BARRON'S

GRE

GRADUATE RECORD EXAMINATION

2008

17TH EDITION

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Acknowledgments

The authors gratefully acknowledge the following for permission to reprint reading passages.


Page 104: From The Madwoman in the Attic by Sandra M. Gilbert and Susan Gubar, © 1979 by Yale University Press, publisher.


Preface

As prospective graduate students concerned with professional advancement, you know the importance of using good tools and drawing on solid research. In this Seventeenth Edition of Barron’s GRE, we offer you both.

This revision contains the fruits of our close study of the major changes in the GRE General Test made public by the Graduate Record Examinations Board. We have scrutinized hundreds of actual GRE questions, traced dozens of GRE reading passages to their sources, analyzed subsets of questions by order of difficulty and question type. We have gone through all the topics in the new analytical writing section, categorizing the actual issues you will encounter on your test and analyzing the argument passages, pinpointing their logical flaws. In the process, we have come up with the following features, which should make this Seventeenth Edition particularly helpful to you:

Typical GRE Questions Analyzed

The Seventeenth Edition takes you step by step through dozens of verbal and mathematical questions that simulate actual GRE questions, showing you how to solve them and how to avoid going wrong.

Testing Tactics

The Seventeenth Edition provides you with dozens of proven, highlighted testing tactics that will help you attack the different types of questions on the GRE.

High-Frequency Word List

The Seventeenth Edition continues to give you an up-to-date 333-word High-Frequency Word List—333 words from abate to zealot that have been shown by computer analysis to occur and recur on actual published GREs—plus Barron’s 3,500-word Master Word List, the college-level vocabulary list for over 40 years.

Comprehensive Mathematics Review

The Seventeenth Edition presents you with extensive mathematical review materials that provide a refresher course for students primarily involved in nonscientific disciplines.

GRE-Modeled Tests

The Seventeenth Edition offers you a full-length Diagnostic Test geared to the current GRE, a diagnostic test that will enable you to pinpoint your areas of weakness right away and concentrate your review on subjects in which you need the most work, plus five additional Model Tests, all with answers completely explained, that in format, difficulty, and content echo today’s GRE.

Computer GRE Update

The Seventeenth Edition introduces you to the computer-based GRE—and, along with the accompanying CD-ROM (optional), explains everything you need to know about the computer-adaptive GRE.
**Analytical Writing Update**

The Seventeenth Edition also provides you with an introduction to the GRE analytical writing section, familiarizing you with the range of topics covered and giving you helpful hints on how to write clear, cogent essays in no time at all.

This Seventeenth Edition once more upgrades what has long been a standard text. It reflects the contributions of numerous teachers, editors, and coaches, and the dedication of the staff at Barron's. It also reflects the forensic and rhetorical skills of Lexy Green, Director of Debate at the College Preparatory School, to whom we owe special thanks. We, the authors, are indebted to all these individuals for their ongoing efforts to make this book America's outstanding GRE study guide.

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**TIMETABLE FOR A TYPICAL COMPUTER-BASED GRADUATE RECORD EXAMINATION**

*Total Testing Time: 2 hours and 30 minutes*

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<td>4 data interpretation questions (tables/graphs)</td>
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<td>3</td>
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<td>45 minutes</td>
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<td>Analytical Writing: 1 essay analyzing an argument</td>
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PART ONE

Introduction/
Diagnostic Test
1 What You Need to Know About the GRE

- An Overview of the GRE General Test
- Commonly Asked Questions About the GRE
- GRE Test Format
  - Verbal Ability
  - Quantitative Ability
  - Analytical Ability

An Overview of the Computer-Based GRE General Test

The GRE General Test is an examination designed to measure the verbal, quantitative, and analytical writing skills you have developed in the course of your academic career. High GRE scores strongly correlate with the probability of success in graduate school: the higher you score, the more likely you are to complete your graduate degree. For this reason, many graduate and professional schools require applicants to take the GRE General Test, a test now given only on computer. (They may also require you to take a GRE Subject Test in your particular field. Subject Tests currently are available in 14 fields.)

The computer-based GRE General Test you take will have three or four sections. There will always be

- a 30-question verbal section (30 minutes)
- a 28-question quantitative section (45 minutes)
- an analytical writing section composed of two tasks (75 minutes)

In addition, there may be

- an unidentified experimental section, which would be a second verbal or quantitative section
- an identified optional research section

The verbal section measures your ability to use words as tools in reasoning; you are tested not only on the extent of your vocabulary but on your ability to discern the relationships that exist both within written passages and among individual groups of words. The quantitative section measures your ability to use and reason with numbers or mathematical concepts; you are tested not on advanced mathematical theory but on general concepts expected to be part of everyone’s academic background. The analytical writing section measures your ability to make rational assessments about unfamiliar, fictitious relationships and to logically present your perspective on an issue.

There are four very important points you should be aware of:

1. In each multiple-choice section, before you can move from one question to the next, you must answer the question currently on the screen.

2. Once you have clicked on an answer and confirmed your choice, you cannot go back to that question and change your answer choice.

3. Not every question is worth the same number of points; harder questions are worth more than easy ones.

4. The GRE General Test does not penalize you for incorrect answers. When you don’t know an answer, try to make an educated guess by eliminating clearly incorrect choices; if you can’t eliminate any choices, make a wild guess, and move on.

Keep these points in mind as you learn more about what’s on the computer-based test, and, in the next chapter, about the tactics and strategies that will help you maximize your test score.
Commonly Asked Questions About the Computer-Based GRE

How Does the GRE Differ from Other Tests?

Most tests college students take are straightforward achievement tests. They attempt to find out how much you have learned, usually in a specific subject, and how well you can apply that information. Without emphasizing memorized data, the GRE General Test attempts to measure verbal, quantitative, and analytical writing skills that you have acquired over the years both in and out of school.

Although the GRE General Test is claimed to measure skills that you have developed over a long period, even a brief period of intensive study can make a great difference in your eventual GRE scores. By thoroughly familiarizing yourself with the process of computer-based testing, the GRE test format, and the various question types, you can enhance your chances of doing well on the test and of being accepted by the graduate school of your choice.

How Can I Learn to Handle the Mechanics of Taking a Computer-Based Test?

By using the CD-ROM that accompanies this book, you will become familiar with everything you need to know. In addition, at the test site before you get to the actual computer-based GRE, you have to work through four tutorials that train you in the mechanics of taking this particular test. They are:

- How to Use a Mouse
- How to Select an Answer
- How to Use the Testing Tools
- How to Scroll

You can't skip these tutorials; they're mandatory, even for computer majors. They're also important—every computer program has its idiosyncrasies, and you need to familiarize yourself with how to handle this particular computer setup.

Plan to take your time on these tutorials, and don't worry about how much time you're taking. The 20 to 30 minutes you spend working through the tutorials before you begin testing don't count against your time for taking the test. You can even use this free time to organize your scratch paper before you begin the actual timed test. (More on setting up your scratch paper later.)

What Is It Like to Take a Computer-Based GRE?

You sit in a carrel in a computer lab or testing center, facing a computer screen. You may be alone in the room, or other test-takers may be taking tests in nearby carrels. With your mouse, you click on an icon to start your test. A question appears on screen. You answer it, clicking on the oval next to your answer choice. Satisfied with your answer, you click on a box marked Confirm, to indicate you have no second thoughts about your choice. Then, ready to move on, you click on the box marked Next. A new question appears on screen, and you go through the process again.

This is what it is like to take a computerized GRE. At the end of the first section, you are given a one-minute break. After finishing the second section, you have a ten-minute break. The third section may include another one-minute break. (This is the most likely scenario; it's possible you may be instructed to answer a fourth experimental section.)

How Does Taking a Computer-Based Test Differ from Taking a Pencil-and-Paper Test?

On a pencil-and-paper standardized test, within any given section of your test booklet you are free to skip from question to question and to answer questions in any order you choose. If you do better on antonyms than on reading comprehension questions, for example, you can temporarily skip the time-consuming reading passages and go straight to the antonyms. Likewise, if you have second thoughts about a particular answer choice, on a pencil-and-paper test you can go back to the question, erase your original pencil mark, and select a different answer choice. You are also free to write in your test booklet, crossing out incorrect answer choices, underlining key words, and highlighting questions you need to reconsider.

On a computer-based test (CBT), there is no test booklet. Your test questions appear, one at a time, on your computer screen. You must answer the question currently on the screen and confirm that you are sure of your answer choice before you can move on to the next question. Once you have confirmed your answer choice and moved on, you cannot go back and change it.

In addition, on the CBT, questions are not arranged in groups according to question type: two analogy questions may follow two antonyms; they may in turn be followed by a single sentence completion. You cannot predict what type of question will come up next.

Why Do Some People Call the Computer-Based General Test a CAT?

CAT stands for Computer-Adaptive Test. What does this mean?

When you take a pencil-and-paper test, the questions in the test booklet you receive are basically the same as the questions printed in every other booklet distributed to test-takers on that day. When you take a computer-based GRE
General Test, however, the questions you face on screen are likely to differ markedly from those that come up on the screens of the test-takers in the carrels next to you.

Why will your test be different from someone else’s test? Because the CBT GRE is a computer-adaptive test. The test adapts to your skill level. It is customized.

How does this work? The computer program begins by assuming you are the “average” GRE candidate, an imaginary figure whose score would place him or her precisely in the middle of the entire test-taking population. The computer program contains a pool of some 1,000 questions organized by content, question type, and level of difficulty. From this pool the computer selects a math question of medium difficulty, a question the average GRE candidate (someone who would wind up in the 50th percentile of test-takers with a Quantitative score of 550) would be likely to get correct. If you answer this question correctly, the computer revises its estimate of your eventual score upward and proceeds to give you a slightly harder question, one that a student scoring 600 should get correct. However, if you answer that question incorrectly, the computer again revises its estimate of your eventual score—downward this time, and you are presented with an easier question, one that a student scoring 500 might get correct. Thus, as you answer each question, the computer adapts your test, tailoring it to reflect your previous performance. In the process, it fine-tunes its estimate of your skill level, gradually zeroing in on your eventual score.

Can I Tell How Well I’m Doing on the Test from the Questions the Computer Assigns Me?

Don’t even try; it never pays to try to second-guess the computer. There’s no point in wasting time and energy wondering whether it’s feeding you harder questions or easier ones. Let the computer keep track of how well you’re doing—you concentrate on answering questions and pacing yourself.

Should I Guess?

Yes, you must! You are not going to know the correct answer to every question on the GRE. That’s a given. But you can’t just skip a question. In order to move on to the next question, you first must answer the question currently on screen, even if you haven’t a clue as to what the correct answer might be. So if the question on screen has you stumped, eliminate any obviously incorrect answer choices, and then guess and don’t worry whether you’ve guessed right or wrong. Your job is to get to the next question you can answer. Just remember to use the process of elimination to improve your guessing odds.

How Can I Use the Process of Elimination on a Computer-Based GRE?

Even though the current CBT GRE makes no provision for you to cross out incorrect answer choices on screen, you still can eliminate answers you know are wrong before guessing which of the remaining answer choices is correct. This is where your scratch paper comes in. Take a couple of minutes to write out four rough, scratch-paper answer sheets—one for each section. Use these answer sheets as your guessing guides. Before you guess, first cross out any choices on your answer sheet that you are sure are wrong. Then choose between the answer choices that are left. You’ll increase your chances of coming up with the right answer by making this sort of “educated” guess.

Make use of your scratch paper throughout the test. In the verbal section, jot down key words or phrases from the reading passages. On the mathematics questions, use your scratch paper to draw diagrams and, of course, to do all of your calculations.

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How Can I Determine the Unidentified Experimental Section?

You can't. Do not waste time in the exam room trying to identify the experimental section. If you are presented with extra sections, do your best on all of them. Some claim that most often the last section is the experimental section. Others claim that the section with unusual questions is the one that does not count. Ignore the claims: you have no sure way to tell. If you encounter a series of questions that seem strange to you, do your best. Either these are experimental and will not count, in which case you have no reason to worry about them, or they will count, in which case they probably will seem just as strange and troublesome to your fellow examinees.

When and Where Can I Take the Computer-Based GRE?

You can take the computer-based GRE General Test almost any Monday through Saturday all year round. (Testing centers are closed on Christmas and New Year's Day and other major federal holidays.) Because appointments are scheduled on a first-come, first-served basis, you should be sure to register early to get the date you want, especially if that date falls in the highly popular November through January testing period.

The computer-based GRE is administered at a variety of sites: Sylvan Technology Centers, Educational Testing Service (ETS) field offices, university testing centers, and other academic institutions. Test centers are located in all 50 states, in American Samoa, Guam, Puerto Rico, the U.S. Virgin Islands, and eight provinces of Canada. International test centers also exist: a list of them can be found on-line at www.gre.org or in the GRE Registration and Information Bulletin.

How Can I Register to Take the GRE?

If you have a credit card or CST authorization voucher, you can register for the GRE over the phone. This is by far the fastest way. In the United States, American Samoa, Guam, the U.S. Virgin Islands, Puerto Rico, and Canada, contact the Sylvan Candidate Services Call Center at 1-800-GRE-CALL (1-800-473-2255). You can also register by calling your local test center directly. If you plan to take the GRE when abroad, contact the appropriate international Regional Registration Center, also listed on-line at www.gre.org as well as in the Registration and Information Bulletin.

You can also register by mail to take the GRE. Simply complete the Computer-Based Test Authorization Voucher request located in the center of the Registration and Information Bulletin. Then mail the completed form and a check or money order for the appropriate fee (currently $99; $125 for test locations outside the United States and U.S. territories) to Graduate Record Examinations, Educational Testing Service, P.O. Box 6020, Princeton, NJ 08541-6020. You will receive your authorization voucher in two to three weeks and can then call Sylvan Candidate Services to schedule your test date.

Your college counseling office should be able to provide you with a registration form. If a registration form is not available at your school, download one on-line at www.gre.org or request one by mail from Graduate Record Examinations, Educational Testing Service, CN 6000, Princeton, NJ 08541-6000.

How and When Are GRE Scores Reported?

The General Test raw score, the number of correct answers, is converted to a score on a scale of 200 to 800. With no correct answers at all, a student would still have a score of 200. With one or two incorrectly answered questions, a student could still have a score of 800. You receive separate scores (from 200 to 800) on the verbal and quantitative sections. Your score report will include both your scaled scores and your percentile rank indicating the percent of examinees scoring below your scaled scores on the General Test.

Your analytical writing score will be the average of the scores assigned to your essays by two trained readers. These scores are rounded up to the nearest half-point. Your combined analytical writing score can vary from 0 to 6, with 6 the highest score possible.

As soon as you have finished taking the test, the computer will calculate your unofficial scaled scores for the verbal and quantitative sections and display them to you on the screen. Because your essays are sent to trained readers for holistic scoring, you will not receive a score for the analytical writing section on the day of the test. You should receive in the mail an official report containing all three scores approximately three weeks after the test date. (If you have chosen to hand-write your essays, you should allow up to six weeks for the official report to arrive.)

NOTE: Except in the analytical writing sections, every question on the GRE is a multiple-choice question with five choices—except for the quantitative comparisons, which have four choices. In this book, the choices are always labeled A, B, C, D, and E, and these letters are used in the Answer Keys and the explanations. On an actual GRE, these letters never appear on the screen. Rather, each choice is preceded by a blank oval, and you will answer a question by clicking with the mouse on the oval in front of your choice.
GRE Test Format

Verbal Ability

The verbal section consists of 30 questions. These fall into four types: antonyms, analogies, sentence completions, and reading comprehension questions. Your academic success will depend on your verbal abilities, especially your ability to understand scholarly prose and to work with specialized and technical vocabulary.

Here is how the 30-question verbal section generally breaks down:

- 8–10 antonym questions
- 6–8 analogy questions
- 5–7 sentence completion questions
- 6–10 reading comprehension questions (based on two to four passages)

Although the amount of time spent on each type of question varies from person to person, in general, antonyms take the least time, then analogies, then sentence completions, and, finally, reading comprehension questions.

Antonym Questions

The antonym questions are the most straightforward vocabulary questions on the test. You are given a word and must choose, from the five choices that follow it, the best antonym (opposite). Some of these words may be totally unfamiliar to you.

A typical antonym question looks like this:

The word perfidy contains the root fid, meaning faith (as in fidelity). Perfidy means treachery, the betrayal of faith. Its opposite is faithfulness, the last choice given.

Even if you do not know the meaning of perfidy, if you know its root, you can guess that its antonym must be either a word meaning faith or loyalty, or a word opposite in meaning to faith, such as treachery or disloyalty. The only answer containing such a word is the final answer choice.

See Chapter 4 for antonym testing tactics and practice exercises that will help you handle these questions, and Chapter 8 for vocabulary and word-part exercises that will help you throughout the verbal section.

Analogy Questions

Like antonyms, analogy questions are vocabulary questions. They test your understanding of the relationships among words and ideas. You are given one pair of words and must choose another pair that is related in the same way. Many relationships are possible. The two terms in the pair can be synonyms; one term can be a cause, the other its effect; one can be a tool, the other the worker who uses the tool.

A typical analogy question looks like this:

When energy flags, it weakens or grows less. Likewise when determination or resolve falters, it weakens or grows less. The correct answer is the second choice.

See Chapter 5 for analogy question tactics and practice exercises that will help you handle these questions.

Sentence Completion Questions

In the sentence completion questions you are asked to choose the best way to complete a sentence from which one or two words have been omitted. These questions test a combination of reading comprehension skills and vocabulary. You must be able to recognize the logic, style, and tone of the sentence so that you will be able to choose the answer that makes sense in context. You must also be able to recognize differences in usage. The sentences cover a wide variety of topics from a number of academic fields. They do not, however, test specific academic knowledge. You may feel more comfortable if you are familiar...
with the topic the sentence is discussing, but you should be able to handle any of the sentences using your knowledge of the English language.

Here is a typical sentence completion question.

The medical researchers replied to the charge that their proposed new treatment was ______ by demonstrating that it in fact observed conventional medical practices.

- insignificant
- untested
- unorthodox
- expensive
- intricate

The medical researchers defend their new treatment by saying it follows accepted, conventional practices. What, therefore, must have been the critics' accusation about the treatment? They must have claimed it was unconventional, violating accepted practices. The missing word is the third choice, unorthodox.

See Chapter 6 for sentence completion question tactics and practice exercises that will help you handle these questions.

### Reading Comprehension Questions

Reading comprehension questions test your ability to understand and interpret what you read. This is probably the most important ability you will need in graduate school and afterward.

Although the passages may encompass any subject matter, you do not need to know anything about the subject discussed in the passage in order to answer the questions on that passage. The purpose of the questions is to test your reading ability, not your knowledge of history, science, literature, or art.

Here is a typical reading comprehension passage and question.
The key lines here are the passage's final sentences. Does the author acknowledge hypothetical objections to the comparison? Definitely. Does the author conclude by reaffirming the significance of the termite/macaque comparison? Clearly he does: he concludes by quoting Wilson (whom he calls an eminent scholar), in doing so giving implicit support to Wilson's assertion that such oversimplified comparisons can provide the basis for an important general theory. The correct answer is the third choice.

See Chapter 7 for reading comprehension tactics and practice exercises that will help you handle these questions.

Quantitative Ability

The quantitative section consists of 28 questions:

• 14 quantitative comparison questions
• 10 discrete quantitative questions (another name for standard multiple-choice questions)
• 4 data interpretation questions

In order to answer these questions, you need to know arithmetic, some very elementary algebra, and a little geometry. Most of this material you learned in elementary and middle school. You do not need to know any advanced mathematics. The questions are intended to determine if you have a basic knowledge of elementary mathematics, and if you have the ability to reason clearly.

If you haven’t done any mathematics in a while, go through the math review in this book before attempting the Model Tests, and certainly before registering to take the GRE. If you feel that your math skills are still pretty good, you can try the Diagnostic Test first, and then read only those sections of the math review relating to those topics that gave you trouble.

Quantitative Comparison Questions

Of the 28 mathematics questions on the GRE, half of them (14) are what is known as quantitative comparisons. It is very likely that you have not seen such a question since you were in high school preparing for the SAT I; if you didn’t have to take the SAT I, it is possible that you have never even seen a quantitative comparison. Therefore, read these instructions very carefully.

In these questions there are two quantities, one in Column A and one in Column B, and it is your job to compare them. For these problems there are only four possible answers:

- The quantity in Column A is greater;
- The quantity in Column B is greater;
- The two quantities are equal; and
- The relationship cannot be determined from the information given.

In this book, these four answer choices will be referred to as A, B, C, and D, respectively. In some of the questions, information about the quantities being compared is centered above the columns. This information must be taken into consideration when comparing the two quantities.

In Chapter 12 you will learn several important strategies for handling quantitative comparisons. For now, let’s look at three examples to make sure that you understand the concepts involved.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>((3+4)^2)</td>
<td>(3^2+4^2)</td>
</tr>
</tbody>
</table>

- Evaluate each column: \((3+4)^2 = 7^2 = 49\), whereas \(3^2+4^2 = 9+16 = 25\).
- Since \(49 > 25\), the quantity in Column A is greater.
- The answer is A.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a+b = 16)</td>
<td>8</td>
</tr>
</tbody>
</table>

The quantity in Column A is the average of \(a\) and \(b\): \(\frac{a+b}{2}\).

Since we are told that \(a+b = 16\), the quantity in Column A is \(\frac{16}{2} = 8\). So, the quantities in Columns A and B are equal. The answer is C.

**NOTE:** We cannot determine the value of either \(a\) or \(b\); all we know is that their sum is 16. Perhaps \(a = 10\) and \(b = 6\), or \(a = 0\) and \(b = 16\), or \(a = -4\) and \(b = 20\). It doesn’t matter. The average of 10 and 6 is 8; the average of 0 and 16 is 8; and the average of -4 and 20 is 8. Since \(a+b = 16\), the average of \(a\) and \(b\) is 8; all the time, no matter what. The answer, therefore, is C.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a^3)</td>
<td>(a^2)</td>
</tr>
</tbody>
</table>

- If \(a = 1\), \(a^3 = 1\) and \(a^2 = 1\). In this case, the quantities in the two columns are equal.
- This means that the answer to this problem cannot be A or B. Why?
- The answer can be A (or B) only if the quantity in Column A (or B) is greater all the time. But it isn’t—not when \(a = 1\).
- So, is the answer C? Maybe. But for the answer to be C, the quantities would have to be equal all the time. Are they?
- No. If \(a = 2\), \(a^3 = 8\) and \(a^2 = 4\), and in this case the two quantities are not equal.
- The answer, therefore, is D.
Discrete Quantitative Questions

Of the 28 mathematics questions on the GRE, 10 are standard multiple-choice questions, what the ETS calls discrete quantitative questions. The way to answer such a question is to do the necessary work, get the solution, and then look at the five choices to find your answer. In Chapter 11 we will discuss other techniques for answering these questions, but for now let’s look at two examples.

Edison High School has 840 students, and the ratio of the number of students taking Spanish to the number not taking Spanish is 4:3. How many of the students take Spanish?

(A) 280  (B) 360  (C) 480  (D) 560  (E) 630

To solve this problem requires only that you understand what a ratio is. Ignore the fact that this is a multiple-choice question. Don’t even look at the choices.

• Let 4x and 3x be the number of students taking and not taking Spanish, respectively.
• Then 4x + 3x = 840 ⇒ 7x = 840 ⇒ x = 120.
• The number of students taking Spanish is 4 × 120 = 480.
• Having found the answer to be 480, now look at the five choices: see 480 listed as Choice C, click on that choice, and confirm your answer.

Another type of multiple-choice question that appears on the GRE is the Roman numeral-type question. These questions consist of three statements labeled I, II, and III. The five answer choices give various possibilities for which of the statements are true. Here is a typical example.

If x is negative, which of the following must be true?

I. \( x^2 < x^3 \)
II. \( x + \frac{1}{x} < 0 \)
III. \( x = \sqrt{x^3} \)

(A) I only  (B) II only  (C) I and II only  (D) II and III only  (E) I, II, and III

To solve this problem, examine each statement independently, and think of it as a true-false question.

• If x is negative, \( x^2 \) is negative, and so must be less than \( x^3 \), which is positive. Statement I is true.

• If x is negative, so is \( \frac{1}{x} \) and the sum of two negative numbers is negative. Statement II is true.

• The square root of a number is never negative, and so could not possibly equal x. Statement III is false.

• Only I and II are true. The answer is C.

Data Interpretation Questions

Four of the questions in the quantitative section are data interpretation questions. There are always two questions based on one set of data, and later in the section, two more questions based on a second set of data. As you might guess from their name, these questions are based on information provided in graphs, tables, or charts. The questions test your ability to interpret the data that have been provided. You will either have to do a calculation or make an inference from the given data. The various types of questions that could arise will be explored in Chapter 13. Here are two questions based on one set of data.

![Distribution by Rank of the 800 Faculty Members at Central State University (CSU) in 1990]

1. In 1990 how many faculty members did not have a professorial rank?

(A) 200  (B) 240  (C) 320  (D) 400  (E) 520

This is a straightforward question that can easily be answered by looking at the chart and doing a small calculation.

• In 1990, 30% of the faculty were not professors (5% were instructors and 25% were adjunct faculty).
• 30% of 800 = .30 × 800 = 240.

2. From 1990 to 2000 the number of faculty members at CSU increased by 20%. If the total number of assistant, associate, and full professors remained the same, and the number of instructors increased by 50%, how many adjunct faculty were there in 2000?

(A) 240  (B) 340  (C) 384  (D) 480  (E) 516

This question is more complicated and requires several calculations.

• Since the number of faculty members increased by 20%, in 2000 there were 960 people on the faculty (20% of 800 = 160, and 800 + 160 = 960).
• In 1990, there were 560 professors.

55% + 10% + 25% = 70% and 70% of 800 = 560

So in 2000, there were also 560 professors.
Analytical Writing

The analytical writing section consists of two tasks:

- Writing an essay presenting your point of view on an issue of general intellectual concern
- Writing an essay analyzing the line of reasoning in an argument

You are allotted 45 minutes to complete the issue task and 30 minutes to complete the argument analysis task. There is no break between the two tasks. You must finish the first task before you begin the other.

You will find suggestions for tackling both writing tasks in Chapter 9.

The Issue Task

In this task, you are asked to respond to a particular issue, clearly presenting your viewpoint on that issue and supporting your position with reasons and examples. This task is intended to test your ability to write persuasively and effectively.

At the test center, before you begin the timed portion of your issue writing assignment, you will be shown a set of directions on screen. The directions for the issue task are straightforward. In essence, they say the following:

Give Your Viewpoint on an Issue
45 Minutes

Choose one of the following topics and compose an essay on that topic. You may not write on any other topic.

Each topic is presented as a one- to two-sentence quotation commenting on an issue of general concern. Your essay may support, refute, or qualify the views expressed in the quotation. Whatever you write, however, must be relevant to the issue under discussion, and you must support your viewpoint with reasons and examples derived from your studies and/or experience.

Before you choose a topic, read both topics carefully. Consider which topic would give you greater scope for writing an effective, well-argued essay.

Faculty members from various institutions will evaluate your essay, judging it on the basis of your skill in the following areas:

- Analysis of the quotation’s implications
- Organization and articulation of your ideas

Use of relevant examples and arguments to support your case

Handling of the mechanics of standard written English

Once you have decided which topic you prefer, click on the appropriate icon (Topic 1 or Topic 2) to confirm your choice. Do not be hasty confirming your choice of topic. Once you have clicked on a topic, you will not be able to switch to the alternate choice.

To begin the timed portion of this task, click on the icon labeled Proceed.

Once you click on Proceed, a second screen will appear. This screen contains some general words of advice about how to write an issue essay:

- Think before you write. Plan what you are going to say.
- Work out your ideas in detail.
- Be coherent.
- Leave yourself enough time to revise.

None of this is rocket science. You already know what you are supposed to do. The clock is ticking away, so don’t waste your time reading pro forma advice. Just click on the Dismiss Directions icon and get to work.

Here are two issue topics modeled on the kinds of topics found in the GRE’s “Pool of Issue Topics” available on their web site [www.gre.org/issuetop.html]. Please note that these are not official GRE issue topics, though they resemble the official topics closely in subject matter and form.

“A mind is a terrible thing to waste. ’No society can afford to let its exceptionally bright or talented children go without the training they need to develop their talents fully.”

“The great artists in any medium—painters, poets, choreographers, sculptors—are those who create works of art that the majority of people can comprehend.”

The Argument Task

In this task, you are asked to critique the line of reasoning of an argument given in a brief passage, clearly pointing out that argument’s strengths and weaknesses and supporting your position with reasons and examples. This task is intended to test both your ability to evaluate the soundness of a position and your ability to get your point across to an academic audience.

Again, before you begin the timed portion of your argument analysis task, you first will be shown a set of directions on screen. The directions for the argument task are straightforward. In essence, they say the following:
Evaluate an Argument
30 Minutes

In 30 minutes, prepare a critical analysis of an argument expressed in a short paragraph. You may not offer an analysis of any other argument.

As you critique the argument, think about the author’s underlying assumptions. Ask yourself whether any of them are questionable. Also evaluate any evidence the author brings up. Ask yourself whether it actually supports the author’s conclusion.

In your analysis, you may suggest additional kinds of evidence to reinforce the author’s argument. You may also suggest methods to refute the argument, or additional data that might be useful to you as you assess the soundness of the argument. You may not, however, present your personal views on the topic. Your job is to analyze the elements of an argument, not to support or contradict that argument.

Faculty members from various institutions will judge your essay, assessing it on the basis of your skill in the following areas:

• Identification and assessment of the argument’s main elements
• Organization and articulation of your thoughts
• Use of relevant examples and arguments to support your case
• Handling of the mechanics of standard written English

Here is an argument topic modeled on the kinds of topics found in the GRE’s “Pool of Argument Topics” available on their web site [www.gre.org/argutop.html]. Please note that it is not an official GRE argument topic, though it resembles the official topics closely in subject matter and form.

The following was written as part of an application for a parade permit made by a special events production company in San Francisco.

A televised Christmas parade held in San Francisco would be a surefire source of profits and publicity for the city. Currently the only nationally televised pre-Christmas parade is the New York Macy’s Thanksgiving Day parade in late November; our proposed early December Santa Day parade would both capitalize on the Macy’s parade publicity and attract shoppers to San Francisco to take advantage of the pre-Christmas sales. San Franciscans love parades; over 10,000 people attended the St. Patrick’s Day parade, while last October’s Halloween parade through the Haight-Ashbury district drew at least twice that number. Finally, a recent marketing survey shows that people who come to New York to attend the Thanksgiving Day parade spend over $1,000 that weekend on restaurant meals, hotel rooms, and Christmas shopping.
2

Test-Taking Tactics for the Computer-Based GRE

Before studying the specific tips that will enable you to do your best on this computer-based test or CBT, briefly review the key features of the exam:

• A typical CBT consists of 58 multiple-choice questions in two sections, plus two essay questions.

• The verbal section contains 30 questions: roughly 9 antonyms, 7 analogies, 6 sentence completions, 8 reading comprehension questions. These appear on screen in no set order; 2 sentence completions may be followed on screen by 2 antonyms.

• The mathematics section contains 28 questions; 14 are quantitative comparisons, 10 are standard multiple-choice questions, and 4 are data interpretation questions based on tables or graphs.

• Because the CBT you take will be tailored to your skills, it may vary slightly from the typical test described above.

• In the multiple-choice sections, you receive more credit for getting a hard question right than you do for answering an easy question correctly.

• You cannot skip questions; you must answer the question on screen and confirm that you are satisfied with your answer choice before you can proceed to the next question.

• Once you have confirmed an answer, you cannot go back and change it.

Starting Right Now

Begin to Familiarize Yourself with Computer Skills

Use the CD-ROM that accompanies this book to familiarize yourself with computerized testing.

Using a Mouse

As you probably know, a mouse is a small electronic device that enables you to send signals to your PC. It sits on a mouse pad, its tail (the electric cord that links it to your PC) pointed away from you. As you move the mouse back and forth along the surface of the mouse pad, you see a pointer or arrow moving on the computer screen. There's a "button" on the rear surface of the mouse. Click that button to tell the computer to do something.
Here is an antonym question as it would appear on a computer screen. Right now the arrow is off to one side.

To enter your answer to this question, you must move the mouse until the arrow touches the oval next to your answer choice.

Once the pointer is on the oval, click the button. Note that the oval on which you clicked is now black. This means that the computer has recorded your answer choice.

If you decide that you prefer a different answer, simply move the mouse until the arrow is on the appropriate oval. Click the button. The new oval is now black, while the old oval is once more blank.

Once you're sure of your answer choice, before you can go on to the next question, you have to use the mouse twice more. First, you have to move the pointer until it's on the box labeled "Next" at the bottom of the screen. Click the button. This signals the computer that you want to move on. Before you can do so, however, you have to confirm that you really want to do that. Up to this moment, you can still change your answer. Once you click on the box labeled "Confirm," however, the screen will change to show the next question. You can never go back to change an answer you have confirmed.

There are six icons at the bottom of a CBT screen, three to the left and three to the right. They read, in order from left to right, as follows:

Quiz  Exit  Time  Help  Confirm  Next
Test  Section  Answer

Because ETS currently refuses to allow other publishers to duplicate its testing tools, we have had to create alternative icons for the computer screens that appear on the CD-ROM accompanying this book. Thus, in place of the CBT icon "Next," our screen has the icon "Proceed." Where the CBT tells you to "Confirm" your answer, our screen asks, "Are You Sure?"

Our layout thus reads, from left to right:

Abandon  Leave  Clock  Need  Are You  Proceed
Section  Help?  Sure?

Do not let these minor differences confuse you. The basic layout of the screen is identical, and the functions of the testing tools are the same. Even if our icons don't match the ones on the CBT exactly, you can depend on what we say about the appearance of the test.
Scrolling Through a Text

Occasionally, to answer a question you may have to consider more information than can fit conveniently on a single computer screen. A 500-word reading passage, for example, takes up too much room for one screen; so do certain charts and bar and line graphs.

In such cases, a vertical scroll bar will appear along the right side of that reading passage or chart. It enables you to control what part of the text you see on screen. Click on the scroll bar’s down arrow, and it will allow you to move down one line to see the next line of text. Keep on clicking on the down arrow and you’ll scroll down even more. Click on the up arrow and you’ll scroll back up. You can scroll line by line.
line; you can also scroll a page at a time. If you hold down
the mouse button on an arrow, you can scroll through the
text quite rapidly.

The small grey status bar at the top of the pane or little
window helps you figure out just where you are in the text.
When you’re at the start of the text, it reads “Begin” when
you’re at the end of the text, it reads “End.” When you’re in
the middle and can scroll in either direction, it reads “More
Available.”

If you’re a rapid reader and are unused to word-processing
programs and other software programs that incorporate
scrolling, you may find the process a bit awkward at first.
Practice on the CD-ROM version of this book until you get
the hang of it. When you take the CBT, you’ll have a
chance to work through a tutorial that teaches you how to
scroll. However, you’ll have an easier time on the test if you
come in already comfortable with scrolling techniques.

Before the Test

Schedule the test for your best time of day.

When you sign up to take the test on a specific date, you
will be given a choice of time slots. Some people are
morning people; others work well in the midafternoon.
Consider how your energy and alertness levels vary during
the course of a day. Also, consider possible transportation
problems, such as rush hour. With these and other relevant
factors in mind, select the time slot that works best for you.

Allow yourself enough time for the test.

The GRE Bulletin recommends that you allow \( 4 \frac{1}{2} \) hours for
the CBT. There are three scored sections on the test.
These sections range in length from 30 minutes to 75
minutes each; you must also allow time for a ten-minute
break midway through the session, as well as for the
untimed tutorial on computer-based testing. You will also
need up to half an hour for signing in, during which time
you may be photographed and even fingerprinted. If you
sign up to take the GRE at 8:00 a.m., do not make an
dentist appointment for 12:00. You can’t possibly get there on time,
and you’ll just spend the last hour of the test worrying about
it.

Look over the test site before the day you are
scheduled to take the test.

Do a practice run out to the test center a week or so before
you take the test. If you’re going by car, check out the traffic
patterns. See whether you’ll need to allow extra time to get
to the site, and whether you’ll be able to find parking easily.
If you’re using public transportation, figure out how to get
from the bus stop or train station to the test center. Some
testing centers are located in suites in skyscrapers; others
in storefront locations in the middle of busy malls. Also
learn where the restrooms are, and the nearest place to
buy a quick snack.

Set out your test kit the night before the test.

Avoid sudden panic on the morning of the test. Before you
go to bed, set out everything you will need to take with you
in the morning. For the CBT GRE, you need two forms of
official I.D., at least one of which must include a current
photograph; be sure you have these items in your wallet or
purse. If you need to wear special glasses when you work
at a computer, set them out. Include also your directions
to the site, and your CBT authorization voucher, if you
have been given one. (If, however, you register by phone
for an imminent date and pay via credit card, the Sylvan
Candidate Services Call Center will not send you an
authorization voucher; instead, the scheduler will assign
you a confirmation number by which you can identify
yourself to the test center staff. Have that number with you
on the day of the test.)

Also set out the clothes you plan to wear. Choose comfort-
able, casual clothing. Now is not the time to make a fashion
statement; simplicity, not elegance, should be the order of
the day. Bring along a sweater, however; you can’t do your
best if you’re shivering from the cold.

Don’t bother to set out pencils and scratch paper. The test
center will supply you with both. You will not be allowed to
take any “testing aids”—calculators, watches with calculator
functions, pens, rulers, highlighters, books, handheld PCs—
into the testing room.

Get a good night’s sleep.

The way to do your best on any test you ever take is to get
a good night’s sleep so you are well rested and alert.

On the Day of the Test

Take as much time as you need to work through the
tutorials that precede the actual test.

The computerized GRE makes you work through four
tutorials:

- How to Use a Mouse
- How to Select an Answer
- How to Use the Testing Tools
- How to Scroll

You can’t skip these tutorials; they’re mandatory, even for
computer majors. They’re also important; every computer
program has its idiosyncrasies, and you need to familiarize
yourself with how to handle this particular computer setup.

Proceed at your own pace and don’t worry about how much
time you’re taking. The twenty to thirty minutes you spend
working through the tutorials before you begin testing will
not count against your time for taking the test.
As you work through the tutorials, make sure you know all the test directions thoroughly.

Once the test begins, any time you have to switch screens to look up directions or to get help with scrolling is time you lose from the actual test. The clock keeps on ticking, and, to maximize your score, you've got to keep on thinking and clicking. For this reason, be sure you've memorized the directions for the different question types you'll face on the test.

Before you move on from the tutorial section to the actual test, take a break.

Once you've finished making your rough answer sheet, don't be in a rush to click and start the test. Raise your hand to let the proctor know you need assistance, and, when he or she comes up to your Carroll, ask for a restroom break. You'll be escorted out of the computer room and allowed to sit out. You may have spent half an hour or more mastering the material in the tutorials section, and if you're new to working with a mouse, you may be a bit tired or tense. Feel free to wash your face, nibble a quick snack, stretch, or do anything else that will relax you before you move into the test-taking mode. Any time out you take before the test actually starts is "free"; it doesn't cost you any of that all-important question-answering time.

Once the Test Has Started

Avoid clicking on the boxes at the bottom left of the screen.

As you will learn in the tutorial, there are six boxes at the bottom of the screen, three to the left and three to the right. They read, in order, from left to right: Quit, Exit, Time, Help, Confirm, Next. Avoid the ones to the left, especially the two leftmost ones. If you click on either of those boxes, you're abandoning ship, quitting either the particular section on which you're working or the whole test. There is no point in doing so. Even if you're dissatisfied with your performance and unwilling to have your scores sent to the graduate schools you selected, you still can use this test as a practice session. Don't bail out midway. Wait. After you've completed all four sections of the test, you will get a chance to indicate whether you want to cancel this test or whether you want to receive a score for your work. Make the decision then. Even if you decide to cancel your test, you'll still benefit from having had the chance to see what specific questions the computer selected for you. After all, you've paid more than $100 to take this test. Get your money's worth from the experience.

Avoid clicking on the third left-hand box as well, the "Time" box. This is the "Time" box. If you click on it, the information line at the top of the computer screen will stop showing the amount of time remaining in the section on which you're working. You won't be able to pace yourself effectively, and you may completely lose track of how much time you have left. Why create problems for yourself? Keep away from those boxes at the bottom left. (If you accidentally click on the "Time" box and hide the time information momentarily, don't panic; just click on the box a second time to turn the time indicator back on again.)

Keep track of the time.

Your job is to answer correctly as many questions as you can within the time allowed for that particular section of the test. Because of the computer-adaptive nature of the test, you can't simply skip time-consuming questions or questions that stump you, and hope to return to them if you have time left over. To move on to the next question, you must enter and confirm an answer for the question currently on your screen. Therefore, whenever you decide it's worth your while to spend time working through a complicated question, you've got to keep one eye on the clock to make sure getting this one answer correct isn't costing you too much time.

Don't get bogged down by any one question.

Now more than ever it is important for you to avoid getting caught up in figuring out one question that you lose track of the time. Remember, you can't move on to the next question until you've answered the one on screen. If a question is taking too long, guess at the answer and go on to the next question. This is not the time to prove that you can stick to a job no matter how long it takes.

On the other hand, don't rush.

Since your score will depend on how many correct answers you give within a definite period of time, speed and accuracy both count. Don't fall into the common errors born of haste. Read all the answer choices, not just some. Make sure you are answering the question asked and not one it may have reminded you of or one you thought was going to be asked. Write down key words like NOT and EXCEPT to make sure that you do not end up trying to answer the exact opposite of the question asked.

Don't be trigger-happy: Think before you click.

Once you get into the swing of things, clicking "Next" to indicate you're ready to go on to the next question and "Confirm" to indicate that you're sure of your answer, watch out that you don't start double-clicking automatically. It's all too easy to fall into a game-playing mode and click twice before you've thought things through. The CBT is not a computer game; you don't win any points here by zapping the enemy blindly. Take a moment to reconsider each answer choice. Then move on to the next question, sure that you've given this one your best shot.

Be especially careful answering questions that resemble questions you've seen before.

In the GRE, the test-makers test and retest the same concepts. They follow basic patterns, modifying questions subtly or substantially. Thus, in your CBT, you may come
across questions that look very much like ones you have previously seen in published GREs or on www.gre.com, the GRE web site. You may even come across some that resemble questions you’ve just seen on an earlier section of your test. Don’t assume that you know the answer to a question because it looks like one you’ve seen before. Read the question closely. Don’t let subtle shifts in wording catch you unaware.

**Never rush through the first questions of a section.**

Remember, your answers to these initial questions have a greater impact on your score than your answers to the last few questions of the section do.

**Always eliminate as many wrong answers as you can.**

Deciding between two choices is easier than deciding among five. Even if you have to guess, every answer you eliminate improves your chances of guessing correctly.

**Don’t waste time second-guessing yourself.**

Once you confirm an answer, that’s it; you no longer have a chance to change that answer. If, later on in a section, you suddenly realize you got an earlier question wrong, don’t sit there kicking yourself. Self-reproach is a waste of time. Remember, the only question you have to worry about is the one now on screen, so concentrate on it.

Similarly, don’t try to second-guess the computer. There’s no point in wasting time and energy wondering whether it’s feeding you harder questions or easier ones. Let the computer keep track of how well you’re doing. You concentrate on answering questions and pacing yourself.

**Be alert for the five-minute warning.**

Toward the end of each section, a brief flash of the clock will indicate that you have only five minutes left. Even if you have clicked “Time” to hide the remaining time display, the time display will come on automatically at this point. Also, instead of showing just the hours and minutes remaining, the display will change to show seconds as well.

Don’t miss your five-minute warning signal. As you work through each section, be aware of the clock. When you are running out of time, eliminate any answer choices you can and then guess. At that point, even random guessing those last questions is better than leaving them unanswered.
This chapter contains a full-length diagnostic test. The format of the test is identical to the computer-based GRE that you will take, in that it has exactly the same number of verbal and quantitative questions that an actual test has. Within each section, there is also exactly the same breakdown of question types. For example, on the verbal section there are the same number of analogies and antonyms as on a real test; in the quantitative section there are four data interpretation questions and 14 quantitative comparisons. Directions will appear only the first time a given type of question is introduced in each test; after that, only the type of question will appear. What is different, of course, is that this test is not computer adaptive. If you purchased the version of this book that contains a CD-ROM, then later in your preparation, to get a feel for what it is like to take a computerized GRE, do a model test on the CD-ROM.

After taking the test, score your answers and evaluate your results, using the self-ratings guides provided. (Be sure also to read the answer explanations for questions you answered incorrectly and questions you answered correctly but found difficult.)

You should now be in a position to approach your review program realistically and allot your time for study. For example, you should know which topics in mathematics require review and drill. You should also know which of your verbal and analytical skills require concentrated study.

**Simulate Test Conditions**

To best simulate actual test conditions, find a quiet place to work. Have a stop watch or a clock handy so that you can keep perfect track of the time. Go through each section by answering the questions in the order in which they appear. If you don't know the answer to a question, guess (making an educated guess, if possible) and move on. Do not return to a question that you were unsure of, and do not go back to check your work if you have some time left over at the end of a section. (It isn't possible to do that on a real GRE.) Knowing how much time you have for each section and how many questions there are, try to pace yourself so that you use all your time and just finish each section in the time allowed. Do not spend too much time on any one question. Again, if you get stuck, just guess and go on to the next question.
Answer Key—A Diagnostic Test

Section 1

1. A B C D E 11. A B C D E
5. A B C D E 15. A B C D E
7. A B C D E 17. A B C D E
10. A B C D E 20. A B C D E
27. A B C D E 28. A B C D E

Section 2

1. A B C D E 11. A B C D E
5. A B C D E 15. A B C D E
7. A B C D E 17. A B C D E
10. A B C D E 20. A B C D E
27. A B C D E 28. A B C D E
29. A B C D E

DIAGNOSTIC TEST

SECTION 1 — VERBAL ABILITY

Time—30 Minutes
30 Questions

Select the best answer to the following questions, then fill in the appropriate space on your Answer Sheet.

Directions: In each of the following antonym questions, a word printed in capital letters precedes five lettered words or phrases. From these five lettered words or phrases, pick the one most nearly opposite in meaning to the capitalized word.

1. PRODIGAL:
   (A) nomad
   (B) sycophant
   (C) gifted child
   (D) economical person
   (E) antagonist

2. ARTIFICE:
   (A) edifice
   (B) sincerity
   (C) prejudice
   (D) creativity
   (E) affirmation

Directions: Each of the following sentence completion questions contains one or two blanks. These blanks signify that a word or set of words has been left out. Below each sentence are five words or sets of words. For each blank, pick the word or set of words that best reflects the sentence’s overall meaning.

3. The earth is a planet bathed in light; it is therefore _______ that many of the living organisms that have evolved on the earth have _______ the biologically advantageous capacity to trap light energy.
   (A) anomalous...engendered
   (B) unsurprising...developed
   (C) predictable...forfeited
   (D) problematic...exhibited
   (E) expectable...relinquished

4. Relatively few politicians willingly forsake center stage, although a touch of _______ on their parts now and again might well increase their popularity with the voting public.
   (A) garrulity
   (B) misanthropy
   (C) self-effacement
   (D) self-dramatization
   (E) self-doubt

Directions: Each of the following analogy questions presents a related pair of words linked by a colon. Five lettered pairs of words follow the linked pair. Choose the lettered pair of words whose relationship is most like the relationship expressed in the original linked pair.

5. CIRCUITOUS : ROUTE ::
   (A) problematic : solution
   (B) devious : argument
   (C) elliptical : brevity
   (D) judicious : selection
   (E) profound : depth

6. HELPFUL : OFFICIOUS ::
   (A) dutiful : assiduous
   (B) effusive : gushing
   (C) gullible : incredulous
   (D) enigmatic : dumbfounded
   (E) deferential : sycophantic
Directions: Each of the following reading comprehension questions is based on the content of the following passage. Read the passage and then determine the best answer choice for each question. Base your choice on what this passage states directly or implies, not on any information you may have gained elsewhere.

James's first novels used conventional narrative techniques: explicit characterization, action, which related events in distinctly phased sequences, settings firmly outlined and specifically described.

(5) But this method gradually gave way to a subtler, more deliberate, more diffuse style of accumulation of minutely discriminated details whose total significance the reader can grasp only by constant attention and sensitive inference. His later novels play down scenes of abrupt and prominent action, and do not so much offer a succession of sharp shocks as slow piecemeal additions of perception. The curtain is not suddenly drawn back from shrouded things, but is slowly moved away.

(15) Such a technique is suited to James's essential subject, which is not human action itself but the states of mind which produce and are produced by human actions and interactions. James was less interested in what characters do, than in the moral and psychological antecedents, realizations, and consequences which attend their doings. This is why he is more often speaks of "cases" than of actions. His stories, therefore, grow more and more lengthy while the actions they relate grow simpler and less visible; not because they are crammed with adventitious and secondary events, digressive relief, or supernumerary characters, as overstuffed novels of action are; but because he presents in such exhaustive detail every nuance of his situation. Commonly the interest of a novel is in the variety and excitement of visible actions building up to a climactic event which will settle the outward destinies of characters with storybook promise of permanence. A James novel, however, possesses its characteristic interest in carrying the reader through a rich analysis of the mental adjustments of characters to the realities of their personal situations as they are slowly revealed to them through exploration and chance discovery.

7. The passage supplies information for answering which of the following questions?
   (A) Did James originate the so-called psychological novel?
   (B) Is conventional narrative technique strictly chronological in recounting action?
   (C) Can novels lacking overtly dramatic incident sustain the reader's interest?
   (D) Were James's later novels more acceptable to the general public than his earlier ones?
   (E) Is James unique in his predilection for exploring psychological nuances of character?

8. According to the passage, James's later novels differ from his earlier ones in their
   (A) preoccupation with specifically described settings
   (B) ever-increasing concision and tautness of plot
   (C) levels of moral and psychological complexity
   (D) development of rising action to a climax
   (E) subordination of psychological exploration to dramatic effect

9. The author's attitude toward the novel of action appears to be one of
   (A) pointed indignation
   (B) detached neutrality
   (C) sharp derision
   (D) strong partisanship
   (E) mild disapproval
Antonyms

10. EQUIVOCATE:
   (A) yield
   (B) distinguish
   (C) condescend
   (D) pledge
   (E) denounce

11. OPULENCE:
   (A) transience
   (B) penury
   (C) solitude
   (D) generosity
   (E) transparency

Analogies

12. EPHEMERAL : PERMANENCE ::
   (A) erratic : predictability
   (B) immaculate : cleanliness
   (C) commendable : reputation
   (D) spurious : emulation
   (E) mandatory : obedience

13. NONPLussed : BAFFLEMENT ::
   (A) disconsolate : embarrassment
   (B) parsimonious : extravagance
   (C) disgruntled : contentment
   (D) despicable : contempt
   (E) surly : harassment

14. OGLE : OBSERVE ::
   (A) haggle : outbid
   (B) clamor : dispute
   (C) discern : perceive
   (D) flaunt : display
   (E) glare : glower

Sentence Completion

15. It may be useful to think of character in fiction as a function of two _______ impulses: the impulse to individualize and the impulse to _______.
   (A) analogous...humanize
   (B) disparate...aggrandize
   (C) divergent...typify
   (D) comparable...delineate
   (E) related...moralize

16. There are any number of theories to explain these events and, since even the experts disagree, it is _______ the rest of us in our role as responsible scholars to _______ dogmatic statements.
   (A) paradoxical for...abstain from
   (B) arrogant of...compensate with
   (C) incumbent on...refrain from
   (D) opportune for...quarrel over
   (E) appropriate for...issue forth

Reading Comprehension

According to the theory of plate tectonics, the lithosphere (earth’s relatively hard and solid outer layer consisting of the crust and part of the underlying mantle) is divided into a few dozen plates that vary in size and shape; in general, these plates move in relation to one another. They move away from one another at a mid-ocean ridge, a long chain of sub-oceanic mountains that forms a boundary between plates. At a mid-ocean ridge, new lithospheric material in the form of hot magma pushes up from the earth’s interior. The injection of this new lithospheric material from below causes the phenomenon known as sea-floor spreading.

Given that the earth is not expanding in size to any appreciable degree, how can “new” lithosphere be created at a mid-ocean ridge? For new lithosphere to come into being in one region, an equal amount of lithospheric material must be destroyed somewhere else. This destruction takes place at a boundary between plates called a subduction zone. At a subduction zone, one plate is pushed down under another into the red-hot mantle, where over a span of millions of years it is absorbed into the mantle.

In the early 1960’s, well before scientists had formulated the theory of plate tectonics, Princeton University professor Harry H. Hess proposed the concept of sea-floor spreading. Hess’s original hypothesis described the creation and spread of ocean floor by means of the upwelling and cooling of magma from the earth’s interior. Hess, however, did not mention rigid lithospheric plates. The subsequent discovery that the oceanic crust contains evidence of periodic reversals of the earth’s magnetic field helped confirm Hess’s hypothesis. According to the explanation formulated by Princeton’s F. J. Vine and D. H. Matthews, whenever magma wells up under a
1. mid-ocean ridge, the ferromagnetic minerals within the magma become magnetized in the direction of the geomagnetic field. As the magma cools and hardens into rock, the direction and the polarity of the geomagnetic field are recorded in the magnetized volcanic rock. Thus, when reversals of the earth’s magnetic field occur, as they do at intervals of from 10,000 to around a million years, they produce a series of magnetic stripes paralleling the axis of the rift. Thus, the oceanic crust is like a magnetic tape recording, but instead of preserving sounds or visual images, it preserves the history of earth’s geomagnetic field. The boundaries between stripes reflect reversals of the magnetic field; these reversals can be dated independently.

Given this information, geologists can deduce the rate of sea-floor spreading from the width of the stripes. (Geologists, however, have yet to solve the mystery of exactly how the earth’s magnetic field comes to reverse itself periodically.)

17. According to the passage, a mid-ocean ridge differs from a subduction zone in that
(A) it marks the boundary line between neighboring plates 
(B) only the former is located on the ocean floor 
(C) it is a site for the emergence of new lithospheric material 
(D) the former periodically disrupts the earth’s geomagnetic field 
(E) it is involved with lithospheric destruction rather than lithospheric creation

18. It can be inferred from the passage that as new lithospheric material is injected from below
(A) the plates become immobilized in a kind of gridlock 
(B) it is incorporated into an underwater mountain ridge 
(C) the earth’s total mass is altered 
(D) it reverses its magnetic polarity 
(E) the immediately adjacent plates sink

19. According to the passage, lithospheric material at the site of a subduction zone
(A) rises and is polarized 
(B) sinks and is reincorporated 
(C) slides and is injected 
(D) spreads and is absorbed 
(E) diverges and is consumed

Antonyms

20. HONE:
(A) broaden 
(B) twist 
(C) dull 
(D) weld 
(E) break

21. PHLEGOMATIC:
(A) dogmatic 
(B) ardent 
(C) haphazard 
(D) self-assured 
(E) abstracted

22. BANALITY:
(A) tentative interpretation 
(B) concise summation 
(C) accurate delineation 
(D) laudatory remark 
(E) novel expression

Analogies

23. THIRST : DRIVE ::
(A) inebriety : excess 
(B) success : ambition 
(C) indifference : passion 
(D) taste : gusto 
(E) smell : sense

24. SKULDUGGERY : SWINDLER ::
(A) surgery : quack 
(B) quandary : craven 
(C) chicanery : trickster 
(D) forgery : speculator 
(E) cutlery : butcher

Sentence Completion

25. According to one optimistic hypothesis, the dense concentration of entrepreneurs and services in the cities would incubate new functions, _____ them, and finally export them to other areas, and so the cities, forever breeding fresh ideas, would _____ themselves repeatedly.

(A) immunize...perpetuate 
(B) isolate...revitalize 
(C) foster...deplete 
(D) spawn...imitate 
(E) nurture...renew

26. Man is a ________ animal, and much more so in his mind than in his body: he may like to go alone for a walk, but he hates to stand alone in his _________.

(A) gregarious...opinions 
(B) conceited...vanity 
(C) singular...uniqueness 
(D) solitary...thoughts 
(E) nomadic...footsteps
Antonyms

27. **ERUDITE:**
   (A) unhealthy
   (B) ignorant
   (C) impolite
   (D) indifferent
   (E) imprecise

28. **EFFRONTERY:**
   (A) obscurity
   (B) indolence
   (C) separation
   (D) diffidence
   (E) fluctuation

Reading Comprehension

The stability that had marked the Iroquois Confederacy’s generally pro-British position was shattered with the overthrow of James II in 1688, the colonial uprisings that followed in Massachusetts, New York, and Maryland, and the commencement of King William’s War against Louis XIV of France. The increasing French threat to English hegemony in the interior of North America was signalized by French-led or French-inspired attacks on the Iroquois and on outlying colonial settlements in New York and New England. The high point of the Iroquois response was the spectacular raid of August 5, 1689, in which the Iroquois virtually wiped out the French village of Lachine, just outside Montreal. A counterraid by the French on the English village of Schenectady in March, 1690, instilled an appropriate measure of fear among the English and their Iroquois allies.

The Iroquois position at the end of the war, which was formalized by treaties made during the summer of 1701 with the British and the French, and which was maintained throughout most of the eighteenth century, was one of “aggressive neutrality” between the two competing European powers. Under the new system the Iroquois initiated a peace policy toward the “far Indians,” tightened their control over the nearby tribes, and induced both English and French to support their neutrality toward the European powers by appropriate gifts and concessions.

By holding the balance of power in the sparsely settled borderlands between English and French settlements, and by their willingness to use their power against one or the other nation if not appropriately treated, the Iroquois played the game of European power politics with effectiveness. The system broke down, however, after the French became convinced that the Iroquois were compromising the system in favor of the English and launched a full-scale attempt to establish French physical and juridical presence in the Ohio Valley, the heart of the borderlands long claimed by the Iroquois. As a consequence of the ensuing Great War for Empire, in which Iroquois neutrality was dissolved and European influence moved closer, the play-off system lost its efficacy and a system of direct bargaining supplanted it.

29. The author’s primary purpose in this passage is to
   (A) denounce the imperialistic policies of the French
   (B) disprove the charges of barbarism made against the Indian nations
   (C) expose the French government’s exploitation of the Iroquois balance of power
   (D) describe and assess the effect of European military power on the policy of an Indian nation
   (E) show the inability of the Iroquois to engage in European-style diplomacy

30. With which of the following statements would the author be LEAST likely to agree?
   (A) The Iroquois were able to respond effectively to French acts of aggression.
   (B) James II’s removal from the throne caused disension to break out among the colonies.
   (C) The French begrudged the British their alleged high standing among the Iroquois.
   (D) Iroquois negotiations involved playing one side against the other.
   (E) The Iroquois ceased to hold the balance of power early in the eighteenth century.
SECTION 2—QUANTITATIVE ABILITY

In this section use scrap paper to solve each problem. Then decide which is the best of the choices given and fill in the corresponding oval on the Answer Sheet.

Directions: In the following type of question, two quantities appear, one in Column A and one in Column B. You must compare them. The correct answer to the question is

A if the quantity in Column A is greater
B if the quantity in Column B is greater
C if the two quantities are equal
D it is impossible to determine which quantity is greater

Notes: Sometimes information about one or both of the quantities is centered above the two columns. If the same symbol appears in both columns, it represents the same thing each time.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>( a &gt; 0 )</td>
<td>((a^3)^2)</td>
</tr>
<tr>
<td>( a + b - c )</td>
<td>( 0 )</td>
</tr>
</tbody>
</table>

3. \( \sqrt{a + b} \) \( \sqrt{a + \sqrt{b}} \)

4. The number of primes between 30 and 40
   The number of primes between 40 and 50

Directions: In the following questions, choose the best answer from the five choices listed.

5. In the figure at the right, what is the value of \( a + b + c \)?
   (A) 210          (B) 220
   (C) 240          (D) 270
   (E) 280

7. Twenty children were sharing equally the cost of a present for their teacher. When 4 of the children decided not to contribute, each of the other children had to pay $1.50 more. How much did the present cost, in dollars?
   (A) 50          (B) 80      (C) 100    (D) 120   (E) 150

6. Of the 200 seniors at Monroe High School, exactly 40 are in the band, 60 are in the orchestra, and 10 are in both. How many students are in neither the band nor the orchestra?
   (A) 80       (B) 90      (C) 100     (D) 110   (E) 120
Questions 14–15 refer to the following graphs.

### 1993
**Total Exports to Eastern Europe = $98 Billion**

![1993 Graph](image)

### 1996
**Total Exports to Eastern Europe = $174 Billion**

![1996 Graph](image)

10. What is the value of \( n \) if \( 4^{10} \times 64^2 = 16^3 \times 4^n \)?  
   (A) 6  (B) 10  (C) 12  (D) 15  (E) 30

11. \( \frac{a - b}{c - a} = 1 \)

12. The average (arithmetic mean) of \( b \) and \( c \)

13. The area of a square whose sides are 10

14. Which of the following statements concerning the value of exports to Eastern Europe from other Eastern European countries from 1993 to 1996 is the most accurate?  
   (A) They increased by 2%.  
   (B) They increased by 12%.  
   (C) They increased by 20%.  
   (D) They increased by 50%.  
   (E) They increased by 100%.

15. France is one of the countries in the European Union. If in 1996 France’s exports to Eastern Europe were four times those of the United States, then what percent of the European Union’s exports to Eastern Europe came from France that year?  
   (A) 5%  (B) 8%  (C) 12.5%  
   (D) 20%  (E) 25%
16. The average (arithmetic mean) of the measures of the three angles of a triangle whose largest angle measures 75°

Column A

Column B

The average (arithmetic mean) of the measures of the three angles of a triangle whose largest angle measures 165°

18. Given that $x \neq y$ and that $(x - y)^2 = (x + y)^2$, which of the following must be true?

I. $x + y = x - y$
II. $y = 0$
III. $xy = 0$

(A) None  (B) II only  (C) III only  (D) I and III  (E) I, II, and III

19. Let the lengths of the sides of a triangle be represented by $x + 3$, $2x - 3$, and $3x - 5$. If the perimeter of the triangle is 25, what is the length of the shortest side?

(A) 5  (B) 6  (C) 7  (D) 8  (E) 10

Questions 20–21 refer to the graph below.

20. In which presidential election between 1972 to 1996 inclusive, was the percent of votes received by the winning candidate the lowest?

(A) 1976  (B) 1980  (C) 1988  (D) 1992  (E) 1996

![Popular Vote Cast for President by Major Political Party](image-url)
21. In which year between 1972 and 1996 inclusive were the greatest number of votes cast for president?  
(A) 1980  (B) 1984  (C) 1988  
(D) 1992  (E) 1996

22. In 1990, twice as many boys as girls at Adams High School earned varsity letters. From 1990 to 2000 the number of girls earning varsity letters increased by 25% while the number of boys earning varsity letters decreased by 25%. What was the ratio in 2000 of the number of girls to the number of boys who earned varsity letters?  
(A) $\frac{5}{3}$  (B) $\frac{6}{5}$  (C) $\frac{1}{1}$  
(D) $\frac{5}{6}$  (E) $\frac{3}{5}$

23. $O$, $P$, and $Q$, which are the centers of the three circles, all lie on diameter $AB$.  
The area of the entire shaded region  4 times the area of the white region


25. The area of the shaded region  The area of the striped region

26. A square and an equilateral triangle each have sides of length 5. What is the ratio of the area of the square to the area of the triangle?  
(A) $\frac{4}{3}$  (B) $\frac{16}{9}$  (C) $\frac{\sqrt{3}}{4}$  
(D) $\frac{4\sqrt{3}}{3}$  (E) $\frac{16\sqrt{3}}{9}$

27. If $x + 2y = a$ and $x - 2y = b$, which of the following expressions is equal to $xy$?  
(A) $ab$  (B) $\frac{a + b}{2}$  (C) $\frac{a - b}{2}$  
(D) $\frac{a^2 - b^2}{4}$  (E) $\frac{a^2 - b^2}{8}$

28. In the figure above, the area of square $ABCD$ is 100, the area of triangle $DEC$ is 10, and $EC = ED$. What is the distance from $A$ to $E$?  
(A) 11  (B) 12  (C) $\sqrt{146}$  (D) 13  (E) $\sqrt{244}$
SECTION 3—ANALYTICAL WRITING

Time—75 Minutes
2 Writing Tasks

Task 1: Issue Exploration
45 Minutes

Directions: In 45 minutes, choose one of the two following topics and compose an essay on that topic. You may not write on any other topic. Write your essay on separate sheets of paper.

Each topic is presented in a one- to two-sentence quotation commenting on an issue of general concern. Your essay may support, refute, or qualify the views expressed in the quotation. Whatever you write, however, must be relevant to the issue under discussion, and you must support your viewpoint with reasons and examples derived from your studies and/or experience.

Before you choose a topic, read both topics carefully. Consider which topic would give you greater scope for writing an effective, well-argued essay.

Faculty members from various institutions will evaluate your essay, judging it on the basis of your skill in the following areas.

• Analysis of the quotation’s implications
• Organization and articulation of your ideas
• Use of relevant examples and arguments to support your case
• Handling of the mechanics of standard written English

Once you have decided which topic you prefer, click on the appropriate icon (Topic 1 or Topic 2) to confirm your choice. Do not be hasty confirming your choice of topic. Once you have clicked on a topic, you will not be able to switch to the alternate choice.

Topic 1

“We venerate loyalty—to our schools, employers, institutions, friends—as a virtue. Loyalty, however, can be at least as detrimental an influence as it can be a beneficial one.”

Topic 2

“A person who does not thoroughly comprehend the technical side of a craft is incapable of judging it.”
Task 2: Argument Analysis
30 Minutes

Directions: in 30 minutes, prepare a critical analysis of an argument expressed in a short paragraph. You may not offer an analysis of any other argument. Write your essay on separate sheets of paper.

As you critique the argument, think about the author’s underlying assumptions. Ask yourself whether any of them are questionable. Also evaluate any evidence the author brings up. Ask yourself whether it actually supports the author’s conclusion.

In your analysis, you may suggest additional kinds of evidence to reinforce the author’s argument. You may also suggest methods to refute the argument, or additional data that might be useful to you as you assess the soundness of the argument. You may not, however, present your personal views on the topic. Your job is to analyze the elements of an argument, not to support or contradict that argument.

Faculty members from various institutions will judge your essay, assessing it on the basis of your skill in the following areas:

- Identification and assessment of the argument’s main elements
- Organization and articulation of your thoughts
- Use of relevant examples and arguments to support your case
- Handling of the mechanics of standard written English

The following appeared in an editorial in the Bayside Sentinel.

“Bayside citizens need to consider raising local taxes if they want to see improvements in the Bayside School District. Test scores, graduation and college admission rates, and a number of other indicators have long made it clear that the Bayside School District is doing a poor job educating our youth. Our schools look run down. Windows are broken, bathrooms unusable, and classroom equipment hopelessly out of date. Yet just across the Bay, in New Harbor, school facilities are up-to-date and in good condition. The difference is money; New Harbor spends twenty-seven percent more per student than Bayside does, and test scores and other indicators of student performance are stronger in New Harbor as well.”
Answer Key—Diagnostic Test

Section 1—Verbal Ability


Section 2—Quantitative Ability

Note: The letters in brackets following the Quantitative Ability answers refer to the sections of Chapter 14 in which you can find the information you need to answer the questions. For example, 1. C [E] means that the answer to question 1 is C, and that the solution requires information found in Section 14-E: Averages. Also, 20. A [13] means that the answer to question 20 is based on information in Chapter 13: Data Interpretation.


Section 3—Analytical Writing

There are no "correct answers" to this section.

Self-Appraisal

Now that you have completed the Diagnostic Test, evaluate your performance. Identify your strengths and weaknesses, and then plan a practical study program based on what you have discovered.

Use the Answer Key to check your answers. Your raw score for each section is equal to the number of correct answers you had. Once you have determined your raw score for each ability area, use the conversion chart that follows to get your scaled score. Note that this conversion chart is provided to give you a very rough estimate of the GRE score you would achieve if you took the test now without any further preparation. When you take the computer-based GRE, your scaled score will be determined not only by the number of questions you answer correctly, but also by the difficulty level of those questions. The unofficial conversion chart presented here gives you only an approximate idea of how raw scores convert into scaled scores.

Use this Diagnostic Test to identify areas you may be weak in. You may find that you had trouble with a particular question type (for example, you didn’t do well on the analogy questions in the verbal section), or with particular subject matter (for example, you didn’t do well on any geometry questions, whether they were quantitative comparisons or discrete quantitative). Determining what you need to concentrate on will help you plan an effective study program.

Remember that, in addition to evaluating your scores and identifying weak areas, you should read all the answer explanations for questions you answered incorrectly, questions you guessed on, and questions you answered correctly but found difficult. Reviewing the answer explanations will help you understand concepts and strategies, and may point out shortcuts.
Score Conversion Chart

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<th>Verbal Score</th>
<th>Quantitative Score</th>
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Answer Explanations

Section 1—Verbal Ability

1. D. The opposite of a prodigal (spendthrift; extravagant person) is an economical person. Beware eye-catchers. Choice C is incorrect. A prodigal is not a prodigy (wonder; gifted person). Think of “a prodigal squandering his wealth.”

2. B. The opposite of artifice (trickery; guile) is sincerity. Think of being “tricked by her skillful artifice.”

3. B. Given the ubiquity of light, it is unsurprising that creatures have developed the biologically helpful ability to make use of light energy. Note the use of therefore indicating that the omitted portion of the sentence supports or continues a thought developed elsewhere in the sentence.

4. C. The politicians do not forsake center stage. However, if they did forsake center stage once in a while, the public might like them better for their self-effacement (withdrawal from attention).

5. B. By definition, a route that is circuitous follows an indirect course. Likewise, an argument that is devious follows an indirect course. (Defining Characteristic)

6. E. To be officious (meddlesome) is to be helpful in an excessive, offensive manner. To be sycophantic (fawning, obsequious) is to be deferential (respectful) in an excessive, offensive manner. (Manner)

7. C. The author states that the later novels of James play down prominent action. Thus they lack overly dramatic incident. However, the author goes on to state that James’s novels do possess interest; they carry the reader through “a rich analysis of the mental adjustments of the characters to the realities of their personal situations.” It is this implicitly dramatic psychological revelation that sustains the reader’s interest. Question A is unanswerable on the basis of the passage. It is evident that James wrote psychological novels; it is nowhere stated that he originated the genre. Question B is unanswerable on the basis of the passage. Although conventional narrative technique relates “events in distinctly phased sequences,” clearly separating them, it does not necessarily recount action in strictly chronological order.
Question D is unanswerable on the basis of the passage. The passage does not deal with the general public's reaction to James.

Question E is unanswerable on the basis of the passage. The passage talks of qualities in James as a novelist in terms of their being characteristic, not in terms of their making him unique.

8. C. While the stories themselves grow simpler, their moral and psychological aspects become increasingly complex. Choice A is incorrect. The passage mentions the specific description of settings as characteristic of James's early, conventional novels, not of his later works.
   Choice B is incorrect. In his later novels, James grew less concerned with plot and more concerned with psychological revelation.
   Choice D is incorrect. The "excitement of visible actions building up to a climactic event" (lines 31–32) is characteristic of the common novel, not of the Jamesian psychological novel.
   Choice E is incorrect. The later novels tend instead to subordinate dramatic effect to psychological exploration and revelation.

9. E. The author refers to novels of action as "overstuffed" and describes them as "crammed with adventitious events"—events that are not inherent in the situation, but that are added, possibly irrelevantly, to the general story. However, these comments are merely made in passing; the author is not launching an attack against the novel of action. Thus, his attitude is best described as one of mild disapprobation or disapproval.
   Choice A is incorrect. The author is not pointedly indignant or deeply resentful in tone. He is merely making mildly critical remarks in passing.
   Choice B is incorrect. The author does make passing comments that disparage the novel of action. He is not wholly neutral on the topic.
   Choice C is incorrect. While the author does disparage the novel of action, he does not ridicule or deride it harshly.
   Choice D is incorrect. The author is certainly not a strong partisan or advocate of the novel of action.

10. D. The opposite of to equivocate (avoid committing oneself in what one says) is to pledge (bind or commit oneself solemnly). Think of politicians "heaging and equivocating."

11. B. The opposite of opulence (wealth; affluence) is penury or extreme poverty. Think of "luxurious opulence."

12. A. Something ephemeral (fleeting; transient) lacks permanence. Something erratic (unpredictable) lacks predictability.
   (Antonym Variant)

13. A. To be nonplussed (totally at a loss) is to exhibit bafflement (perplexity). To be discomfited (abashed; disconcerted) is to exhibit embarrassment.
   Beware eye-catchers. Choice D is incorrect.
   To be despicable is to be worthy of contempt; it is not to exhibit contempt.
   (Synonym Variant)

14. D. To ogle is to observe or look at someone provocatively (in an attention-getting manner).
   To flaunt is to display or show off something provocatively (in an attention-getting manner).
   (Manner)

15. C. You are dealing with either similar or contradictory impulses. If the impulses are similar (that is, analogous, comparable, or related), the second missing word should be a synonym or near-synonym for individualize. If the impulses are contradictory (that is, disparate or divergent), the second missing word should be an antonym or near-antonym for individualize. In this case, the latter holds true. The impulses are divergent; they are the impulse to individuate and the contradictory impulse to typify (treat characters as representatives of a type).

16. C. In a case in which experts disagree, it is incumbent on responsible scholars (that is, falls upon them as a scholarly duty or obligation) to refrain from making statements that are dogmatic or excessively assertive and arbitrary about the issue.

17. C. The subduction zone is the site of the destruction or consumption of existing lithospheric material. In contrast, the mid-ocean ridge is the site of the creation or emergence of new lithospheric material.
   Choice A is incorrect. Both mid-ocean ridges and subduction zones are boundaries between plates.
   Choice B is incorrect. Both are located on the ocean floor.
   Choice D is incorrect. It is unsupported by the passage.
   Choice E is incorrect. The reverse is true.

18. B. Choice B is correct. You are told that the new lithospheric material is injected into a mid-ocean ridge, a suboceanic mountain range. This new material does not disappear; it is added to the material already there. Thus, it is incorporated into the existing mid-ocean ridge.
Choice A is incorrect. “In general the plates are in motion with respect to one another.” Nothing suggests that they become immobilized; indeed, they are said to diverge from the ridge, sliding as they diverge.

Choice C is incorrect. The passage specifically denies it. ("The size of the earth is essentially constant.")

Choice D is incorrect. It is the earth itself whose magnetic field reverses. Nothing in the passage suggests the new lithospheric material has any such potential.

Choice E is incorrect. At a mid-ocean ridge, the site at which new lithospheric material is injected from below, the plates diverge; they do not sink. (They sink, one plate diving under another, at a subduction zone.)

19. B. Line 23 states that one plate is pushed under another and is reincorporated or absorbed into the mantle.

Choice A is incorrect. Lithospheric material rises at mid-ocean ridges, not at subduction zones.

Choice C is incorrect. New lithospheric material is injected at a mid-ocean ridge.

Choice D is incorrect. The injection of new lithospheric material causes sea-floor spreading around the mid-ocean ridge.

Choice E is incorrect. The lithospheric plates are described as diverging from a mid-ocean ridge, not from a subduction zone.

20. C. The opposite of to hone or sharpen is to dull (make blunt). Think of “honing a razor.”

21. B. The opposite of phlegmatic (stolid; undemonstrative) is ardent (passionate; eager). Think of “phlegmatic and uncaring.”

22. E. The opposite of a banality (commonplace; trite or overused expression) is a novel expression. Think of “the banality of a greeting card rhyme.”

23. E. Thirst is a specific example of a drive (state of instinctual need). Smell is a specific example of a sense. (Class and Member)

24. C. Skullduggery or dishonest, unscrupulous behavior is the mark of the swindler. Chicanery or trickery is the mark of the trickster. (Defining Characteristic)

25. E. After incubating the new functions, the next step would be to nurture or foster their growth until they were ready to be sent out into the world. Their departure, however, would not diminish the cities, for by continuing to breed fresh ideas the cities would renew themselves.

Note the metaphorical usage of incubate and breed that influences the writer’s choice of words. Cities do not literally incubate businesses or breed ideas; they only do so figuratively.

26. A. Man is gregarious or sociable. However, he is more in need of mental companionship than of physical companionship. The writer plays on words in his conceit that a man may like to go alone for a walk but hates to stand alone in his opinions.

27. B. The opposite of erudite (scholarly; learned) is ignorant. Think of “an endite scholar.”

28. D. The opposite of effrontery (shameless boldness) is diffidence (tenativeness; timidity). Think of “shocking effrontery.”

29. D. The opening sentence describes the shattering of the Iroquois leadership’s pro-British policy. The remainder of the passage describes how Iroquois policy changed to reflect changes in European military goals.

Choice A is incorrect. The passage is expository, not accusatory.

Choice B is incorrect. Nothing in the passage suggests that such charges were made against the Iroquois.

Choice C is incorrect. It is unsupported by the passage.

Choice E is incorrect. The passage demonstrates the Iroquois were able to play European power politics.

Remember, when asked to find the main idea, be sure to check the opening and summary sentences of each paragraph.

30. E. Lines 20–31 indicate that in the early 1700s and through most of the eighteenth century the Iroquois did hold the balance of power.

Therefore, Choice E is the correct answer. Choice A is incorrect. The raid on Lachine was an effective response to French aggression, as was the Iroquois-enforced policy of aggressive neutrality.

Choice B is incorrect. James II’s overthrow was followed by colonial uprisings.

Choice C is incorrect. In response to the Iroquois leaders’ supposed favoring of the British (lines 38–44), the French went to war.

Choice D is incorrect. This sums up the policy of aggressive neutrality.
Section 2—Quantitative Ability

Two asterisks (**) indicate an alternative method of solving.

1. D. Use the laws of exponents. Column A is \(a^2 a^3 = a^5\). Column B is \((a^2)^3 = a^6\). If \(a = 1\), the columns are equal; but if \(a = 2\), Column A is much greater. Neither column is always greater, and the two columns are not always equal (D).

2. C. Since the measure of an exterior angle of a triangle is equal to the sum of the measures of the two opposite interior angles [KEY FACT J2],
   \[c = a + b \Rightarrow a + b - c = 0,\]
   The columns are equal (C).
   **Use TACTIC 13-1: plug in easy-to-use numbers. If \(a = 60\) and \(b = 70\), then \(d = 50 \Rightarrow c = 130\), and \(60 + 70 - 130 = 0\).

3. B. \[
\begin{array}{c|c}
\text{Column A} & \text{Column B} \\
\sqrt{a + b} & \sqrt{a + \sqrt{b}} \\
\end{array}
\]
Since the quantities in each column are positive, we can square them [TACTIC 3, Chapter 12].
Subtract \(\sqrt{a + b}\) from each column
Since \(a\) and \(b\) are positive, \(2\sqrt{ab}\) is positive. Column B is greater.

4. B. There are three primes between 40 and 50: 41, 43, and 47, but only two primes between 30 and 40: 31 and 37. Note: remember that other than 2 and 5 every prime ends in 1, 3, 7, or 9, so those are the only numbers you need to check.

5. B. The unmarked angle opposite the 60° angle also measures 60° [KEY FACT 14], and the sum of the measures of all six angles in the diagram is 360° [KEY FACT 13]. So,
   \[360 = a + b + c + 20 + 60 + 60 = a + b + c + 140.\]
   Subtracting 140 from each side, we get that \(a + b + c = 220\).

6. D. Draw a Venn diagram. Since 16 seniors are in both band and orchestra, 30 are in band only and 50 are in orchestra only. Therefore, 10 + 30 + 50 = 90 seniors are in at least one group, and the remaining 110 are in neither.

7. D. Let \(x\) be the amount in dollars that each of the 20 children were going to contribute; then \(20x\) represents the cost of the present. When 4 children dropped out, the remaining 16 each had to pay \((x + 1.50)\) dollars. So, \(16(x + 1.5) = 20x \Rightarrow 16x + 24 = 20x \Rightarrow 24 = 4x \Rightarrow x = 6\), and so the cost of the present was \(20 \times 6 = 120\) dollars.
   **Since each of the 16 remaining children had to pay an extra \$1.50, the extra payments totaled \(16 \times \$1.50 = \$24\). This is the amount that would have been paid by the 4 children who dropped out, so each of the 4 would have paid \$6. The cost of the gift was \(20 \times \$6 = \$120\).

8. A. \[
\begin{array}{c|c|c|c}
\text{Column A} & \text{Column B} & \text{Rewrite} & \text{Use a law of exponents} \\
10^{10} & 20^{10} & (2 \times 10)^{10} & 10^{20} \\
10^{10} & 2 \times 10^{10} & \text{Divide each column by } 10^{10} & 2^{10}
\end{array}
\]
   Column A is much greater.


10. C. \(4^{10} \times 64^2 = 4^{10} \times (4^3)^2 = 4^{10} \times 4^6 = 4^{16}\).
    Also, \(16^2 \times 4^3 = (4^2)^2 \times 4^3 = 4^4 \times 4^3 = 4^{10}\).
    So, \(4^{16} = 4^{4n}\) and \(16 = 4 \times n\). Then \(n = 12\).

11. A. Since \(OA\) and \(OB\) are radii, they are each equal to 5. With no restrictions on \(x\), chord \(AB\) could be any positive number less than 10 (the length of a diameter). If \(x\) were 90, \(AB\) would be \(\sqrt{50}\), since \(x > 90\), \(AB > \sqrt{50} > 7\).
    Therefore, the perimeter of \(\triangle AOB\) is greater than \(5 + 5 + 7 = 17\), Column A is greater.

12. C. \[
\frac{a - b}{c - a} = 1 \Rightarrow a - b = c - a \Rightarrow 2a = b + c \Rightarrow a = \frac{b + c}{2} \cdot \text{The columns are equal (C).}
\]
    **Use TACTIC G2. Since you have an equation with three variables, choose values for two of them and find the third. Let \(a = 2\) and \(b = 1\). Then \(\frac{2 - 1}{c - 2} = 1 \Rightarrow c = 3\). The average of \(b\) and \(c\) is 2, which equals \(a\).
13. B. If the side of a square is 10, its diagonal is \(10\sqrt{2} \approx 14\) [KEY FACTS 38 and 39]. So the square in Column B is larger.

**The area of the square in Column A is \(10^2 = 100\). The area of the square in Column B is \(\frac{1}{2}(15^2) = \frac{1}{2}(225) = 112.5\).**

14. E. Exports to Eastern Europe from other Eastern European countries increased from $9.8 billion (10% of $98 billion) to $20.88 billion (12% of $174 billion)—an increase of slightly more than 100%.

15. C. If France’s exports to Eastern Europe were four times those of the United States, than France accounted for 8% of the total exports.

Since 8% is \(\frac{1}{8}\) of 64%, France accounted for \(\frac{1}{8}\) or 12.5% of the exports from the European Union.

16. C. The average of the measures of the three angles of any triangle is \(180^\circ / 3 = 60^\circ\). The columns are equal (C).

17. C. Ignore the x’s and the y’s. In any “staircase” the perimeter is just twice the sum of the height and the length. So the perimeter is \(2(12 + 14) = 2(26) = 52\). The columns are equal (C).

18. C. Expand both binomial squares:

\((x + y)^2 = (x - y)^2 \Rightarrow x^2 + 2xy + y^2 = x^2 - 2xy + y^2 \Rightarrow 2xy = -2xy \Rightarrow 4xy = 0 \Rightarrow xy = 0.\)

So III is true. Since \(xy = 0\), either \(x = 0\) or \(y = 0\) (possibly both), but neither one must be 0. Since \(x = 0\) and \(y = 1\) is a solution, both I and II are false. Only statement III is true.

19. C. Set up the equation:

\((x + 3) + (2x - 3) + (3x - 5) = 25\)

Collect like terms:

\(6x - 5 = 25\)

Add 5 to each side:

\(6x = 30\)

Divide each side by 6:

\(x = 5\)

Plugging in 5 for \(x\), we get that the lengths of the sides are 8, 7, and 10. The length of the shortest side is 7.

20. D. In each election with only two candidates, the candidate who received the greater number of votes, received more than 50% of them. In 1972 and 1980 the number of votes received by other major candidates was far less than and in 1996 that number was approximately equal to, the difference between the number of votes received by the Republican and the Democrat. Therefore, the percent of votes won by the winner was greater than or approximately equal to 50%. In 1992, however, the sum of the number of votes received by the Republican and the other major candidate greatly exceeded that of the Democratic winner. Consequently, the winner had fewer than 50% of the votes.

21. D. It is easy to see that 1992 was the only year in which the total number of votes cast for president exceeded 100 million.

22. D. Use TACTIC 3, Chapter 12: pick easy-to-use numbers. Assume that in 1990 there were 200 boys and 100 girls who earned varsity letters. Then in 2000, there were 150 boys and 125 girls. So, the ratio of girls to boys was \(125:150 = 5:6\) or \(\frac{5}{6}\).

23. A. Pick a simple number for the radius of circle \(Q\)—say, 1. Then the radius of circle \(P\) is 2, and the radius of circle \(O\) is 4. The area of the large shaded region is the area of circle \(O\) minus the area of circle \(P\): \(16\pi - 4\pi = 12\pi\).

The small shaded region is just circle \(Q\), whose area is \(\pi\). Then, the total shaded area is \(12\pi + \pi = 13\pi\).

The white area is the area of circle \(P\) minus the area of circle \(Q\): \(4\pi - \pi = 3\pi\). The area of the shaded region is more than 4 times the area of the white region. Column A is greater.

24. C. Let \(x =\) Adam’s age in 1980. Then, in 1980, Judy’s age was 3 \(x\) and Elaine’s age was 8 \(x\). Since Elaine is 20 years older than Judy, \(8x = 3x + 20 \Rightarrow 5x = 20 \Rightarrow x = 4\). Therefore, in 1988, Adam was 4 + 8 = 12. The columns are equal (C).

25. C. The area of the shaded region is the area of the large circle, 25\(\pi\), minus the area of the middle circle, 16\(\pi\). The striped region is just a circle of radius 3. Its area is also 9\(\pi\). The columns are equal (C).
26. D. Since you need a ratio, the length of the side is irrelevant. The area of a square is $s^2$ and the area of an equilateral triangle is $\frac{s^2 \sqrt{3}}{4}$. [KEY FACT J15]. Then the ratio is

$$\frac{s^2 + \frac{s^2 \sqrt{3}}{4}}{s^2} = \frac{\frac{4}{\sqrt{3}}}{1} = \frac{4 \sqrt{3}}{3}.$$ 

Of course, you could have used any number instead of $s$, and if you forgot the formula for the area of an equilateral triangle, you could have used $A = \frac{1}{2}bh$.

27. E. The easiest way to solve this is to use TAC-TIC 2, Chapter 11. Let $x = 2$ and $y = 1$. Then $xy = 2$, $a = 4$ and $b = 0$. Now, plug in 4 for $a$ and 0 for $b$ and see which of the five choices is equal to 2. Only E works:

$$\frac{a^2 - b^2}{8} = \frac{4^2 - 0^2}{8} = \frac{16}{8} = 2.$$ 

**Here is the correct algebraic solution.**

Add the two equations:

$$x + 2y = a + b$$

Divide by 2:

$$x = \frac{a + b}{2}$$

Multiply the second equation by $-1$ and add it to the first:

$$x + 2y = a$$

$$-x + 2y = -b$$

Divide by 4:

$$y = \frac{a - b}{4}$$

Then $xy = \frac{a + b}{2} \cdot \frac{a - b}{4} = \frac{a^2 - b^2}{8}$. 

This is the type of algebra you want to avoid.

28. D. Draw in segment $EXY \perp AB$. Then $XY = 10$ since it is the same length as a side of the square. $EX$ is the height of $\triangle ECD$, whose base is 10 and whose area is 10, so 

$$EX = 2 \left[ \frac{1}{2} bh = \frac{1}{2} (10)(2) = 10 \right],$$

and $EY = 12$.

Since $\triangle ECD$ is isosceles, $DX = 5$, so $AY = 5$. Finally, recognize $\triangle AYE$ as a 5-12-13 right triangle, or use the Pythagorean theorem to find the hypotenuse, $AE$, of the triangle:

$$(AE)^2 = 5^2 + 12^2 = 25 + 144 = 169,$$

so $AE = 13$.

Section 3—Analytical Writing

There are no “correct answers” to this section.
PART TWO

Verbal Ability: Tactics, Review, and Practice
Antonym Questions

Testing Tactics

Practice Exercises

Answer Key

These are the antonym directions you will find on the GRE: "Each question below consists of a word printed in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters."

Your task in answering antonym questions is straightforward: You are given a word and must choose, from the five choices that follow it, the best antonym (opposite). Often the first question or two on your verbal section will be an antonym question. Remember, the earlier questions you face on the GRE weigh more heavily than the final ones you answer. Take the time you need to answer these early questions correctly.

Testing Tactics

Tactic 1

Think of a Context for the Capitalized Word

Take a quick look at the word in capital letters. If you don’t recollect its meaning right away, try to think of a phrase or sentence in which you have heard it used. The context may help you come up with the word’s meaning. For example:

MAGNIFY:
(A) forgive
(B) comprehend
(C) extract
(D) diminish
(E) electrify

The term “magnifying glass” should immediately come to mind. A magnifying glass enlarges things. The opposite of enlarging something is to make it smaller or diminish it. The answer is Choice D.

Now apply this tactic to a slightly more difficult question.

ABERRANT:
(A) exact
(B) simple
(C) causative
(D) ordinary
(E) pleasant

What phrase comes to your mind? "Aberrant behavior." "Aberrant data." In both cases you should have an impression of something deviating from what is expected, an impression of something unusual or abnormal. Aberrant behavior is odd or extraordinary; aberrant, therefore, is an antonym for ordinary. The correct answer is Choice D.
**Tactic 2**

**Before You Look at the Choices, Think of Antonyms for the Capitalized Word**

Suppose your word is industrious, hard-working. What opposites come to your mind? You might come up with lazy, idle, slothful, inactive—all words that mean lacking industry and energy.

Now look at the choices:

<table>
<thead>
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<th>INDUSTRIOUS:</th>
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<tr>
<td>(A) stupid</td>
</tr>
<tr>
<td>(B) harsh</td>
</tr>
<tr>
<td>(C) indolent</td>
</tr>
<tr>
<td>(D) complex</td>
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<tr>
<td>(E) inexpensive</td>
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</table>

Lazy, idle, and slothful all are synonyms for indolent. Your correct answer is Choice C.

This tactic will help you even when you have to deal with unfamiliar words among your answer choices. Suppose you do not know the meaning of the word indolent. You know that one antonym for your key word industrious is lazy. Therefore, you know that you are looking for a word that means the same as lazy. At this point you can go through the answer choices eliminating answers that don't work. Does stupid mean the same as lazy? No, smart people can be lazy, too. Does harsh mean the same as lazy? No, harsh means cruel or rough. Does indolent mean the same as lazy? You don’t know; you should check the other choices and then come back. Does complex mean the same as lazy? No, complex means complicated or intricate. Does inexpensive mean the same as lazy? No. So what is left? Indolent. Once again, your correct answer is Choice C.

See how you do when you apply this tactic to a new question.

<table>
<thead>
<tr>
<th>TACTURNITY:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) arrogance</td>
</tr>
<tr>
<td>(B) intolerance</td>
</tr>
<tr>
<td>(C) belligerence</td>
</tr>
<tr>
<td>(D) inconstancy</td>
</tr>
<tr>
<td>(E) loquacity</td>
</tr>
</tbody>
</table>

Tacturnity is the quality of being uncommunicative. In thinking of possible antonyms for tacturnity, you may have come up with words like talkativeness, wordiness, and garrulity, words signifying excessiveness of speech. Talkativeness, wordiness, and garrulity are all synonyms for loquacity. The correct answer is Choice E.

**Tactic 3**

**Read All the Choices Before You Decide Which Is Best**

On the GRE you are working under time pressure. You may be tempted to mark down the first answer that feels right and ignore the other choices given. Don’t do it. Consider each answer. Only in this way can you be sure to distinguish between two possible answers and come up with the best answer for the question.

Words have shades of meaning. In matching a word with its opposite, you must pay attention to these shades of meaning. Try this example to see how this tactic works.

<table>
<thead>
<tr>
<th>UNRULY:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) immobile</td>
</tr>
<tr>
<td>(B) engaging</td>
</tr>
<tr>
<td>(C) merciful</td>
</tr>
<tr>
<td>(D) tractable</td>
</tr>
<tr>
<td>(E) indifferent</td>
</tr>
</tbody>
</table>

Suppose you have only a vague sense of the meaning of unruly. You associate it with such vaguely negative terms as wild, disagreeable, bad. For this reason, you stop short when you come to Choice C. Reasoning that someone wild and disagreeable is not compassionate or merciful, you look no further and mark down Choice C.

Choice C, however, is incorrect. True, an unruly person is wild and hard to manage, even rebellious. Someone who lacks rebelliousness, however, is not necessarily merciful. Such a person is easy to manage, compliant, in fact tractable. The correct answer is Choice D.

Now try a second example to practice this tactic.

<table>
<thead>
<tr>
<th>BANALITY:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) detailed analysis</td>
</tr>
<tr>
<td>(B) unrehearsed statement</td>
</tr>
<tr>
<td>(C) succinct account</td>
</tr>
<tr>
<td>(D) novel expression</td>
</tr>
<tr>
<td>(E) faithful description</td>
</tr>
</tbody>
</table>

A banality lacks freshness and originality; something banal is timeworn and trite. Choice B has an immediate appeal: something unrehearsed is by definition spontaneous and at least should seem fresh. However, an unrehearsed statement could be filled with clichés; though spontaneous, it may well be banal or trite. The best antonym for banality is Choice D, novel expression.
Tactic 4

Look at the Answer Choices to Determine the Word’s Part of Speech

Look at the capitalized word. What part of speech is it? Words often exist in several forms. You may think of run as a verb, for example, but in the phrases, “a run in her stocking,” and “hit a home run,” run is a noun.

The GRE plays on this confusion in testing your verbal ability. When you look at a particular capitalized word, you may not know whether you are dealing with a noun, a verb, or an adjective. Harbor, for example, is a very common noun; in “to harbor a fugitive,” to give refuge to a runaway, it is a much less common verb.

If you suspect that a capitalized word may have more than one part of speech, don’t worry. Just look at the first couple of answer choices and see what part of speech they are. That part of speech will be the capitalized word’s part of speech.

In GRE Antonym Questions, all the answer choices have the same part of speech. You can always tell what that part of speech is by a quick glance at the first answer choice or two.

See how this tactic works in answering a relatively simple question.

<table>
<thead>
<tr>
<th>POLISH:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) ruthlessness</td>
</tr>
<tr>
<td>(B) honesty</td>
</tr>
<tr>
<td>(C) indolence</td>
</tr>
<tr>
<td>(D) gaucheness</td>
</tr>
<tr>
<td>(E) complexity</td>
</tr>
</tbody>
</table>

Are you dealing with polish the verb or polish the noun?

A quick look at the answers assures you that they are all nouns. Polish here has nothing to do with rubbing and shining your silverware. The noun polish means refinement and culture: The country squire went abroad to acquire polish. Its opposite is gaucheness or awkwardness. The correct answer is Choice D.

Now try a second example

<table>
<thead>
<tr>
<th>PRECIPITATE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) candid</td>
</tr>
<tr>
<td>(B) erratic</td>
</tr>
<tr>
<td>(C) cautious</td>
</tr>
<tr>
<td>(D) generous</td>
</tr>
<tr>
<td>(E) shallow</td>
</tr>
</tbody>
</table>

Is the word in capitals the adjective precipitate (hasty, impetuous) or the verb precipitate (to expedite or trigger)?

A quick look at the answer choices reveals that it is an adjective. (The -ic and -ous word endings are common adjective endings.) Thus, its opposite is cautious or deliberate, Choice C.

Tactic 5

Consider Secondary Meanings of the Capitalized Word As Well as Its Primary Meaning

If none of the answer choices seems right to you, take another look at the capitalized word. It may have more than one meaning. The GRE often constructs questions that make use of secondary, less well-known meanings of deceptively familiar words. Take, for example, this typical question.

<table>
<thead>
<tr>
<th>LIST:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) overturn</td>
</tr>
<tr>
<td>(B) be upright</td>
</tr>
<tr>
<td>(C) lie flat</td>
</tr>
<tr>
<td>(D) full forward</td>
</tr>
<tr>
<td>(E) veer from side to side</td>
</tr>
</tbody>
</table>

List here has nothing to do with making lists or enumerating. It has to do with moving. When it lists to starboard, a ship simply leans to one side or tilts. The best antonym for this meaning of list is Choice B, be upright.

Try a second, more difficult question involving a less familiar meaning of a familiar word.

<table>
<thead>
<tr>
<th>IMPRECISE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) direct</td>
</tr>
<tr>
<td>(B) resolute</td>
</tr>
<tr>
<td>(C) voluminous</td>
</tr>
<tr>
<td>(D) nice</td>
</tr>
<tr>
<td>(E) perceptible</td>
</tr>
</tbody>
</table>
Few examinees tested on this question would answer it correctly. Why?

The problem lies not in the capitalized word but in the answer choices. *Imprecise* means inexact, approximate, vague. Thus, its antonym means exact and precise. Not immediately spotting exact or precise among the answer choices, and looking for a positive term to contrast with imprecise, some examinees may settle for Choice A, direct.

In doing so, they fail to consider that words have secondary meanings. In this case, *nice* does not mean pleasant or agreeable, as in *enjoying nice weather* or being *nice to your baby brother*. Instead, it means requiring or marked by great accuracy, delicacy, and skill, as in making a *nice distinction* in an argument or hitting a *nice shot* in golf. The correct answer is Choice D.

**TACTIC 6**

**Break Down Unfamiliar Words into Recognizable Parts**

When you come upon a totally unfamiliar word, don't give up. Break it down and see if you recognize any of its parts. Pay particular attention to prefixes—word parts added to the beginning of a word—and to roots, the building blocks of the language.

Look once more at the following question.

**ABERRANT:**

(A) exact  
(B) simple  
(C) causative  
(D) ordinary  
(E) pleasant

Suppose you had never seen *aberrant* before. You have seen dozens of other words beginning with *ab*: absent, abnormal, abduct. Take *abduct*. What do you do when you abduct someone? You kidnap him, or steal him away. *Ab* means away.

What about the root, *err*? To err is to be wrong or to wander, as in wandering from the usual path. Thus, *aberrant* means wandering away, straying from what is usual or normal, and its opposite is of course Choice D, *ordinary*.

Now try a second example in which this tactic can prove helpful.

**NEOLOGISM:**

(A) cordial salutation  
(B) brief summary  
(C) lengthy diatribe  
(D) archaic expression  
(E) equivocal remark

*Neo-* means new. *Log-* means word or speech. A *neologism* must have to do with a new sort of word or speech. Logically, therefore, the opposite of *neologism* must have to do with an *old* sort of word or speech. Only one answer seems possible: Choice D, *archaic expression*. *Archaic* means antiquated or obsolete. Choice D is correct.

Here is a final example, with word parts coming from Greek.

**SYNCHRONOUS:**

(A) not in working order 
(B) without problems 
(C) out of position 
(D) not in phase 
(E) without permission

*Syn-* means together. *Chron-* means time. Something *synchronous* must have to do with occurring together in time, like the *synchronous* movements of swimmers keeping time with one another. The antonym for *synchronous* thus is Choice D, not *in phase*.

The word part approach can help you interpret new words you encounter. However, apply it cautiously. In many words the roots, prefixes, and suffixes have lost their original meanings. In others, the same root occurs, but with markedly differing effects. It would not do to call a *philanthropist* a *philanderer*, for instance, though both words contain the root for *love*.

If you find the word part approach appealing, try to spend some time working with the Basic Word Parts List in Chapter 8. Remember, however, there is no substitute for learning the exact meaning of a word as it is used today.
Tactic 7
Change Unfamiliar Words from One Part of Speech to Another

Sometimes you may be stumped by a word in one form, yet recognize it easily in another. Take, for example, the word synchronous in the previous tactic. To most test-takers, the adjective synchronous is far less familiar than is the verb synchronize, as in "Synchronize your watches!"

When you confront an unfamiliar word, try replacing its suffix with a different word ending and see whether this change joggs your memory. In the case of the noun assiduity, for example, cut off the noun suffix -ity and replace it with the adjective suffix -ous. You now have the word assiduous, as in an assiduous worker. Does that ring a bell? Assiduous means hardworking; assiduity, therefore, is a synonym for industriousness or diligence.

Practice this tactic as you answer the following question:

DICHOTOMOUS:
(A) apparent
(B) undivided
(C) atypical
(D) indifferent
(E) abstract

Remove the -ous ending from dichotomous. In its place, substitute -y. You have the word dichotomy, as in the dichotomy between Good and Evil, or the dichotomy between thought and action. A dichotomy is a division or separation in two parts, often mutually exclusive ones. Something dichotomous, therefore, is divided; its opposite is undivided, Choice B.

Tactic 8
In Eliminating Answer Choices, Test Words for Their Positive or Negative Connotations

When you are dealing with a partially unfamiliar word, a word that you cannot define or use in a sentence but that you know you have seen previously, try to remember in what sort of context you have seen that word. Did it have positive connotations, or did it have a negative feel? If you are certain the capitalized word has positive connotations, then, since you are looking for its antonym, you know the correct answer must have negative ones. Thus, you can eliminate any answer choices that have positive connotations and guess among the answer choices that are negative in tone.

See how this approach applies in the following example.

CHARY:
(A) bold
(B) bright
(C) unsteady
(D) unforgiving
(E) unhappy

You cannot define chary. You would hesitate to use it in a sentence of your own. And yet, you are sure the word has a slightly negative feel to it. A person is chary about something. You have a sense of someone holding back.

Look at the answer choices. Which of them have negative connotations? Unsteady? Unforgiving? Unhappy? Eliminate all three. You have narrowed down your choices to bold and bright, both words that have a positive feel. You are in an excellent position to guess. As it turns out, chary means hesitant or reluctant to proceed. Its opposite is Choice A, bold.
Watch Out for Errors Caused by Eye-Catchers

When you look at answer choices, do you find that certain ones seem to leap right off the page? These words are eye-catchers. They look good—but be sure to take a second look.

Try these next antonym questions to see just how an eye-catcher works. First, an easy one.

**UNDERMINE:**
- (A) ensnare
- (B) overstrain
- (C) mollify
- (D) terminate
- (E) bolster

What's the opposite of *under*? Over. What's the opposite of *undermine*? No, it's not overstrain. Be suspicious of answers that come too easily. To undermine means to weaken something or cause it to collapse by removing its underlying supports. The opposite of to *undermine* is Choice E, to *bolster* or support.

Here's a more difficult example. See if you can spot the eye-catcher.

**REDUDBTABLE:**
- (A) unanticipated
- (B) unambiguous
- (C) unimposing
- (D) inescapable
- (E) immutable

Few test-takers attempting this question would answer it correctly. Why? Once more an early answer choice has been set up to tempt you. In this case, the presence of the familiar word *doubt* in the unfamiliar word redoubtable suggests that the word *redoubtable* has something to do with uncertainty. You know that ambiguous means uncertain in meaning. Thus, Choice B, unambiguous, is particularly appealing here. It is particularly appealing, and it is wrong. *Doubt* in redoubtable is used in the sense not of uncertainty but of fear. A *redoubtable foe* causes fear; such a person is awesome or imposing. Someone unimposing causes no such fear. The correct answer is Choice C.

---

**Antonym Exercise A**

**Directions:** In each of the following antonym questions, a word printed in capital letters precedes five lettered words or phrases. From these five lettered words or phrases, pick the one most nearly opposite in meaning to the capitalized word.

Because some of the questions require you to distinguish fine shades of meaning, be sure to consider all the choices before deciding which one is best.

1. **MOURNFUL:**
   - (A) informal
   - (B) sympathetic
   - (C) private
   - (D) appropriate
   - (E) joyous

2. **SCAD:**
   - (A) parsimony
   - (B) allocation
   - (C) death
   - (D) restraint
   - (E) provision

3. **GRANDIOSE:**
   - (A) docile
   - (B) unlikely to occur
   - (C) simple and unimposing
   - (D) light in weight
   - (E) uncommunicative

4. **ENTRENCH:**
   - (A) defy
   - (B) oust
   - (C) extinguish
   - (D) squander
   - (E) intercede

5. **LACKLUSTER:**
   - (A) superficial
   - (B) courteous
   - (C) vibrant
   - (D) complex
   - (E) abundant

6. **CENSURE:**
   - (A) augment
   - (B) eradicate
   - (C) enthral
   - (D) commend
   - (E) reform

7. **TRANSIENCE:**
   - (A) slowness
   - (B) permanence
   - (C) lack of caution
   - (D) desire for perfection
   - (E) original nature

8. **DESICCATE:**
   - (A) lengthen
   - (B) hallow
   - (C) exonerate
   - (D) saturate
   - (E) anesthetize

9. **PROTRUSION:**
   - (A) deep recess
   - (B) strong dislike
   - (C) growing scarcity
   - (D) illusion
   - (E) chaos

10. **ENTICE:**
    - (A) repel
    - (B) authorize
    - (C) baffle
    - (D) misplace
    - (E) diminish

11. **ORTHODOXY:**
    - (A) renown
    - (B) trepidation
    - (C) unconventionality
    - (D) inquisitiveness
    - (E) remoteness
12. SUMPTUOUS: (A) dank (B) frequent (C) partial (D) restrained (E) open

13. DISSOLUTION: (A) retribution (B) compliance (C) futility (D) persuasion (E) establishment

14. IRK: (A) pry (B) tinge (C) beguile (D) convince (E) soothe

15. LIMBER: (A) sturdy (B) orderly (C) durable (D) stiff (E) gloomy

16. OBLIQUITY: (A) praise (B) straightforwardness (C) conformity (D) self-righteousness (E) depreciation

17. SLUR: (A) sensitivity (B) sacrifice (C) understatement (D) challenge (E) commendation

18. APOTHEOSIS: (A) departure from tradition (B) impatience with stupidity (C) demotion from glory (D) surrender to impulse (E) cause for grief

19. ENERVATE: (A) narrate (B) enrage (C) accomplish (D) invigorate (E) acquiesce

20. PARSIMONIOUS: (A) appropriate (B) generous (C) complete (D) radiant (E) ongoing

4. SPUNK: (A) success (B) timidity (C) growing awareness (D) lack of intelligence (E) loss of prestige

5. SAGE: (A) zealot (B) miser (C) braggart (D) fool (E) tyrant

6. ADMONITION: (A) premonition (B) hallucination (C) escape (D) commendation (E) trepidation

7. CHARY: (A) lugubrious (B) brash (C) indifferent (D) graceful (E) scornful

8. STUPEFY: (A) lie (B) bend (C) enliven (D) talk nonsense (E) consider thoughtfully

9. COGENT: (A) contemplative (B) unpersuasive (C) expository (D) stable (E) inconceivable

10. FICKLE: (A) spotless (B) industrious (C) welcome (D) urgent (E) loyal

11. COMPLY: (A) simplify (B) strive (C) rebel (D) unite (E) appreciate

12. CREDIT: (A) believe false (B) treat as equal (C) make more difficult (D) underemphasize (E) forget

13. STILTED: (A) informal (B) verbose (C) secretive (D) senseless (E) tentative

14. UNGAINLY: (A) slender (B) graceful (C) restrained (D) inaccurate (E) unnoticed

15. QUIXOTIC: (A) slow (B) abstemious (C) pragmatic (D) benevolent (E) grave

16. DISPARITY: (A) timidity (B) complacency (C) bigotry (D) likeness (E) influence

17. CRITICAL: (A) unimportant (B) uncertain (C) silent (D) coherent (E) destructive

18. SOBRIETY: (A) influence (B) nonchalance (C) holiness (D) civility (E) mirth

19. RESTIVENESS: (A) completeness (B) conviction (C) concern (D) docility (E) petulance

20. HALLOW: (A) keep silence (B) prove incorrect (C) accuse openly (D) desecrate (E) instigate

**Antonym Exercise B**

**Directions:** In each of the following antonym questions, a word printed in capital letters precedes five lettered words or phrases. From these five lettered words or phrases, pick the one most nearly opposite in meaning to the capitalized word.

Because some of the questions require you to distinguish fine shades of meaning, be sure to consider all the choices before deciding which one is best.

1. HEDGE:  
   (A) act on impulse  
   (B) refuse to represent  
   (C) state without qualification  
   (D) make a foolish comment  
   (E) establish a connection

2. ABROGATE: (A) transgress (B) signify (C) alleviate (D) question (E) ratify

3. INDUSTRY: (A) cleanliness (B) pragmatism (C) sloth (D) promptness (E) abasement
Antonym Exercise C

Directions: In each of the following antonym questions, a word printed in capital letters precedes five lettered words or phrases. From these five lettered words or phrases, pick the one most nearly opposite in meaning to the capitalized word.

Because some of the questions require you to distinguish fine shades of meaning, be sure to consider all the choices before deciding which one is best.

1. HARBINGER: (A) ascetic (B) miser (C) counselor (D) follower (E) braggart
2. SPUR: (A) embitter (B) discourage (C) impress (D) mislead (E) ignore
3. DISJOINTED: (A) responsible (B) connected (C) implied (D) useful (E) imprecise
4. MEALYMOUTHED: (A) hungry (B) indefinite (C) tightlipped (D) sincere (E) apathetic
5. PREVARICATE: (A) postulate (B) emphasize (C) support in theory (D) consider thoughtfully (E) state truthfully
6. LUMINARY: (A) impostor (B) nonentity (C) pilgrim (D) braggart (E) mutineer
7. TESTY: (A) erroneous (B) uncommunicative (C) even-tempered (D) quick-witted (E) industrious
8. NEFARIOUS: (A) lackadaisical (B) eccentric (C) exemplary (D) corrige (E) hypocritical
9. BEGRUDGE: (A) mourn silently (B) grant freely (C) hunger for (D) advance rapidly (E) fight back
10. BILK: (A) reduce in size (B) make famous (C) roughen (D) renovate (E) pay in full
11. COMPOSE: (A) disturb (B) reveal (C) strengthen (D) isolate (E) prevent
12. OCCLUDE: (A) determine (B) transcend (C) surround (D) open (E) regulate
13. AMBIGUITY: (A) extent (B) success (C) clarity (D) normality (E) expression
14. AMELIORATION: (A) prevention (B) aggravation (C) distraction (D) indifference (E) dissuasion
15. CAVAL: (A) discern (B) disclose (C) introduce (D) flatter (E) commend
16. SKEPTICAL: (A) theoretical (B) indifferent (C) ready to believe (D) eager for change (E) lost in thought
17. FLEDGLING: (A) experienced person (B) shy onlooker (C) social outcast (D) fugitive (E) adversary
18. CRASS: (A) boastful (B) temporary (C) cheerful (D) refined (E) extensive
19. RECALCITRANT: (A) tractable (B) erratic (C) intuitive (D) vigorous (E) rambling
20. PROTRACT: (A) defy (B) supplement (C) postpone (D) shorten (E) design

Antonym Exercise D

Directions: In each of the following antonym questions, a word printed in capital letters precedes five lettered words or phrases. From these five lettered words or phrases, pick the one most nearly opposite in meaning to the capitalized word.

Because some of the questions require you to distinguish fine shades of meaning, be sure to consider all the choices before deciding which one is best.

1. PRIM: (A) rare (B) careful (C) unnecessary (D) improper (E) decisive
2. REPUGNANCE: (A) attraction (B) lechery (C) blame (D) virtue (E) awe
3. NETTLE: (A) discontent (B) mollify (C) magnify (D) muffle (E) recompense
4. REPLETE: (A) unwrinkled (B) devoid (C) vulgar (D) matchless (E) unsympathetic
5. UNASSUAGED: (A) presumed (B) deceptive (C) singular (D) faulty (E) soothed
6. PALTRY: (A) munificent (B) improvident (C) random (D) cautious (E) obsolete
7. CONCLUSIVE: (A) difficult to express (B) bringing bad luck (C) easy to solve (D) lacking merit (E) open to question
8. RESOURCEFULNESS: (A) wealth (B) gratitude (C) melancholy (D) incompetence (E) frustration
9. DISSUADE: (A) extol (B) exhort (C) intensify (D) complicate (E) precede
10. SPLENETIC: (A) lacklustre (B) heartless (C) diffident (D) constant (E) cordial
11. VIRULENCE: (A) pallor (B) orderliness (C) femininity (D) harmlessness (E) cowardice
12. ADHERENT: (A) fugitive (B) dissembler (C) opponent (D) educator (E) witness
13. OSCILLATE: (A) entreat (B) intensify (C) remain fixed (D) expand gradually (E) wither away
14. ASPERITY: (A) gentility (B) superiority (C) kindness (D) clarity (E) vagueness
15. UNSCATHED: (A) honest (B) gathered (C) injured (D) cleansed (E) forgiven
16. FETTER: (A) diminish (B) enervate (C) liberate (D) return (E) cure
17. AUTONOMY: (A) dependence (B) animation (C) renown (D) altruism (E) antipathy
18. SLACK: (A) rough (B) active (C) liberal (D) dependent (E) familiar
19. RECOIL: (A) plunge forward (B) cease firing (C) skirt an issue (D) facilitate (E) surrender
20. ENCUMBER: (A) disburden (B) perform easily (C) challenge boldly (D) observe with care (E) suppress

Antonym Exercise E

Directions: In each of the following antonym questions, a word printed in capital letters precedes five lettered words or phrases. From these five lettered words or phrases, pick the one most nearly opposite in meaning to the capitalized word.

Because some of the questions require you to distinguish fine shades of meaning, be sure to consider all the choices before deciding which one is best.

1. OPACITY: (A) iridescence (B) firmness (C) transparence (D) poverty (E) slum
2. PREDILECTION: (A) postponement (B) afterthought (C) lamentation (D) reoccurrence (E) aversion
3. SEEDY: (A) elegant (B) intricate (C) tranquill (D) irregular (E) slow
4. BOGGLE: (A) disentangle (B) repudiate (C) ascertain (D) remain unruffled (E) lack planning
5. HIDEBOUND: (A) strong-willed (B) open-minded (C) thin-skinned (D) tenderhearted (E) scatterbrained
6. CASTIGATE: (A) diminish (B) imitate (C) compare (D) reward (E) misjudge
7. GAMBL: (A) dodge (B) masquerade (C) digress (D) plod (E) vex
8. RAUCOUS: (A) orderly (B) absorbent (C) meifiluous (D) contentious (E) buoyant
9. TAPER: (A) emphasize (B) restore (C) split (D) broaden (E) modify
10. HIGH-HANDED: (A) dejected (B) reasonable (C) hard-handed (D) short-handed (E) dynamic
11. DIMINUTION: (A) measurement (B) proximity (C) augmentation (D) orderliness (E) inclination
12. DISTEND: (A) tell the truth (B) respond as expected (C) approximate (D) collect (E) shrink
13. EMBROIL: (A) disengage (B) remonstrate (C) refute thoroughly (D) answer hypothetically (E) consider genuinely
14. VOUCHSAFE: (A) postpone (B) dissemble (C) endanger (D) prohibit (E) justify
15. JETTISON: (A) salvage (B) decelerate (C) muffle (D) distract (E) anchor
16. STOIC: (A) savant (B) herald (C) whiner (D) victor (E) bystander
17. GAMELY: (A) fearfully (B) diligently (C) clumsily (D) gloomily (E) respectfully
18. CRESTFALLEN: (A) haughty (B) impolite (C) frivolous (D) tentative (E) rough
19. DESULTORY: (A) apologetic (B) independent (C) laudatory (D) questionable (E) methodical
20. PULCHRITUDE: (A) antipathy (B) unsightliness (C) inexperience (D) languor (E) rancor
Answer Key

**Antonym Exercise A**

**Antonym Exercise B**

**Antonym Exercise C**

**Antonym Exercise D**
5. E 10. E 15. C 20. A

**Antonym Exercise E**
5  Analogy Questions

- Testing Tactics
- Practice Exercises
- Answer Key

Here are the directions for answering analogy questions that you will find on the GRE: "In the following question, a related pair of words or phrases is followed by five lettered pairs of words or phrases. Select the lettered pair that best expresses a relationship similar to that expressed in the original pair."

Analogy questions ask you to determine the relationship between a pair of words and then recognize a similar or parallel relationship between a different pair of words. You are given one pair of words and must choose from the five answer choices another pair that is related in the same way. The relationship between the words in the original pair will always be specific and precise, as will the relationship between the words in the correct answer pair.

Analogies come from a wide variety of fields. You need to know that musicians study in conservatories and ministers in seminaries, that panegyrics praise and elegies lament. You need to be aware of catalysts and conundrums, augers and auguries, and know in which contexts these words are found. You are not, however, dealing with these words in isolation; you are always dealing with them in relationship to other words.

Note how a GRE analogy question is set up. First you have the two capitalized words linked by a symbol. Take a look at a few examples.

Fresco : Wall

A fresco is related to a wall. How? By definition, a fresco or mural painting is painted on a wall.

Stammer : Talk

Stammer is related to talk. How? To stammer is to talk haltingly, even inarticulately. It is to talk in a defective or faulty manner.

TILE : MOSAIC

Tile is related to mosaic. How? A mosaic is made up of tiles. Notice the wording of the last sentence. You could also have said "Tiles are the pieces that make up a mosaic" and maintained the word order of the analogy. Sometimes, however, it is easier to express a relationship if you reverse the order of the words.

Next you come to the five answer choices. See if you can tell which pair best expresses a relationship similar to the relationship of tile to mosaic.

TILE : MOSAIC ::
(A) hoop : embroidery
(B) wick : candle
(C) whalebone : scrimshaw
(D) easel : painting
(E) knot : macrame

The correct answer is Choice E: macrame is made up of knots. Just as the tiles in a mosaic make a pattern, so too the knots in a piece of macrame make a pattern.

Some of the analogy questions on the GRE are as cut as this. Others are more complex. To answer them correctly involves far more than knowing single meanings of individual words: it involves knowing the usual contexts in which they are found, and their connotations as well. Master the tactics that immediately follow. Then proceed to the practice exercises containing both relatively simple and challenging analogies at the chapter's end.
Testing Tactics

**Tactic 1**

**Before You Look at the Choices, Try to State the Relationship Between the Capitalized Words in a Clear Sentence**

In answering an analogy question, your first problem is to determine the exact relationship between the two capitalized words. **Before you look at the answer pairs,** make up a sentence that illustrates how these capitalized words are related. Then test the possible answers by seeing how well they fit in your sentence.

Try this tactic on the following two questions.

<table>
<thead>
<tr>
<th>TORRENT : DROPLET ::</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) water : eddy</td>
</tr>
<tr>
<td>(B) swamp : desert</td>
</tr>
<tr>
<td>(C) downpour : puddle</td>
</tr>
<tr>
<td>(D) avalanche : pebble</td>
</tr>
<tr>
<td>(E) hurricane : wreckage</td>
</tr>
</tbody>
</table>

_**A torrent** (violent downpour or rushing stream) is made up of _droplets_. An _avalanche_ or sudden fall of rocks, snow or earth is made up of _pebbles_. Choice D is correct.

Don't let Choice C fool you: while a downpour, like a torrent, is a violent rain, it is not made up of puddles; rather, it leaves puddles in its aftermath.

<table>
<thead>
<tr>
<th>PHILATELY : STAMPS ::</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) calligraphy : pens</td>
</tr>
<tr>
<td>(B) cartography : maps</td>
</tr>
<tr>
<td>(C) chronology : events</td>
</tr>
<tr>
<td>(D) numismatics : coins</td>
</tr>
<tr>
<td>(E) geriatrics : ailments</td>
</tr>
</tbody>
</table>

_**Philately** is the study and collecting of _stamps_. _Numismatics_ is the study and collecting of _coins_. Choice D is correct.

Note how difficult this question would be if you did not know that philately involved collecting stamps. You might have guessed that philately primarily involves _working with_ stamps (as, for example, calligraphy involves working with pens) or even _making_ stamps (as cartography involves making maps). Knowing the primary relationship between the capitalized words, however, you can go through the answer choices eliminating any pairs that do not express the same relationship. Thus, you can eliminate Choice A: someone who practices calligraphy may possibly collect pens, but calligraphy's primary, dictionary-defined role is that of penmanship, the production of beautiful handwriting. Similarly, you can eliminate Choice E: geriatrics certainly involves studying ailments, but the ailments of the elderly, not ailments in general; furthermore, while it studies the ailments of the elderly, it certainly doesn't _collect_ any such ailments. You can eliminate Choice C as well: chronology involves arranging events in the order in which they occur. This process of elimination leaves you with two relatively unfamiliar words—**numismatics** and **cartography**—and a fifty percent chance of guessing the answer correctly.

If you are not sure of the answer, always rule out answer choices that you know cannot be correct, and then guess among the choices that are left.

Remember, you have to do your best to answer the question on your screen before you can move on to the next.

**Tactic 2**

**If More Than One Answer Fits the Relationship in Your Sentence, Look for a Narrower Approach**

When you try to express the relationship between the two capitalized words in sentence form, occasionally you come up with too simple a sentence, one that fails to include enough details to particularize your analogy. In such cases, more than one answer may fit the relationship, and you will have to analyze the original pair again.

Consider this analogy question.

<table>
<thead>
<tr>
<th>PSEUDOPOD : AMOEBA ::</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) branch : tree</td>
</tr>
<tr>
<td>(B) minnow : fish</td>
</tr>
<tr>
<td>(C) bristle : hedgehog</td>
</tr>
<tr>
<td>(D) tentacle : octopus</td>
</tr>
<tr>
<td>(E) shell : snail</td>
</tr>
</tbody>
</table>

_"A pseudopod is part of an amoeba."_ You have stated a relationship between the capitalized words in a sentence, but you have not stated a relationship that is precise enough. After all, branches are parts of trees, bristles are...
parts of hedgehogs, tentacles are parts of octopuses, and shells are parts of snails. You need to focus on some aspect of the relationship between the words in the original pair that corresponds to an aspect of only one of the answer pairs. Go back to the original pair of words for more details. How does an amoeba use a pseudopod? What function does it serve? "An amoeba uses a pseudopod for grasping." Try the answer choices in this new test sentence. "A tree uses a branch for grasping." False. "A hedgehog uses a bristle for grasping." False. "A snail uses its shell for grasping." False. "An octopus uses a tentacle for grasping." Choice D clearly is best.

Consider Secondary Meanings of Words As Well as Their Primary Meanings

Frequently, the test-makers attempt to mislead you by using familiar words in relatively uncommon ways. When an apparently familiar word seems incongruous in a particular analogy, consider other definitions of that word.

See how this tactic applies to the following examples.

**PAN : CAMERA ::**

(A) ban : book
(B) tune : radio
(C) charge : battery
(D) filter : lens
(E) rotate : periscope

Before you can answer this question, you have to know the definition of pan. You’re not dealing with a frying pan or a gold miner’s pan or a dish pan; pan here is a verb, not a noun. You can tell because the first word of each answer choice is also a verb. The verb ending -ate at the end of rotate gives that away.

The verb pan, however, has several meanings:

The miner panned for gold. (The miner washed gravel to separate out the gold.)

The chef panned the carrots. (The chef cooked the carrots in a pan with a small amount of fat or water.)

The critic panned the comedy. (The critic severely criticized the comedy.)

None of these is the meaning you want.

Think how pan relates to camera. When someone pans a camera, what happens? The cameraperson rotates the camera on its axis so that he or she can film a panoramic scene (or a moving person or object). Similarly, a submarine crew member rotates or revolves a periscope on its axis so that he or she can make a panoramic observation. The correct answer is Choice E.

**NEBULOUSNESS : DEFINITION ::**

(A) apathy : zeal
(B) impetuosity : intuition
(C) penetration : depth
(D) rectitude : somberness
(E) rigidity : homogeneity

What relationship exists between nebulousness and definition? Nebulousness means haziness or indistinctness; a nebulous idea lacks clarity or sharpness. But what does haziness have to do with definition? After all, a definition is a statement of the meaning of a word or phrase.

Look closely at the term definition. When you define a word, you distinguish its essential characteristics; you make its features clear. Definition in fact possesses a secondary meaning: “sharp demarcation of outlines or limits; distinctness of outline or detail.” With this meaning in mind, you can state the essential relationship between the capitalized words: nebulousness is a lack of definition. Analogously, apathy (indifference, lethargy) is a lack of zeal or enthusiasm. The correct answer is Choice A.

**EMBROIDER : FABRIC ::**

(A) fret : wood
(B) spin : yarn
(C) refine : ore
(D) sculpt : chisel
(E) glaze : glass

Ostensibly, this is a simple analogy. One embroiders fabric to ornament it, embellishing it with needlework. The relationship between the capitalized words is clear. However, the bulk of the examinees responding to this question would answer it incorrectly. The problem lies not in the original analogy but in the answer pairs.
Consider the answer choices closely. Choices B, C, D, and E are clear enough: one spins yarn, forming it out of threads (or one spins a yarn, fabricating or inventing a story); one refines ore, purifying it; one sculpts with a chisel; one glazes or fills a window with glass. Several of these straightforward choices have something to do with embellishment, but none seems precisely right. But how does one fret wood? Certainly not the way one frets a parent! Among the straightforward answer choices, Choice A seems strangely out of place.

When an item in an analogy strikes you as out of place, take a second look. Remember that, if you are a very good test-taker, the computer-adaptive GRE will give you increasingly difficult questions throughout the test. Therefore, if one of the final analogy questions on your screen looks simple, suspect a trap. In this case, the trap is a double one. Choice B, spin : yam is an eye-catcher: because embroidery and spinning both are related to cloth, Choice B has an immediate appeal. Choose it and you fall into the test-makers' trap. Choice A, the odd-seeming choice, is the real answer: fret, as used here, means to mark decoratively, ornamenting a surface with interlaced designs, as cabinet makers decorate wood with interlaced patterns; fretting wood, thus, is directly analogous to embroidering fabric.

Tactic 4

Watch Out for Errors Caused by Eye-Catchers

When you look at answer choices, do you find that certain ones seem to leap right off the screen? For instance, when you were looking for an analogy similar to EMBROIDER : FABRIC, did the terms related to stitchery catch your eye? These words are eye-catchers. They look good—but not if you take a second glance.

In an analogy you have two capitalized words that relate in a particular way, in creating eye-catchers, the test-makers tempt you with pairs of words that are related, but in a grammatically or logically different way. See how eye-catchers work in the following example.

MENTOR : GUIDE ::
(A) medium : advise
(B) mediator : disagree
(C) mercenary : demand
(D) mendicant : beg
(E) merchant : consume

CLEAR ANALOGY (Adjective/Noun)

MERCENARY : DEMAND :: RAVENOUS : APPETITE

A mercenary demand is greedy by definition. A ravenous appetite is greedy by definition as well.

VAGUE ANALOGY (Noun/Verb)

A mercenary demands.

A mercenary (professional soldier) insists or requires? The sentence makes little sense. Mercenaries work for hire; they may or may not make demands. The relationship is vague. Eliminate vague analogies when you find them; their only function is to catch your eye.

You have ruled out Choice C; you are suspicious of Choice A. How do you determine the correct answer? In this case, ask yourself who is doing what to whom. A mentor (teacher or counselor) by definition guides students or protégés. You can eliminate Choices A, B, and E because no necessary, dictionary-supported relationship links the words in these pairs. Mentors represent themselves as channels of communication between the living and the dead; they do not by definition advise. Mediators attempt to reconcile disagreeing parties; they do not by definition disagree. Merchants buy and sell goods that others consume; they do not by definition consume. The correct answer is Choice D. Just as a mentor by definition guides, a mendicant or beggar by definition begs.
Tactic 5

Look at the Answer Choices to Determine a Word's Part of Speech

Look at the capitalized words. What parts of speech are they? Words often have several forms. You may think of *flag* as a noun, for example, but in the phrases "to flag a taxi" and "to flag from exhaustion," *flag* is a verb.

If you suspect that a capitalized word may represent more than one part of speech, don't worry. Grammatical information built into the question can help you recognize analogy types and spot the use of unfamiliar or secondary meanings of words. In GRE analogy questions, the relationship between the parts of speech of the capitalized words and the parts of speech of the answer choices is identical. If your capitalized words are a noun and a verb, each of your answer pairs will be a noun and a verb. If they are an adjective and a noun, each of your answer pairs will be an adjective and a noun. If you can recognize the parts of speech in a single answer pair, you know the parts of speech of every other answer pair and of the original pair as well. See how this tactic works in a somewhat difficult question.

<table>
<thead>
<tr>
<th>SAP : VITALITY :</th>
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</thead>
<tbody>
<tr>
<td>(A) persevere : fortitude</td>
</tr>
<tr>
<td>(B) bore : tedium</td>
</tr>
<tr>
<td>(C) examine : opinion</td>
</tr>
<tr>
<td>(D) drain : resolve</td>
</tr>
<tr>
<td>(E) enhance : allure</td>
</tr>
</tbody>
</table>

At first glance, you might think that both *sap* and *vitality* were nouns; *sap*, after all, is a common noun (maple syrup comes from the *sap* of the maple tree), and *vitality* ends in -ity, a common noun suffix. However, *persevere* is clearly a verb. Simply from looking at the first answer choice, you know *sap* is a verb, not a noun.

What occurs when someone's vitality is sapped? It decreases and becomes weak. When vitality is sapped, it is undermined. Think of a fortress being undermined by military engineers; "sappers," the British army called them. Only one answer choice conveys this sense of something strong weakening: *Choice D.* If one's resolve (resolution, determination) is drained, it is depleted or undermined.

Tactic 6

Familiarize Yourself with Common Analogy Types

Analogies tend to fall into certain basic types. If you can discover no apparent relationship between the two capitalized words, try establishing a relationship between them based on those types commonly used on this test.

Common Analogy Types

**Definition**

REFUGE : SHELTER
A *refuge* (place of asylum or sanctuary) by definition *shelters.*

TAXONOMIST : CLASSIFY
A *taxonomist*, a person who specializes in classification, by definition *classifies.*

HAGGLER : BARGAIN
A *hagglers*, a person who argues over prices, by definition *bargains.*

**Defining Characteristic**

TIGER : CARNIVOROUS
A *tiger* is *defined* as a *carnivorous* or meat-eating animal.

ENTOMOLOGIST : INSECTS
An *entomologist* is defined as a person who studies *insects.*

APIARY : BEE
An *apiary* is defined as a home for *bees.*

**Class and Member**

AMPHIBIAN : SALAMANDER
A *salamander* is an example of an *amphibian.*
METAPHYSICS : PHILOSOPHY
Metaphysics belongs to (is a branch of) the field of philosophy.

SONNET : POEM
A sonnet is a specific kind of poem.

Antonyms
Antonyms are words that are opposite in meaning. Both words belong to the same part of speech.

CONCERNED : INDIFFERENT
Concerned is the opposite of indifferent.

WAX : WANE
Wax, to grow larger, and wane, to dwindle, are opposites.

ANARCHY : ORDER
Anarchy is the opposite of order.

Antonym Variants
In an Antonym Variant, the words are not strictly antonyms; their meanings, however, are opposed. Take the adjective nervous. A strict antonym for the adjective nervous would be the adjective poise(d). However, where an Antonym would have the adjective poise(d), an Antonym Variant analogy has the noun poise. It looks like this:

NERVOUS : POISE
Nervous means lacking in poise.

INQUitous : VIRTUE
Something inquitous (wicked) lacks virtue. It is the opposite of virtuous.

ABSTINENT : GORGE
To be abstinent or sparing in eating is the opposite of being inclined to cram or gorge.

Synonyms
Synonyms are words that have the same meaning. Both words belong to the same part of speech.

MAGNIFICENT : GRANDIOSE
Grandiose means magnificent.

RATIOCINATE : THINK
To ratioenticate is to think.

RECIDIVIST : BACKSLIDER
A recidivist or habitual offender is a backslider.

Synonym Variants
In a Synonym Variant, the words are not strictly synonyms; their meanings, however, are opposed. Take the adjective willful. A strict synonym for the adjective willful would be the adjective unruly. However, where a Synonym would have the adjective unruly, a Synonym Variant analogy has the noun unruliness. It looks like this:

WILLFUL : UNRULINESS
Willful means exhibiting unruliness.

VERBOSE : WORDINESS
Someone verbose is wordy; he or she exhibits wordiness.

SOLICITOUS : CONCERN
Someone solicitous is concerned; he or she shows concern.

Degree of Intensity
FOND : DOTING
Fond is less extreme than dotting.

FLURRY : BLIZZARD
A flurry or shower of snow is less extreme than a blizzard.

GRASPING : RAPACIOUS
To be grasping is less extreme than to be rapacious.

Part to Whole
ISLAND : ARCHIPELAGO
Many islands make up an archipelago.

SHARD : POTTERY
A shard is a fragment of pottery.

CANTO : POEM
A canto is part of a poem.

Function
ASYLUM : REFUGE
An asylum provides refuge or protection.

BALLAST : STABILITY
Ballast provides stability.

LULL : STORM
A lull temporarily interrupts a storm.

Manner
MUMBLE : SPEAK
To mumble is to speak indistinctly.

STRUT : WALK
To strut is to walk proudly.

STRAINED : WIT
Wit that is strained is forced in manner.

Action and Its Significance
WINCE : PAIN
A wince is a sign that one feels pain.

BLUSH : DISCOMFITURE
A blush signifies discomfiture or embarrassment.

PROSTRATION : SUBMISSIVENESS
Prostration (assuming a prostrate position, face to the ground) is a sign of submissiveness or abasement.

Worker and Article Created
POET : SONNET
A poet creates a sonnet.

ARCHITECT : BLUEPRINT
An architect designs a blueprint.

MASON : WALL
A mason builds a wall.
Worker and Tool
PAINTER : BRUSH
A painter uses a brush.

SICKLE : REAPER
A reaper uses a sickle to cut the grain.

CARPENTER : VISE
A carpenter uses a vise to hold the object being worked on.

Worker and Action
ACROBAT : CARTWHEEL
An acrobat performs a cartwheel.

FINANCIER : INVEST
A financier invests.

TENOR : ARIA
A tenor sings an aria.

Worker and Workplace
MUSICIAN : CONSERVATORY
A musician studies at a conservatory.

SCULPTOR : ATELIER
A sculptor works in an atelier or studio.

MINER : QUARRY
A miner works in a quarry or pit.

Tool and Its Action
DRILL : BORE
A drill is a tool used to bore holes.

CROWBAR : PRY
A crowbar is a tool used to pry things apart.

SIEVE : SIFT
A sieve is a tool used to strain or sift.

Less Common Analogy Types

Cause and Effect
SOPORIFIC : SLEEPINESS
A soporific (sleep-inducing medicine or drug) causes sleepiness.

Sex
DOE : STAG
A doe is a female deer; a stag, a male deer.

Age
COLT : STALLION
A colt is a young stallion.

Time Sequence
CORONATION : REIGN
The coronation precedes the reign.

Spatial Sequence
ROOF : FOUNDATION
The roof is the highest point of a house; the foundation, the lowest point.

Symbol and Quality It Represents
DOVE : PEACE
A dove is the symbol of peace.

Practice Exercises

Analogy Exercise A

Directions: Each of the following analogy questions presents a related pair of words linked by a colon. Five lettered pairs of words follow the linked pair. Choose the lettered pair of words whose relationship is most like the relationship expressed in the original linked pair.

1. MASON : WALL :: (A) artist : easel (B) fisherman : trout (C) author : book (D) congressman : senator (E) sculptor : mallet
2. FIRE : ASHES :: (A) accident : delay (B) wood : splinters (C) water : waves (D) regret : melancholy (E) event : memories
3. GOOSE : GANDER :: (A) duck : drake (B) hen : chicken (C) sheep : flock (D) dog : kennel (E) horse : bridle
4. CARPENTER : SAW :: (A) stenographer : typewriter (B) painter : brush (C) lawyer : brief (D) seamstress : scissors (E) runner : sneakers
5. CAPTAIN : SHOAL :: (A) lawyer : litigation (B) pilot : radar (C) soldier : ambush (D) doctor : hospital (E) corporal : sergeant
6. HORNS : BULL :: (A) mane : lion (B) wattles : turkey (C) antlers : stag (D) hoofs : horse (E) wings : eagle
7. JUDGE : COURTHOUSE :: (A) carpenter : bench (B) lawyer : brief (C) architect : blueprint (D) physician : infirmary (E) landlord : studio

8. HELMET : HEAD :: (A) pedal : foot (B) gun : hand (C) breastplate : chest (D) pendant : neck (E) knapsack : back

9. GULLIBLE : DUPED :: (A) credible : cheated (B) careful : cautioned (C) malleable : molded (D) myopic : misled (E) articulate : silenced

10. DUNGEON : CONFINEMENT :: (A) church : chapel (B) school : truancy (C) asylum : refuge (D) hospital : mercy (E) courthouse : remorse

11. HERMIT : GREGARIOUS :: (A) miser : penurious (B) ascetic : hedonistic (C) coward : pusillanimous (D) scholar : literate (E) crab : crustacean

12. MENDACITY : HONESTY :: (A) courage : craveness (B) truth : beauty (C) courage : fortitude (D) unsophistication : ingenuousness (E) turpitude : depravity

13. MARATHON : STAMINA :: (A) relay : independence (B) hurdle : perseverance (C) sprint : celerity (D) jog : weariness (E) ramble : directness

14. NAIVE : INGENUE :: (A) ordinary : genius (B) venerable : celebrity (C) urbane : sophisticate (D) crafty : artisan (E) modest : braggart

15. RETOUCH : PHOTOGRAPH :: (A) hang : painting (B) finger : fabric (C) retract : statement (D) compose : melody (E) refine : style

16. INDIGENT : WEALTH :: (A) contented : happiness (B) aristocratic : stature (C) smug : complacency (D) emaciated : nourishment (E) variegated : variety

17. SHALE : GEOLOGIST :: (A) catacombs : entomologist (B) aster : botanist (C) obelisk : fireman (D) love : philologist (E) reef : astrologer

18. DIDACTIC : TEACH :: (A) sophomoric : learn (B) satiric : mock (C) reticent : complain (D) chaotic : rule (E) apologetic : deny

19. HACKNEYED : ORIGINAL :: (A) mature : juvenile (B) trite : morbid (C) withdrawn : reserved (D) evasive : elusive (E) derivative : traditional

20. AUGER : CARPENTER :: (A) studio : sculptor (B) awl : cobbler (C) seam : seamstress (D) cement : mason (E) apron : chef

Analogy Exercise B

Directions: Each of the following analogy questions presents a related pair of words linked by a colon. Five lettered pairs of words follow the linked pair. Choose the lettered pair of words whose relationship is most like the relationship expressed in the original linked pair.

1. MUSTER : CREW :: (A) convene : committee (B) demobilize : troops (C) domain : opposition (D) cheer : team (E) dismiss : jury

2. DWELL : DENIZEN :: (A) shun : outcast (B) inherit : heir (C) squander : miser (D) obey : automaton (E) patronize : protégé

3. MEANDERING : DIRECTNESS :: (A) menacing : ambition (B) affable : permissiveness (C) digressive : conciseness (D) circuitous : rotation (E) aboveboard : openness

4. CEMENT : TROWEL :: (A) lawn : rake (B) conflagration : match (C) paint : brush (D) floor : polish (E) wallpaper : ladder

5. PIGHEADED : YIELD :: (A) lionhearted : retreat (B) lily-livered : flee (C) dogged : pursue (D) featherbrained : giggle (E) eagle-eyed : discern

6. ALARM : TRIGGER :: (A) prison : escape (B) tunnel : dig (C) criminal : corner (D) fright : allay (E) trap : spring

7. QUOTATION : QUOTATION MARKS :: (A) remark : colon (B) sentence : period (C) aside : parenthetical (D) clause : semicolon (E) interjection : exclamation point

8. SIGNATURE : ILLUSTRATION :: (A) byline : column (B) alias : charge (C) credit : purchase (D) note : scale (E) reference : recommendation
9. SCALES : JUSTICE :: (A) weights : measures  
(B) laws : courts  (C) torch : liberty  
(D) laurel : peace  (E) balance : equity  

10. SURPRISE : EXCLAMATION ::  
(A) insolence : bow  (B) dismay : groan  
(C) happiness : grimace  (D) deference : nod  
(E) contentment : matter  

11. APOSTATE : RELIGION ::  
(A) potentate : kingdom  (B) traitor : country  
(C) bureaucrat : government  (D) jailer : law  
(E) teacher : education  

12. FOX : CUNNING :: (A) dog : playful  
(B) hyena : amusing  (C) beaver : industrious  
(D) vixen : cute  (E) colt : sturdy  

13. PERJURY : OATH :: (A) plagiarism : authority  
(B) embezzlement : trust  (C) disregard : age  
(D) testimony : court  (E) jury : vow  

14. EULOGY : BLAME :: (A) elegy : loss  
(B) satire : mockery  (C) tirade : abuse  
(D) simile : likeness  (E) benediction : curse  

15. PRIDE : LIONS :: (A) gaggle : geese  
(B) honor : thieves  (C) snarl : wolves  
(D) arrogance : kings  (E) lair : bears  

16. RANGE : MOUNTAINS :: (A) atlas : maps  
(B) plain : prairie  (C) string : beads  
(D) novel : short stories  (E) sea : rivers  

17. EXCESSIVE : MODERATION ::  
(A) extensive : duration  (B) arbitrary : courage  
(C) impulsive : reflection  (D) distinguished : reverence  
(E) expensive : cost  

18. DEADBEAT : PAY :: (A) killjoy : lament  
(B) spoilsport : refrain  (C) daredevil : risk  
(D) dehair : quit  (E) turncoat : betray  

19. MENDICANT : IMPECCUNIOUS ::  
(A) critic : quizzical  (B) complainer : petulant  
(C) physician : noble  (D) liar : compulsive  
(E) philanthropist : prodigal  

20. SNICKER : DISRESPECT ::  
(A) whimper : impatience  (B) chortle : glee  
(C) frown : indifference  (D) sneer : detachment  
(E) glower : cheerfulness  

**Analogy Exercise C**

Directions: Each of the following analogy questions presents a related pair of words linked by a colon. Five lettered pairs of words follow the linked pair. Choose the lettered pair of words whose relationship is most like the relationship expressed in the original linked pair.

1. MYTH : LEGENDARY :: (A) sermon : lengthy  
(B) anecdote : witty  (C) fable : didactic  
(D) epic : comic  (E) allegory : obscure  

2. TIRADE : ABUSIVE :: (A) monologue : lengthy  
(B) aphorism : boring  (C) prologue : conclusive  
(D) encomium : laudatory  (E) critique : insolent  

3. EXPEDITIOUS : SPEED ::  
(A) astute : wisdom  (B) decorous : impropriety  
(C) thoughtful : inanity  (D) haggard : sturdiness  
(E) portable : frailty  

4. ANNOTATE : TEXT ::  
(A) enact : law  (B) prescribe : medication  
(C) caption : photograph  (D) abridge : novel  
(E) censor : film  

5. DRUDGERY : IRKSOME ::  
(A) encumbrance : burdensome  
(B) journey : wearisome  (C) ambivalence : suspicious  
(D) compliance : forced  (E) dissonance : harmonious  

6. IMPROMPTU : REHEARSAL ::  
(A) practiced : technique  (B) makeshift : whim  
(C) offhand : premeditation  (D) glib : fluency  
(E) numerical : calculation  

7. ELISION : SYLLABLES ::  
(A) contraction : letters  (B) thesis : ideas  
(C) diagnosis : symptoms  (D) almanac : facts  
(E) abacus : numbers  

8. STICKLER : INSIST :: (A) numbler : enunciate  
(B) trickster : risk  (C) haggler : concede  
(D) laggard : outlast  (E) braggart : boast  

9. DETRITUS : GLACIER :: (A) thaw : snowfall  
(B) snow : ice cap  (C) silt : river  
(D) range : mountain  (E) foliage : tree  

10. DESCRY : DISTANT :: (A) mourn : lost  
(B) whisper : mused  (C) discern : subtle  
(D) destroy : flagrant  (E) entrap : hostile  

11. HORSE : CORRAL :: (A) oyster : reef  
(B) dog : muzzle  (C) sheep : flock  (D) pig : sty  
(E) deer : stag
12. RUBBER : ELASTIC :: (A) paper : brittle  
(B) diamond : hard  
(C) satin : sheer  
(D) metal : heavy  
(E) dust : allergic  
13. REAM : PAPER :: (A) carton : milk  
(B) statue : marble  
(C) tablet : clay  
(D) ink : pen  
(E) cord : wood  
14. HOBBLE : WALK :: (A) gallop : run  
(B) stammer : speak  
(C) stumble : fall  
(D) sniff : smell  
(E) amble : stroll  
15. DETECTIVE : INFORMER :: (A) spy : counterspy  
(B) reporter : source  
(C) author : editor  
(D) architect : draftsman  
(E) sailor : mutineer  
16. SCULPTOR : STONE :: (A) essayist : words  
(B) painter : turpentine  
(C) composer : symphony  
(D) logger : timber  
(E) etcher : acid  
17. MASTHEAD : NEWSPAPER :: (A) footnote : essay  
(B) credits : film  
(C) spine : book  
(D) ream : paper  
(E) advertisement : magazine  
18. FRAYED : FABRIC :: (A) thawed : ice  
(B) renovated : building  
(C) frizzled : nerves  
(D) watered : lawn  
(E) cultivated : manner  
19. INDOLENT : WORK :: (A) decisive : act  
(B) gullible : cheat  
(C) perceptive : observe  
(D) theatrical : perform  
(E) taciturn : speak  
20. INFALLIBLE : ERROR :: (A) irreversible : cure  
(B) invulnerable : emotion  
(C) impeccable : flaw  
(D) intolerable : defect  
(E) immovable : choice  

**Analogy Exercise D**

**Directions:** Each of the following analogy questions presents a related pair of words linked by a colon. Five lettered pairs of words follow the linked pair. Choose the lettered pair of words whose relationship is most like the relationship expressed in the original linked pair.

1. INFRACTION : LAW ::  
(A) interruption : continuity  
(B) renovation : structure  
(C) establishment : order  
(D) enactment : amendment  
(E) punishment : crime  
2. LACHRYMOSE : TEARS ::  
(A) effusive : requests  
(B) ironic : jests  
(C) morose : speeches  
(D) profound : sighs  
(E) verbose : words  
3. MOISTEN : DRENCH :: (A) enclose : confine  
(B) prick : stab  
(C) disregard : ignore  
(D) scrub : polish  
(E) heat : chill  
4. WITCH : COVEN :: (A) ogre : castle  
(B) seer : prophecy  
(C) actor : troupe  
(D) fairy : spell  
(E) doctor : medicine  
5. CONTINENT : ISLAND :: (A) ocean : lake  
(B) isthmus : peninsula  
(C) cape : cove  
(D) river : canal  
(E) plateau : plain  
6. SKINFLINT : STINGY :: (A) daredevil : alert  
(B) braggart : carefree  
(C) blackguard : protective  
(D) spendthrift : weak  
(E) diehard : stubborn  
7. STORY : BUILDING :: (A) plot : outline  
(B) rung : ladder  
(C) cable : elevator  
(D) foundation : skyscraper  
(E) spire : church  
8. CANONIZE : SAINT :: (A) train : athlete  
(B) guard : dignitary  
(C) deify : sinner  
(D) lionize : celebrity  
(E) humanize : scholar  
9. STARE : GLANCE :: (A) participate : observe  
(B) scorn : admire  
(C) hunt : stalk  
(D) gulp : sip  
(E) confide : tell  
10. PERFORATE : HOLES :: (A) speckle : spots  
(B) evaporate : perfume  
(C) decorate : rooms  
(D) filter : water  
(E) repent : sins  
11. PUGNACIOUS : BATTLE :: (A) timorous : beg  
(B) loquacious : drink  
(C) tenacious : persist  
(D) veracious : lie  
(E) wicked : survive  
12. CLEARSIGHTED : PERSPICACITY :: (A) daring : temerity  
(B) reserved : impulsiveness  
(C) transparent : opacity  
(D) severe : clemency  
(E) lethargic : energy  
13. PLEAD : SUPPLIANT :: (A) disperse : rioter  
(B) shun : outcast  
(C) revere : elder  
(D) beg : philanthropist  
(E) translate : interpreter  
14. EPIGRAM : PITHY :: (A) allegory : lengthy  
(B) saga : heroic  
(C) anecdote : humorous  
(D) elegy : satiric  
(E) proverb : modern  
15. BOLT : FABRIC :: (A) lock : key  
(B) book : paper  
(C) roll : film  
(D) needle : thread  
(E) light : lamp  
16. PROOF : ALCOHOL :: (A) cream : milk  
(B) canteen : water  
(C) tanker : oil  
(D) octane : gasoline  
(E) pulp : juice  
17. INCUBATOR : INFANT :: (A) henhouse : chicken  
(B) greenhouse : plant  
(C) archives : document  
(D) cooler : wine  
(E) hive : bee
18. CITADEL : DEFENSE :: (A) chapel : refreshment (B) gazebo : refuge (C) marina : contemplation (D) warehouse : storage (E) rampart : supervision

19. RANCID : TASTE :: (A) tepid : temperature (B) glossy : look (C) rank : smell (D) dulcet : sound (E) savory : odor

20. TRYST : CLANDESTINE :: (A) reverie : dreamy (B) acquaintance : brief (C) expectation : hopeless (D) glance : resentful (E) journey : leisurely

**Analogy Exercise E**

**Directions:** Each of the following analogy questions presents a related pair of words linked by a colon. Five lettered pairs of words follow the linked pair. Choose the lettered pair of words whose relationship is most like the relationship expressed in the original linked pair.

1. WHISPER : SPEAK :: (A) brush : touch (B) skip : walk (C) listen : hear (D) request : ask (E) whimper : whine

2. ELUSIVE : CAPTURE :: (A) persuasive : convince (B) elastic : stretch (C) headstrong : control (D) sensible : decide (E) gullible : trick

3. LINEAGE : PERSON :: (A) foliage : tree (B) derivation : word (C) adolescence : child (D) title : book (E) landscape : portrait

4. IMPANEL : JUROR :: (A) accuse : defendant (B) convict : culprit (C) testify : witness (D) enroll : student (E) involve : bystander

5. PECCADILLO : TRIFLING :: (A) pariah : popular (B) diagnosis : accurate (C) notion : farfetched (D) squabble : petry (E) pursuit : trivial

6. PHYSIQUE : STURDY :: (A) intellect : noble (B) punctuality : tardy (C) investment : sound (D) fabric : worn (E) technique : inept

7. TRAILER : MOTION PICTURE :: (A) truck : cargo (B) theater : play (C) edition : novel (D) commercial : product (E) libretto : opera

8. SIGN : ZODIAC :: (A) poster : billboard (B) letter : alphabet (C) prediction : prophecy (D) signal : beacon (E) rhyme : almanac

9. LUMINARY : ILLUSTRIUS :: (A) zealot : intense (B) miser : prodigal (C) atheist : devout (D) dignitary : conceited (E) celebrity : wealthy

10. BUFFOON : DIGNITY :: (A) braggart : modesty (B) blackguard : strength (C) laughstock : ridicule (D) impostor : identification (E) gambler : risk

11. ROUT : DEFEAT :: (A) ovation : applause (B) triumph : failure (C) grief : loss (D) pathway : ruin (E) memory : oblivion

12. METAPHOR : FIGURATIVE :: (A) fabie : contemporary (B) adage : paradoxical (C) perceive : instructive (D) irony : dramatic (E) epic : literal

13. CALUMNY : ASPERSIONS :: (A) approbation : praise (B) slander : mockery (C) approval : criticism (D) expectation : threats (E) satire : lamentations

14. LAST : SHOE :: (A) cuff : trousers (B) finale : curtain (C) pattern : glove (D) buckle : belt (E) strap : slip

15. INDOLENT : SLOTH :: (A) wrathful : ire (B) arrogant : acuity (C) covetous : enigma (D) glutinous : loyalty (E) impatient : apathy

16. GROVEL : SERVILITY :: (A) titter : arrogance (B) fume : anger (C) yawn : civility (D) preen : modesty (E) snivel : hypocrisy

17. DELICATE : FASTIDIOUS :: (A) hard-working : diligent (B) altruistic : mercenary (C) demonstrative : effusive (D) deceptive : fallacious (E) blithe : melancholy

18. RICOCHET : BULLET :: (A) soar : falcon (B) aim : crossbow (C) pierce : dart (D) carom : ball (E) catapult : missile

19. JUGGERNAUT : INEXORABLE :: (A) cosmonaut : worldly (B) colossus : gigantic (C) demagogue : liberal (D) philistine : cultivated (E) despot : immaculate

20. APOCRYPHAL : AUTHENTICITY :: (A) nefarious : wickedness (B) dogmatic : assertiveness (C) hypocritical : integrity (D) perspicacious : discernment (E) deceptive : artifice
### Answer Key

#### Analogy Exercise A

#### Analogy Exercise B

#### Analogy Exercise C

### Analogy Exercise D
5. A  10. A  15. C  20. A  

### Analogy Exercise E
These are the sentence completion directions you will find on the GRE: "Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five lettered words or sets of words. Choose the word or set of words for each blank that best fits the meaning of the sentence as a whole."

GRE sentence completion questions test your ability to use your vocabulary and recognize logical consistency among the elements in a sentence. You need to know more than the dictionary definitions of the words involved. You need to know how the words fit together to make logical and stylistic sense.

Sentence completion questions actually measure one part of reading comprehension. If you can recognize how the different parts of a sentence affect one another, you should do well at choosing the answer that best completes the meaning of the sentence or provides a clear, logical statement of fact. The ability to recognize irony and humor will also stand you in good stead, as will the ability to recognize figurative language and to distinguish between formal and informal levels of speech.

GRE sentence completion questions may come from any of a number of different fields—art, literature, history, philosophy, botany, astronomy, geology, and others. You cannot predict what subject matter the sentences on your test will have. However, even if you are unfamiliar with the subject matter of a particular sentence, you should still be able to analyze that sentence and choose the word that best completes its meaning. It is not the sentence’s subject matter that makes hard GRE sentence completion questions hard.

What makes hard sentence completion questions hard?

1. **Vocabulary Level.** Sentences contain words like intransigence, nonplussed, harbingers. Answer choices include words like penchant, abeyance, eclectic. Questions employ unfamiliar secondary meanings of words—brook as a verb, economy with the meaning of restraint.

2. **Grammatical Complexity.** Sentences combine the entire range of grammatical possibilities—subordinate clauses, relative clauses, prepositional phrases, gerunds, infinitives—in convoluted ways. The more complex the sentence, the more difficult it is for you to spot the key words that can unlock its meaning.

3. **Tone.** Sentences reflect the writer’s attitude toward his subject matter. It is simple enough to comprehend material that is presented neutrally. It is far more difficult to comprehend material that is ironic, condescending, playful, somber, or similarly complex in tone.

4. **Style.** Ideas may be expressed in different manners—ornately or sparely, poetically or prosaically, formally or informally, journalistically or academically, originally or imitatively. An author’s style depends on such details as word choice, imagery, repetition, rhythm, sentence structure, and length. Many of the most difficult GRE questions hinge on questions of style.

Work through the following tactics and learn the techniques that will help you with vocabulary, grammatical complexity, tone, and style.
Testing Tactics

**Tactic 1**

**Before You Look at the Choices, Read the Sentence and Think of a Word That Makes Sense**

Your problem is to find the word that best completes the sentence in both thought and style. Before you look at the answer choices, see if you can come up with a word that makes logical sense in the context. Then look at all five choices. If the word you thought of is one of your five choices, select that as your answer. If the word you thought of is not one of your five choices, look for a synonym of that word. Select the synonym as your answer.

This tactic is helpful because it enables you to get a sense of the sentence as a whole without being distracted by any misleading answers among the answer choices. You are free to concentrate on spotting key words or phrases in the body of the sentence and to call on your own “writer’s intuition” in arriving at a stylistically apt choice of word.

See how the process works in a typical model question.

Because experience had convinced her that he was both self-seeking and avaricious, she rejected the likelihood that his donation had been

(A) redundant
(B) frivolous
(C) inexpensive
(D) ephemeral
(E) altruistic

This sentence presents a simple case of cause and effect. The key phrase here is *self-seeking and avaricious*. The woman has found the man to be selfish and greedy. Therefore, she refuses to believe he can do something blank. What words immediately come to mind? *Selfless, generous, charitable.* The missing word is, of course, *altruistic*. The woman expects selfishness (*self-seeking*) and greediness (*avaricious*), not altruism (magnanimity). The correct answer is Choice E.

Practice Tactic 1 extensively to develop your intuitive sense of the *not just*—the exactly right word. However, do not rely on Tactic 1 alone. On the test, always follow up Tactic 1 with Tactic 2.

**Tactic 2**

**Look at All the Possible Answers Before You Make Your Final Choice**

*Never* decide on an answer before you have read all the choices. You are looking for the word that *best* fits the meaning of the sentence as a whole. In order to be sure you have not been hasty in making your decision, substitute all the answer choices for the missing word. Do not spend a lot of time doing so, but do try them all. That way you can satisfy yourself that you have come up with the *best* answer.

See how this tactic helps you deal with another question patterned on examples from the GRE.

The evil of class and race hatred must be eliminated while it is still in an blank state; otherwise it may grow to dangerous proportions.

(A) amorphous
(B) overt
(C) uncultivated
(D) embryonic
(E) independent

On the basis of a loose sense of this sentence’s meaning, you might be tempted to select Choice A. After all, this sentence basically tells you that you should wipe out hatred before it gets too dangerous. Clearly, if hatred is vague or *amorphous*, it is less formidable than if it is well-defined. However, this reading of the sentence is inadequate: it fails to take into account the sentence’s key phrase.

The key phrase here is *grow to dangerous proportions*. The writer fears that class and race hatred may grow...
large enough to endanger society. He wants us to wipe out this hatred before it is fully grown. Examine each answer choice, eliminating those answers that carry no suggestion that something lacks its full growth. Does overt suggest that something isn't fully grown? No, it suggests that something is obvious or evident. Does uncultivated suggest that something isn't fully grown? No, it suggests that something is free and unconstrained. Only one word suggests a lack of full growth: embryonic (at a rudimentary, early stage of development). The correct answer is Choice D.

In Double-Blank Sentences, Go Through the Answers, Testing the First Word in Each Choice (and Eliminating Those That Don't Fit)

In a sentence completion question with two blanks, read through the entire sentence to get a sense of it as a whole. Then insert the first word of each answer pair in the sentence's first blank. Ask yourself whether this particular word makes sense in this blank. If the initial word of an answer pair makes no sense in the sentence, you can eliminate that answer pair. (Note: Occasionally this tactic will not work. In some questions, for example, the first words of all five answer pairs may be near-synonyms. However, the tactic frequently pays off, as it does in the following example.)

Critics of the movie version of *The Color Purple* ______ its saccharine, overoptimistic mood as out of keeping with the novel's more ______ tone.

(A) applauded...somber  
(B) condemned...hopeful  
(C) acclaimed...positive  
(D) denounced...sanguine  
(E) decried...acerbic

For a quick, general sense of the opening clause, break it down. What does it say? Critics ______ the movie's sugary sweet mood.

How would critics react to something sugary sweet and over-hopeful? They would disapprove. Your first missing word must be a synonym for disapprove.


To decide among Choices B, D, and E, consider the second blank. The movie's sugary, overly hopeful mood is out of keeping with the novel's tone: the two moods disagree. Therefore, the novel's tone is *not* hopeful or sickly sweet. It is instead on the bitter or sour side; in a word, *acerbic*. The correct answer is clearly Choice E.

Remember, in double-blank sentences, the right answer must correctly fill both blanks. A wrong answer choice often includes one correct and one incorrect answer. ALWAYS test both words.

Watch for Signal Words That Link One Part of the Sentence to Another

Writers use transitions to link their ideas logically. These transitions or signal words are clues that can help you figure out what the sentence actually means.

GRE sentences often contain several signal words, combining them in complex ways.

**Cause and Effect Signals**

Look for words or phrases explicitly indicating that one thing causes another or logically determines another.
Support Signals

Look for words or phrases explicitly indicating that the omitted portion of the sentence supports or continues a thought developed elsewhere in the sentence. In such cases, a synonym or near-synonym for another word in the sentence may provide the correct answer.

Support Signal Words

- additionally
- furthermore
- also
- indeed
- and
- likewise
- as well
- moreover
- besides
- too

Contrast Signals (Explicit)

Look for function words or phrases (conjunctions, sentence adverbs, etc.) that explicitly indicate a contrast between one idea and another, setting up a reversal of a thought. In such cases, an antonym or near-antonym for another word in the sentence may provide the correct answer.

Explicit Contrast Signal Words

- albeit
- nevertheless
- although
- nonetheless
- but
- notwithstanding
- despite
- on the contrary
- even though
- on the other hand
- however
- rather than
- in contrast
- still
- in spite of
- while
- instead of
- yet

Contrast Signals (Implicit)

Look for content words whose meaning inherently indicates a contrast. These words can turn a situation on its head. They indicate that something unexpected, possibly even unwanted, has occurred.

Implicit Contrast Signal Words

- anomaly
- anomalous
- anomalously
- illogic
- illogical
- illogically
- incongruity
- incongruous
- incongruously
- irony
- ironic
- ironically
- paradox
- paradoxical
- paradoxically
- surprise
- surprising
- surprisingly
- unexpected
- unexpectedly

Note the function of such a contrast signal word in the following question.

Paradoxically, the more ______ the details this artist chooses, the better able she is to depict her fantastic, other-worldly landscapes.

(A) ethereal
(B) realistic
(C) fanciful
(D) extravagant
(E) sublime

The artist creates imaginary landscapes that do not seem to belong to this world. We normally would expect the details comprising these landscapes to be as fantastic and supernatural as the landscapes themselves. But the truth of the matter, however, is paradoxical: it contradicts what we expect. The details she chooses are realistic, and the more realistic they are, the more fantastic the paintings become. The correct answer is Choice B.

Use Your Knowledge of Word Parts and Parts of Speech to Get at the Meanings of Unfamiliar Words

If a word used by the author is unfamiliar, or if an answer choice is unknown to you, two approaches are helpful.

1. Break the word down into its component parts—prefixes, suffixes, roots—to see whether they provide a clue to its meaning. For example, in the preceding list of implicit Contrast Signal Words, the word incongruous contains three major word parts. In- here means not; con- means together; gru- means to move or come. Incongruous behavior, therefore, is behavior that does not go together or agree with someone’s usual behavior; it is unexpected.

2. Change the unfamiliar word from one part of speech to another. If the adjective embryonic is unfamiliar to you, cut off its adjective suffix -onic and recognize the familiar word embryo. If the noun precocity is
unfamiliar to you, cut off its noun suffix -ity and visualize it with different endings. You may come up with the adjective *precocious* (maturing early). If the verb *appropriate* is unfamiliar to you, by adding a word part or two you may come up with the common noun *appropriation* or the still more common noun *misappropriation* (as in the misappropriation of funds).

Note the application of this tactic in the following typical example.

| This island is a colony; however, in most matters, it is ________ and receives no orders from the mother country. |
| (A) synoptic |
| (B) methodical |
| (C) heretical |
| (D) autonomous |
| (E) disinterested |

First, eliminate any answer choices that are obviously incorrect. If a colony receives no orders from its mother country, it is essentially self-governing. It is not necessarily *methodical* or systematic, nor is it by definition *heretical* (unorthodox) or *disinterested* (impartial). Thus, you may rule out Choices B, C, and E.

The two answer choices remaining may be unfamiliar to you. Analyze them, using what you know of related words. Choice A, *synoptic*, is related to the noun *synopsis*, a summary or abridgment. This has nothing to do with how a colony might govern itself. Choice D, *autonomous*, comes from the prefix *auto-* (self) and the root *nom-* (law). An autonomous nation is independent; it rules itself. Thus, the correct answer is *autonomous*, Choice D.

**Tactic 6**

**Break Down Complex Sentences into Simpler Components**

In analyzing long, complex sentence completion items, you may find it useful to simplify the sentences by breaking them down. Rephrase dependent clauses and long participial phrases, turning them into simple sentences.

See how this tactic helps you to analyze the following sentence.

| Museum director Hoving ________ refers to the smuggled Greek urn as the "hot pot," not because there are doubts about its authenticity or even great reservations as to its price, but because its ________ of acquisition is open to question. |
| (A) informally...costliness |
| (B) characteristically...date |
| (C) colloquially...manner |
| (D) repeatedly...swiftness |
| (E) cheerfully...mode |

What do we know?

1. The urn has been smuggled.
2. Hoving calls it a "hot pot."
3. It is genuine. (There are no doubts about its authenticity.)
4. It did not cost too much. (There are no great reservations as to its price.)

In calling the smuggled urn a "hot pot," Hoving is not necessarily speaking *characteristically* or *repeatedly* or *cheerfully*. He is speaking either *informally* or *colloquially*. (*Hot* here is a slang term meaning stolen or illegally obtained.) The urn's *costliness* is not being questioned. However, because the urn has been smuggled into the country, there clearly are unresolved questions about how it got here, in other words, about its *manner* of acquisition. The correct answer is Choice C.

Note that in sentence completion questions a choice may be complicated by an unusual word order, such as

1. placing the subject after the verb:
   - To the complaints window *strode* the angry customer.
2. placing the subject after an auxiliary of the verb:
   - Only by unending search *could* some few Havana cigars be found.
3. inverting the subject and verb to give the sense of "if": *Were defeated* to befall him, today's dear friends would be tomorrow's acquaintances, and next week's strangers.
4. placing a negative word or phrase first, which usually requires at least part of the verb to follow:
   - Never have I encountered so demanding a test!

In all these instances, rephrase the sentence to make it more straightforward. For example:

*The angry customer strode to the complaint window.*

*Some few Havana cigars could be found only by unending search.*

*If defeated were to befall him, today's dear friends would be tomorrow's acquaintances, and next week's strangers.*

*I have never encountered so demanding a test!"
Tactic 7
If a Sentence Contains a Metaphor, Check to See Whether That Metaphor Controls the Writer's Choice of Words (and Your Answer Choice)

Writers sometimes indulge in extended metaphors, complex analogies that imaginatively identify one object with another.

In the following example, the mind of a prejudiced person is compared to the pupil of an eye in its response to light or illumination.

The mind of a bigot is like the pupil of the eye: the more light you pour upon it, the more it will ______.
(A) blink
(B) veer
(C) stare
(D) reflect
(E) contract

The image of light unifies this sentence. In choosing an answer, it is necessary to complete the sentence in such a way as to develop that metaphor fully and accurately. Exactly what takes place when you shine a light into someone's eye? The person may stare back or blink; you may see the light reflected in the person's eye. But what happens to the pupil of the eye? It neither blinks nor reflects. Instead it shrinks in size; it contracts. Likewise, exposed to the light of tolerance, the bigot's mind resists illumination. Choice E completes the metaphor; it is the correct answer choice.

Practice Exercises
Sentence Completion Exercise A

Directions: Each of the following sentence completion questions contains one or two blanks. These blanks signify that a word or set of words has been left out. Below each sentence are five words or sets of words. For each blank, pick the word or set of words that best reflects the sentence's overall meaning.

1. Normally an individual thunderstorm lasts about 45 minutes, but under certain conditions the storm may ______, becoming ever more severe, for as long as four hours.
   (A) wane
   (B) moderate
   (C) persist
   (D) vacillate
   (E) disperse

2. Perhaps because something in us instinctively distrusts such displays of natural fluency, some readers approach John Updike's fiction with ________.
   (A) indifference
   (B) suspicion
   (C) veneration
   (D) recklessness
   (E) bewilderment

3. We lost confidence in him because he never ________ the grandiose promises he had made.
   (A) forgot about
   (B) reneged on

   (C) tired of
   (D) delivered on
   (E) retreated from

4. Ms. Sutcliffe's helpful notes on her latest wine discoveries and her no-nonsense warnings to consumers about ________ wines provide ________ guide to the numbing array of wines of Burgundy.
   (A) excellent...a useful
   (B) overrated...an inadequate
   (C) overpriced...a trusty
   (D) unsatisfactory...a spotty
   (E) vintage...an unreliable

5. We were amazed that a man who had been heretofore the most ________ of public speakers could, in a single speech, electrify an audience and bring them cheering to their feet.
   (A) enthralling
   (B) accomplished
   (C) pedestrian
   (D) auspicious
   (E) masterful

6. If you are trying to make a strong impression on your audience, you cannot do so by being understated, tentative, or ________.
   (A) hyperbolic
   (B) restrained
   (C) argumentative
   (D) authoritative
   (E) passionate
7. Despite the mixture's _______ nature, we found that by lowering its temperature in the laboratory we could dramatically reduce its tendency to vaporize.

(A) resilient  
(B) volatile  
(C) homogeneous  
(D) insipid  
(E) astringent

8. No other artist rewards the viewer with more sheer pleasure than Miro; he is one of those blessed artists who combine profundity and ________.

(A) education  
(B) wisdom  
(C) faith  
(D) fun  
(E) depth

9. Some Central Intelligence Agency officers have ________ their previous statements denying any involvement on their part with the Contra aid network and are now revising their earlier testimony.

(A) justified  
(B) recanted  
(C) repeated  
(D) protracted  
(E) heeded

10. New concerns about growing religious tension in northern India were ________ this week after at least fifty people were killed and hundreds were injured or arrested in rioting between Hindus and Moslems.

(A) lessened  
(B) invalidated  
(C) restrained  
(D) dispersed  
(E) fueled

11. In a happy, somewhat boisterous celebration of the European discovery of America, the major phase of the Columbus Quincentennial got off to ________ start on Friday.

(A) a slow  
(B) a rousing  
(C) a reluctant  
(D) an indifferent  
(E) a quiet

12. In one shocking instance of ________ research, one of the nation's most influential researchers in the field of genetics reported on experiments that were never carried out and published deliberately ________ scientific papers on his nonexistent work.

(A) comprehensive...abstract  
(B) theoretical...challenging  
(C) fraudulent...deceptive  
(D) derivative...authoritative  
(E) erroneous...impartial

13. Measurement is, like any other human endeavor, a complex activity, subject to error, not always used ________ , and frequently misinterpreted and ________ .

(A) mistakenly...derided  
(B) erratically...analyzed  
(C) systematically...organized  
(D) innovatively...refined  
(E) properly...misunderstood

14. In a revolutionary development in technology, several manufacturers now make biodegradable forms of plastic; some plastic six-pack rings, for example, gradually ________ when exposed to sunlight.

(A) harden  
(B) stagnate  
(C) inflate  
(D) propagate  
(E) decompose

15. To alleviate the problem of contaminated chicken, the study panel recommends that the federal government shift its inspection emphasis from cursory bird-by-bird visual checks to a more ________ random sampling for bacterial and chemical contamination.

(A) rigorous  
(B) perfunctory  
(C) symbolic  
(D) discreet  
(E) dubious

16. Her novel published to universal acclaim, her literary gifts acknowledged by the chief figures of the Harlem Renaissance, her reputation as yet ________ by envious slights, Hurston clearly was at the ________ of her career.

(A) undamaged...ebb  
(B) unshackled...zenith  
(C) untainted...extremity  
(D) blackened...mercy  
(E) unmarred...brink

17. To the dismay of the student body, the class president was ________ berated by the principal at a school assembly.

(A) ignominiously  
(B) privately  
(C) magnanimously  
(D) fortuitously  
(E) inconspicuously

18. Aimed at curbing European attempts to seize territory in the Americas, the Monroe Doctrine was a warning to ________ foreign powers.

(A) pertinacious  
(B) credulous  
(C) remote  
(D) overt  
(E) predatory
19. When Frazer’s editors at Macmillan tried to _______ his endless augmentations, he insisted on a type size so small and a page so packed as to approach illegibility; and if that proved ________, thinner paper.
   (A) protract...unwarranted
   (B) expurgate...satisfactory
   (C) reprimand...irrelevant
   (D) restrict...insufficient
   (E) revise...idiomsyncratic

20. The authority of voice in Frazer’s writing strikes many readers today as _______ colonialism; his prose seems as invulnerable and expansive as something on which the sun was presumed never to set.
   (A) consonant with
   (B) independent of
   (C) ambivalent toward
   (D) cognizant of
   (E) detrimental to

**Sentence Completion Exercise B**

**Directions:** Each of the following sentence completion questions contains one or two blanks. These blanks signify that a word or set of words has been left out. Below each sentence are five words or sets of words. For each blank, pick the word or set of words that best reflects the sentence’s overall meaning.

1. Baldwin’s brilliant *The Fire Next Time* is both so eloquent in its passion and so searching in its _______ that it is bound to _______ any reader.
   (A) bitterness...embarrass
   (B) romanticism...appall
   (C) candor...unsettle
   (D) indifference...disappoint
   (E) conception...bore

2. Unlike other examples of _______ verse, Milton’s *Lycidas* does more than merely mourn the death of Edward King; it also denounces corruption in the Church in which King was ordained.
   (A) satiric
   (B) elegiac
   (C) free
   (D) humorous
   (E) didactic

3. Few other plants can grow beneath the canopy of the sycamore tree, whose leaves and pods produce a natural herbicide that leaches into the surrounding soil, _______ other plants that might compete for water and nutrients.
   (A) inhibiting
   (B) distinguishing
   (C) nourishing
   (D) encouraging
   (E) refreshing

4. Although a few years ago the fundamental facts about the Milky Way seemed fairly well _______, now even its mass and its radius have come into _______.
   (A) determined...resolution
   (B) ignored...danger
   (C) problematic...prominence
   (D) diminished...disrepute
   (E) established...question

5. The officers threatened to take _______ if the lives of their men were _______ by the conquered natives.
   (A) liberties...irritated
   (B) measures...enhanced
   (C) pains...destroyed
   (D) reprisals...endangered
   (E) affront...everted

6. Despite an affected _______ that convinced casual observers that he was indifferent about his painting and enjoyed only frivolity, Warhol cared deeply about his art and labored at it _______.
   (A) nonchalance...diligently
   (B) empathy...methodically
   (C) fervor...secretly
   (D) gloom...intermittently
   (E) hysteria...sporadically

7. Because she had a reputation for _______ we were surprised and pleased when she greeted us so _______.
   (A) insolence...irately
   (B) insouciance...cordially
   (C) graciousness...amiably
   (D) arrogance...disdainfully
   (E) querulousness...affably

8. The child was so spoiled by her indulgent parents that she pouted and became _______ when she did not receive all of their attention.
   (A) discreet
   (B) suspicious
   (C) elated
   (D) sullen
   (E) tranquil

9. Just as disloyalty is the mark of the renegade, _______ is the mark of the _______.
   (A) timorousness...hero
   (B) temerity...coward
   (C) avarice...philanthropist
   (D) cowardice...craven
   (E) vanity...flatterer

10. He became quite overbearing and domineering once he had become accustomed to the _______ shown to soldiers by the natives; he enjoyed his new sense of power and self-importance.
11. The ________ of time had left the castle ________, it towered above the village, looking much as it must have done in Richard the Lion-Hearted's time.
(A) repairs...destroyed
(B) remoteness...alone
(C) lack...defended
(D) status...lonely
(E) ravages...untouched

12. One of the most ________ educators in New York, Dr. Shalala ignited a controversy in 1984 by calling the city public schools a "rotten barrel" in need of ________ reform.
(A) disputatious...little
(B) outspoken...systemic
(C) caustic...partial
(D) indifferent...pretentious
(E) sycophantic...superficial

13. The newest fiber-optic cables that carry telephone calls cross-country are made of glass so ________ that a piece 100 miles thick is clearer than a standard windowpane.
(A) fragile
(B) immaculate
(C) tangible
(D) transparent
(E) iridescent

14. The reasoning in this editorial is so ________ that we cannot see how anyone can be deceived by it.
(A) coherent
(B) astute
(C) cogent
(D) specious
(E) dispasionate

15. The ________ of evidence was on the side of the plaintiff since all but one witness testified that his story was correct.
(A) paucity
(B) propensity
(C) accuracy
(D) brunt
(E) preponderance

16. Glenndon provides a dark underside to Frederick Jackson Turner's frontier thesis that saw rugged individualism as the essence of American society—an individualism that she sees as ________ atomism.
(A) antithetical toward
(B) skeptical of
(C) degenerating into
(D) aspiring to
(E) renewed by

17. Chatwin has devoted his life to a kind of Grail quest, hoping to prove—by study and direct experience with primitive people—that human nature is gentle and defensive rather than ________, and that man is ________, not a predator.
(A) belligerent...an apostate
(B) martial...a crusader
(C) aggressive...a pilgrim
(D) truculent...a gladiator
(E) pugnacious...a pawn

18. The texts as we have them were written down and edited carefully by Christians proud of their ancestors but unable to bear the thought of their indulging in heathen practices; thus, all references to the ancient religion of the Celts were ________, if not ________.
(A) deleted...expunged
(B) muddled...suppressed
(C) labored...denigrated
(D) aggrieved...overawed
(E) obscure...ironic

19. Because Inspector Morse could not contain his scorn for the police commissioner, he was imprudent enough to make ________ remarks about his superior officer.
(A) ambiguous
(B) dispassionate
(C) unfathomable
(D) interminable
(E) scathing

20. In Japanese art, profound emotion is frequently couched in images of nature, observed with ________ conditioned by life in a land of dramatic seasonal change, where perils of earthquake and typhoon make nature's bounty ________ and its processes awesome and beautiful.
(A) an intimacy...precarious
(B) a fidelity...municent
(C) a skill...excessive
(D) an indifference...chancy
(E) a sensitivity...distinctive

Sentence Completion Exercise C

Directions: Each of the following sentence completion questions contains one or two blanks. These blanks signify that a word or set of words has been left out. Below each sentence are five words or sets of words. For each blank, pick the word or set of words that best reflects the sentence's overall meaning.

1. A ________ statement is an ________ comparison: it does not compare things explicitly, but suggests a likeness between them.
2. Modern architecture has discarded the ________ trimming on buildings and has concentrated on an almost Greek simplicity of line.
   (A) flamboyant
   (B) austere
   (C) inconspicuous
   (D) aesthetic
   (E) derivative

3. If you are seeking ________ that will resolve all our ailments, you are undertaking an impossible task.
   (A) a precedent
   (B) a panacea
   (C) an abstraction
   (D) a direction
   (E) a contrivance

4. I have no ________ motive in offering this advice; I seek no personal advantage or honor.
   (A) nominal
   (B) altruistic
   (C) incongruous
   (D) disinterested
   (E) ulterior

5. This park has been preserved in all its ________ wildness so that visitors in future years may see how people lived during the eighteenth century.
   (A) hedonistic
   (B) prospective
   (C) esoteric
   (D) untrammeled
   (E) pristine

6. Though he was theoretically a friend of labor, his voting record in Congress ________ that impression.
   (A) implied
   (B) created
   (C) confirmed
   (D) belied
   (E) maintained

7. The orator was so ________ that the audience became ________.
   (A) soporific...drowsy
   (B) inaudible...elated
   (C) pompous...bombastic
   (D) dramatic...affable
   (E) convincing...moribund

8. If you carry this ________ attitude to the conference, you will ________ any supporters you may have at this moment.
   (A) belligerent...delight
   (B) truculent...alienate
   (C) conciliatory...defer
   (D) supercilious...attract
   (E) ubiquitous...delight

9. The ________ pittance the widow receives from the government cannot keep her from poverty.
   (A) magnanimous
   (B) indulgent
   (C) meticulous
   (D) munificent
   (E) meager

10. Harriman, Kennan, and Acheson were part of that inner ________ of the American diplomatic establishment whose distinguished legacy ________ U.S. foreign policy.
    (A) circle...grieved
    (B) sanctum...absorbed
    (C) core...dominated
    (D) life...biased
    (E) coterie...exacerbated

11. The young man was quickly promoted when his employers saw how ________ he was.
    (A) indigent
    (B) indifferent
    (C) assiduous
    (D) lethargic
    (E) cursory

12. For Miró, art became a ________ ritual; paper and pencils were holy objects to him and he worked as though he were performing a religious rite.
    (A) superficial
    (B) sacred
    (C) banal
    (D) cryptic
    (E) futile

13. Because it arrives so early in the season, before many other birds, the robin has been called the ________ of spring.
    (A) hostage
    (B) autocrat
    (C) compass
    (D) newcomer
    (E) harbinger

14. Shy and hypochondriacal, Madison was uncomfortable at public gatherings; his character made him a most ________ lawmaker and practicing politician.
    (A) conscientious
    (B) unlikely
    (C) fervent
    (D) gregarious
    (E) effective
15. The tapeworm is an example of ________ organism, one that lives within or on another creature, deriving some or all of its nutrients from its host.
(A) a hospitable  
(B) an exemplary  
(C) a parasitic  
(D) an autonomous  
(E) a protozoan

16. In place of the more general debate about abstract principles of government that most delegates probably expected, the Constitutional Convention put ________ proposals on the table.
(A) theoretical  
(B) vague  
(C) concrete  
(D) tentative  
(E) redundant

17. Overindulgence ________ character as well as physical stamina.
(A) strengthens  
(B) stimulates  
(C) debilitates  
(D) maintains  
(E) provides

18. We must try to understand his momentary ________ for he has ________ more strain and anxiety than any among us.
(A) outcry...descended  
(B) senility...understood  
(C) vision...forgotten  
(D) generosity...desired  
(E) aberration...undergone

19. He is ________ opponent; you must respect and fear him at all times.
(A) a redoubtable  
(B) a disingenuous  
(C) a pugnacious  
(D) an insignificant  
(E) a craven

20. Your ________ tactics may compel me to cancel the contract as the job must be finished on time.
(A) dilatory  
(B) offensive  
(C) repugnant  
(D) infamous  
(E) confiscatory

1. Truculent in defending their individual rights of sovereignty under the Articles of Confederation, the newly formed states ________ constantly.
(A) apologized  
(B) digressed  
(C) conferred  
(D) acquiesced  
(E) squabbled

2. If the Titanic had hit the iceberg head on, its watertight compartments might have saved it from ________, but it swerved to avoid the iceberg, and in the collision so many compartments were opened to the sea that disaster was ________.
(A) foundering...inevitable  
(B) sinking...escaped  
(C) damage...limited  
(D) buoyancy...unavoidable  
(E) collapse...averted

3. Written in an amiable style, the book provides a comprehensive overview of European wines that should prove inviting to both the virtual ________ and the experienced connoisseur.
(A) prodigal  
(B) novice  
(C) zealot  
(D) miser  
(E) glutton

4. The members of the religious sect ostracized the ________ who had abandoned their faith.
(A) coward  
(B) suppliant  
(C) litigant  
(D) recreant  
(E) proselyte

5. I am not attracted by the ________ life of the ________, always wandering through the countryside, begging for charity.
(A) proud...almsgiver  
(B) noble...philanthropist  
(C) affluent...mendicant  
(D) natural...philosopher  
(E) peripatetic...vagabond

6. Her true feelings ________ themselves in her sarcastic asides; only then was her ________ revealed.
(A) concealed...sweetness  
(B) manifested...bitterness  
(C) hid...sarcasm  
(D) developed...anxiety  
(E) grieved...charm

7. They fired upon the enemy from behind trees, walls, and any other ________ point they could find.
(A) conspicuous  
(B) definitive  
(C) vantage  
(D) exposed  
(E) indefensible
8. Because Pauling stubbornly continued to believe in the power of Vitamin C to cure cancer despite much evidence to the contrary, his colleagues felt he had lost his scientific ________
   (A) tenacity
   (B) experimentation
   (C) daring
   (D) apparatus
   (E) objectivity

9. We need more men of culture and enlightenment; we have too many ________ among us.
   (A) visionaries
   (B) students
   (C) philistines
   (D) pragmatists
   (E) philosophers

10. The sugar dissolved in water ________; finally all that remained was an almost ________ residue on the bottom of the glass.
    (A) quickly...lumpy
    (B) immediately...fragrant
    (C) gradually...inperceptible
    (D) subsequently...glassy
    (E) spectacularly...opaque

11. Alec Guinness has few equals among English-speaking actors, and in his autobiography he reveals himself to be an uncommonly ________ prose stylist as well.
    (A) ambivalent
    (B) infamous
    (C) supercilious
    (D) felicitous
    (E) pedestrian

12. Traffic speed limits are set at a level that achieves some balance between the danger of ________ speed and the desire of most people to travel as quickly as possible.
    (A) marginal
    (B) normal
    (C) prudent
    (D) inadvertent
    (E) excessive

13. Although the economy suffers downturns, it also has strong ________ and self-correcting tendencies.
    (A) unstable
    (B) recidivist
    (C) inauspicious
    (D) recuperative
    (E) self-destructive

14. It is foolish to vent your spleen on ________ object; still, you make ________ enemies that way.
    (A) an inanimate...fewer
    (B) an immobile...bitter
    (C) an interesting...curious
    (D) an insipid...dull
    (E) a humane...more

15. Since Cyrano de Bergerac did not wish to be under an obligation to any man, he refused to be a ________ of Cardinal Richelieu.
    (A) proselytizer
    (B) mentor
    (C) protégé
    (D) benefactor
    (E) predecessor

16. The leader of the group is the passionately committed Crimond, whose ________ politics is inversely proportional to his disciples' ________ political faith.
    (A) retreat from...remote
    (B) penchant for...ardent
    (C) indifference to...jaundiced
    (D) engagement in...lapsed
    (E) disinclination for...problematic

17. After the Japanese attack on Pearl Harbor on December 7, 1941, Japanese-Americans were ________ of being spies for Japan, although there was no ________ to back up this accusation.
    (A) acquitted...buttress
    (B) tired...witness
    (C) reminded...reason
    (D) suspected...evidence
    (E) exonerated...money

18. More than one friendly whale has nudged a boat with such ________ that passengers have been knocked overboard.
    (A) enthusiasm
    (B) lethargy
    (C) hostility
    (D) serenity
    (E) animosity

19. In seeking to rediscover Zora Neale Hurston, it is intriguing to look at the figure she cut in the minds of her contemporaries, the high regard she enjoyed before shifting aesthetic values ________ her to curio status.
    (A) emancipated
    (B) deviated
    (C) exported
    (D) absolved
    (E) relegated

20. We have become so democratic in our habits of thought that we are convinced that truth is determined through ________ of facts.
    (A) a hierarchy
    (B) a transcendence
    (C) a plebiscite
    (D) a repeal
    (E) an ignorance
Sentence Completion Exercise E

Directions: Each of the following sentence completion questions contains one or two blanks. These blanks signify that a word or set of words has been left out. Below each sentence are five words or sets of words. For each blank, pick the word or set of words that best reflects the sentence’s overall meaning.

1. Studded starfish are well protected from most ________ and parasites by _________ surface whose studs are actually modified spines.
   (A) dangers...a vulnerable
   (B) predators...an armored
   (C) threats...a fragile
   (D) challenges...an obtuse
   (E) exigencies...a brittle

2. Chaotic in conception but not in ________, Kelly’s canvases are as neat as the proverbial pin.
   (A) conceal
   (B) theory
   (C) execution
   (D) origin
   (E) intent

3. After having worked in the soup kitchen feeding the hungry, the volunteer began to see her own good fortune as ________ and her difference from the ________ as chance rather than destiny.
   (A) an omen...homeless
   (B) a fluke...impoverished
   (C) a threat...destitute
   (D) a reward...indigent
   (E) a lie...affluent

4. Some students are ________ and want to take only the courses for which they see immediate value.
   (A) theoretical
   (B) impartial
   (C) pragmatic
   (D) idealistic
   (E) opinionated

5. Unlike the Shakespearean plays that lit up the English stage, the “closet dramas” of the nineteenth century were meant to be ________ rather than ________.
   (A) seen...acted
   (B) read...staged
   (C) quiet...rancous
   (D) sophisticated...urbane
   (E) produced...performed

6. Japan’s industrial success is ________ in part to its tradition of group effort and ________, as opposed to the emphasis on personal achievement that is a prominent aspect of other industrial nations.
   (A) responsive...independence
   (B) related...introspection
   (C) equivalent...solidarity
   (D) subordinate...individuality
   (E) attributed...cooperation

7. I was so bored with the verbose and redundant style of Victorian novelists that I welcomed the change to the ________ style of Hemingway.
   (A) prolix
   (B) consistent
   (C) terse
   (D) logistical
   (E) florid

8. As ________ head of the organization, he attended social functions and civic meetings but had no ________ in the formulation of company policy.
   (A) titular...voice
   (B) hypothetical...vote
   (C) former...pride
   (D) nominal...competition
   (E) actual...say

9. His listeners enjoyed his ________ wit but his victims often ________ at its satire.
   (A) lugubrious...suffered
   (B) caustic...laughed
   (C) kindly...smarted
   (D) subtle...smiled
   (E) trenchant...winced

10. The first forty years of life give us the text; the next thirty supply the ________.
    (A) abridgement
    (B) bibliography
    (C) commentary
    (D) epitaph
    (E) title

11. The distinctive qualities of African music were not appreciated or even ________ by Westerners until fairly recently.
    (A) deplored
    (B) revered
    (C) ignored
    (D) neglected
    (E) perceived

12. It is only to the vain that all is vanity; and all is ________ only to those who have never been ________ themselves.
    (A) arrogance...proud of
    (B) deception...sincere with
    (C) cowardice...afraid for
    (D) indolence...bored by
    (E) solitude...left to
13. No act of ________ was more pronounced than his refusal of any rewards for his discovery.
   (A) abeyance
   (B) submission
   (C) egoism
   (D) denunciation
   (E) abnegation

14. Tocqueville decided to swear the oath of loyalty to the new Orleanist king in part ________ (he wanted to keep his position as magistras), and in part pragmatically (he was convinced that the democratization of politics represented by the new regime was ________). (A) expeditiously...calamitous
   (B) opportunistically...inevitable
   (C) imprudently...circumspect
   (D) selflessly...idealistic
   (E) theoretically...negligible

15. Unlike the gregarious Capote, who was never happier than when he was in the center of a crowd of celebrities. Faulkner, in later years, grew somewhat ________ and shunned company.
   (A) congenial
   (B) decorous
   (C) dispassionate
   (D) reclusive
   (E) ambivalent

16. She is a pragmatist, as ________ to base her future on impractical dreams as she would be to build a castle on shifting sand.
   (A) determined
   (B) disinclined
   (C) quick
   (D) apt
   (E) diligent

17. We are ________ the intellects of the past; or, rather, like children we take it for granted that somebody must supply us with our supper and our ________.
   (A) ungrateful to...ideas
   (B) dependent on...repose
   (C) unfaithful to...needs
   (D) fortunate in...allowance
   (E) generous to...wants

18. During the middle of the eighteenth century, the ________ style in furniture and architecture, marked by scrollwork and excessive decoration, flourished.
   (A) austere
   (B) functional
   (C) medieval
   (D) rococo
   (E) abstract

19. Although eighteenth-century English society as a whole did not encourage learning for its own sake in women, nonetheless it illogically ________ women's sad lack of education.
   (A) palliated
   (B) postulated
   (C) decreed
   (D) brooked
   (E) vaunted

20. Faced with these massive changes, the government keeps its own counsel; although generally benevolent, it has always been ________ regime.
   (A) an altruistic
   (B) an unpredictable
   (C) a reticent
   (D) a sanguine
   (E) an indifferent

**Answer Key**

**Sentence Completion Exercise A**


**Sentence Completion Exercise B**


**Sentence Completion Exercise C**


**Sentence Completion Exercise D**


**Sentence Completion Exercise E**

Chapter 7

Reading Comprehension Questions

- Testing Tactics
- Practice Exercises
- Answer Key

GRE reading comprehension questions test your ability to understand what you read—both content and technique. Each verbal section on the GRE CAT includes two to four relatively short passages, each passage followed by two to four questions. A passage may deal with the sciences (including medicine, botany, zoology, chemistry, physics, geology, astronomy); the humanities (including art, literature, music, philosophy, folklore); or the social sciences (including history, economics, sociology, government). Some passages are strictly objective, explaining or describing a phenomenon or process neutrally. Others reflect a particular bias or point of view: the author is trying to convince the reader to share his or her opinion about the subject being discussed.

The GRE tends to take its reading passages from The New York Review of Books, from prestigious university presses (Harvard, Princeton, Oxford), from scholarly journals. Often the test-makers hit academically “hot” topics—biodiesel fuels, plate tectonics, damage to the ozone layer, Arthurian romance, the status of women’s literature—that have aroused controversy over the past several decades. Frequently they edit these passages to make them more demanding both in vocabulary level and in grammatical complexity.

Some of the reading comprehension questions on the GRE are factual, asking you about specific details in the passages. Others ask you to interpret the passages, to make judgments about them. Still others ask you to recognize various techniques used by the authors or possible applications of their ideas to other circumstances. Some questions include lengthy and complex statements, as lengthy and complex as any sentences in the passage. Read the questions closely, as closely as you read the text. Be sure, in answering reading comprehension questions, that you read all the answer choices before deciding which is correct.

The reading comprehension questions following each passage are not arranged in order of difficulty. They are arranged to reflect the way the passage’s content is organized. A question based on information found at the beginning of the passage generally will come before a question based on information at the passage’s end.

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Testing Tactics

Tactic 1: First Read the Question, Then Read the Passage

In responding to reading comprehension passages on the CAT, you generally will have to consider more material than can fit conveniently on a single screen. You will confront a split screen similar to the one on the next page. On one half of the screen you will see the question you must answer; on the other you will see a segment of the passage under consideration. You will have to scroll through the passage in order to read the text in its entirety. (For a more comprehensive explanation of scrolling through passages, see Chapter 2.)
Under these conditions, clearly only one tactic works: first read the question, then read the passage.

1. Read the question carefully, so that you are sure you understand what it is asking. Decide whether it is asking about a specific, readily identifiable detail within the passage, or whether it is asking about the passage as a whole. Note any key words in the question that may help you spot where the answer may be found.

2. Next, turn to the passage. Read as rapidly as you can with understanding, but do not force yourself. Do not worry about the time element. If you worry about not finishing the test, you will begin to take shortcuts and miss the correct answer in your haste.

3. As you read the opening sentences, try to anticipate what the passage will be about. Whom or what is the author talking about? What, in other words, is the topic of this passage?

4. As you scroll through the passage, think about what kind of writing this is. What is the author trying to do? Is the author trying to explain some aspect of the topic? Is the author trying to describe some aspect of the topic?

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Tactic 2

Learn to Spot the Major Reading Question Types

Just as it will help you to know the common types of analogies found on the GRE, it will also help you to familiarize yourself with the major types of reading questions on the test.

If you can recognize just what a given question is asking for, you will be better able to tell which reading tactic to apply.
Here are seven categories of reading questions you are likely to face:

1. **Main Idea** Questions that test your ability to find the central thought of a passage or to judge its significance often take one of the following forms:
   - The main point of the passage is...
   - The passage is primarily concerned with...
   - The author's primary purpose in this passage is...
   - The chief theme of the passage can best be described as...
   - Which of the following titles best states the central idea of the passage?
   - Which of the following statements best expresses the main idea of the passage?

2. **Finding Specific Details** Questions that test your ability to understand what the author states *explicitly* are often worded:
   - According to the author,...
   - The author states all of the following EXCEPT...
   - According to the passage, which of the following is true of the...
   - The passage supplies information that would answer which of the following questions?
   - Which of the following statements is (are) best supported by the passage?
   - Which of the following is NOT cited in the passage as evidence of...

3. **Drawing Inferences** Questions that test your ability to go beyond the author's explicit statements and see what these statements imply may be worded:
   - It can be inferred from the passage that...
   - The author implies that...
   - The passage suggests that...
   - Which of the following statements about...can be inferred from the passage?

4. **Application to Other Situations** Questions that test your ability to recognize how the author's ideas might apply to other situations often are worded:
   - With which of the following statements would the author of the passage be most likely to agree?
   - Which of the following aphorisms would the author be in strongest agreement?

The author's argument would be most weakened by the discovery of which of the following?
- The author’s contention would be most clearly strengthened if which of the following were found to be true?
- Which of the following examples could best be substituted for the author’s example of...
- Which of the following statements would be most likely to begin the paragraph immediately following the passage?
- The author is most probably addressing which of the following audiences?

5. **Tone/Attitude** Questions that test your ability to sense an author's emotional state often take the form:
   - The author’s attitude toward the problem can best be described as...
   - The author regards that idea that...with...
   - The author’s tone in the passage is that of a person attempting to...
   - Which of the following best describes the author's tone in the passage?

6. **Technique** Questions that test your ability to recognize a passage's method of organization or technique often are worded:
   - Which of the following best describes the development of this passage?
   - In presenting the argument, the author does all of the following EXCEPT...
   - The relationship between the second paragraph and the first paragraph can best be described as...
   - In the passage, the author makes the central point primarily by...
   - The organization of the passage can best be described as...

7. **Determining the Meaning of Words from Their Context** Questions that test your ability to work out the meaning of unfamiliar words from their context often are worded:
   - As it is used in the passage, the term...can best be described as...
   - The phrase...is used in the passage to mean that...
   - As used by the author, the term...refers to...
   - The author uses the phrase...to describe...

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**Tactic 3**

**When Asked to Find the Main Idea, Be Sure to Check the Opening and Summary Sentences of Each Paragraph**

The opening and closing sentences of a paragraph are key sentences for you to read. They can serve as guideposts, pointing out the author's main idea.

When you are asked to determine a passage's main idea, *always* check the opening and summary sentences of each paragraph. Authors typically provide readers with a sentence that expresses a paragraph's main idea succinctly. Although such topic sentences may appear anywhere in the paragraph, readers customarily look for them in the opening or closing sentences.
Note that in GRE reading passages topic sentences are sometimes implied rather than stated directly. If you cannot find a topic sentence, ask yourself these questions:

1. Who or what is this passage about?
   (The subject of the passage can be a person, place, or thing. It can be something abstract, such as an idea. It can even be a process, or something in motion, for which no single-word synonym exists.)

2. What aspect of this subject is the author talking about?

3. What is the author trying to get across about this aspect of the subject?
   (Decide the most important thing that is being said about the subject. Either the subject must be doing something, or something is being done to it.)

Read the following natural science passage and apply this tactic.

According to Wilson, only when we are able to apply the same parameters and mathematical principles to weighing both troops of rhesus macaques and termite colonies will a unified science of sociobiology finally exist. While recognizing that many of his colleagues question such an outcome, Wilson, one of sociobiology's leading proponents, finds himself simultaneously more and more struck by the functional similarities that characterize both insect and vertebrate societies and less concerned with the structural differences that divide them to such an apparently irreconcilable degree. Thus, he freely compares termites and macaques, pointing out numerous likenesses between them. Both societies are territorial: they occupy a particular home range, which they defend against intruders. Likewise, both are cooperative: members organize themselves into working groups that observe a clearly-defined division of labor. In addition, members of both groups can convey to each other a range of basic emotions and personal information: animosity, fright, hunger, rank within a particular caste, and ability to reproduce. Wilson readily concedes that, from a specialist's perspective, such a likeness may at first appear superficial, even unscientifically Gilbert. Nonetheless, in this eminent scholar's judgment, "it is out of such deliberate oversimplification that the beginnings of a general theory are made."

Edwin O. Wilson, Harvard professor and author of Sociobiology.

Now look at a typical main idea question on this passage.

Which of the following best summarizes the author's main point?

(A) Facile and simplistic comparisons of animal societies could damage the prospects for the establishment of a unified science of sociobiology.

(B) It is necessary to study both biology and sociology in order to appreciate how animals as different as termites and rhesus macaques can be said to resemble each other.

(C) The majority of animal species arrange themselves in societies whose patterns of group behavior resemble those of human societies.

(D) It is worthwhile noting that animals as dissimilar as termites and rhesus monkeys observe certain analogous and predictable behavior patterns.

(E) An analysis of the ways in which insect and vertebrate societies resemble one another could supply the foundation for a unified science of sociobiology.

Look at the opening and summary sentences of the passage: "only when we are able to apply the same parameters and mathematical principles to weighing both troops of rhesus macaques and termite colonies will a unified science of sociobiology finally exist...it is out of such deliberate oversimplification that the beginnings of a general theory are made." First, is there a person, place, thing, idea, or process that is common to both sentences? Are there any words in the last sentence that repeat something in the first? A general theory repeats the idea of a unified science of sociobiology. The paragraph's subject seems to be the unified science of sociobiology. Note as well the words pointing to expectations for the future—will...finally exist, beginnings. The tone of both sentences appears positive: when certain conditions are met, then, in Wilson's view, a specific result will follow—we will have a unified science or general theory of sociobiology. This result, however, is not guaranteed; it can come about only if the conditions are met.

Now turn to the answer choices. What does Choice A say about a unified science of sociobiology? It states some things could make it less likely, not more likely, to come about. Choice A is incorrect; it contradicts the passage's sense that a unified science of sociobiology is a likely outcome. Choices B, C, and D also may be incorrect: not one of them mentions a unified science of sociobiology. On closer inspection, Choice B proves incorrect; it makes an unsupported statement that one needs biological and sociological education to understand the resemblances between insects and vertebrates. Choice C also proves incorrect: it goes far beyond what the passage actually states. Where the passage speaks in terms of termites and rhesus macaques, Choice C speaks in terms of the majority of animal species and extends the comparison to include humans as well. Choice D, while factually correct according to the passage, is incorrect because it is too narrow in scope. It ignores the author's main point; it fails to include Wilson's interest in the possibility that a study of such similar patterns of behavior might lead to a general theory of sociobiology. The correct answer is Choice E. It is the only statement that speaks of a unified science of sociobiology as a likely possibility.
When Asked to Choose a Title, Watch Out for Choices That Are Too Specific or Too Broad

A paragraph has been defined as a group of sentences revolving around a central theme. An appropriate title for a paragraph, therefore, must express this central theme that each of the sentences in the paragraph develops. It should be neither too broad nor too narrow in scope; it should be specific and yet comprehensive enough to include all the essential ideas presented by the sentences. A good title for a passage of two or more paragraphs should express the thoughts of ALL the paragraphs.

When you are trying to select the best title for a passage, watch out for words that come straight out of the passage. They may not always be your best choice.

This second question on the sociobiology passage is a title question. Note how it resembles questions on the passage’s purpose or main idea.

Which of the following is the best title for the passage?
(A) Deceptive Comparisons: Oversimplification in Biological Research
(B) An Uncanny Likeness: Termites and Rhesus Macaques
(C) Structural Dissimilarities Between Insects and Vertebrates
(D) Arguments Against a Science of Sociobiology
(E) Sociobiology: Intimations of a General Theory

Choice A is incorrect; it is at once too narrow and too broad. It is too narrow in that the passage refers to oversimplification only in passing; it does not have oversimplification as its subject. It is too broad in that the passage emphasizes sociobiology, not the whole realm of biological research. It is also misleading: the passage never asserts that the deliberate oversimplification of the comparison between termites and macaques is intended to deceive.

Choice B is incorrect; it is too narrow. True, the author discusses the resemblance between termite and macaque societies; however, this likeness is not his subject. He discusses it to provide an example of the sort of comparison that may lay the groundwork for a potential science of sociobiology.

Choice C is also incorrect because it is not inclusive enough. It fails to mention the potential science of sociobiology. In addition, while the passage refers to structural differences between insect and vertebrate societies, it stresses structural similarities, not structural dissimilarities.

Choices D and E both mention the theory of sociobiology. Which is the better title for the piece? Clearly, Choice E: the author is not arguing against the potential science of sociobiology; he is reporting Wilson’s opinions concerning the likelihood of sociobiology’s emergence as a unified science. Thus, he finds in the termite-macaque comparison intimations or hints of an incipient general theory.

When Asked to Determine Questions of Attitude, Mood, or Tone, Look for Words That Convey Emotion, Express Values, or Paint Pictures

In determining the attitude, mood, or tone of an author, examine the specific diction used. Is the author using adjectives to describe the subject? If so, are they words like fragrant, tranquil, magnanimous—words with positive connotations? Or are they words like fed, ruffled, stinging—words with negative connotations?

When we speak, our tone of voice conveys our mood—frustrated, cheerful, critical, gloomy, angry. When we write, our images and descriptive phrases get our feelings across.

The next model question on the Wilson passage is an attitude question. Note the range of feelings in the answer choices.

According to the author, Wilson’s attitude toward the prospect of a unified theory in sociobiology can best be characterized as which of the following?
(A) Unconditional enthusiasm
(B) Cautious optimism
(C) Unbiased objectivity
(D) Resigned acquiescence
(E) Strong displeasure

How does Wilson feel about the possibility of a unified theory of sociobiology? The answer choices range from actively negative (strong displeasure) to actively positive
(unconditional enthusiasm), with passively negative (resigned acquiescence), neutral (unbiased objectivity), and guardedly positive (cautious optimism) in between.

Wilson's attitude toward the possibility of a unified theory of sociobiology is implicit in the author's choice of words. It is clear that Wilson views this possibility positively; the whole thrust of his argument is that the current studies of the similarities between insect and vertebrate societies could mark the beginnings of such a unified theory and that the specialist should not dismiss these studies as glib or simpleminded. Note in the second sentence how the author describes Wilson as a leading proponent or champion of sociobiology, someone whose feelings about the field are by definition positive.

Wilson is certainly not unhappy or strongly displeased with this potential unified theory, nor is he merely long-suffering or resigned to it. Similarly, he is not unbiased and objective about it; he actively involves himself in arguing the case for sociobiology. Thus, you can eliminate Choices C, D, and E. But how do you decide between the two positive terms, enthusiasm and optimism, Choice A and Choice B? To decide between them, you must look carefully at the adjectives modifying them. Is Wilson's enthusiasm unqualified or unconditional? You may think so, but look again. The opening sentence states a basic condition that must be met before there can be a unified science of sociobiology: the same parameters and mathematical principles must be used to analyze insect and vertebrate societies. Though a proponent of sociobiology, Wilson is first and foremost a scientist, one who tests hypotheses and comes to logical conclusions about them. Unconditional enthusiasm seems to overstate his attitude.

Choice A appears incorrect. What of Choice B? Is Wilson's optimism cautious or guarded? Yes, According to the passage, Wilson is aware that specialists may well find fault with the sociobiologist's conclusions; the passage uses terms that convey values, first the negative "superficial, even unscientifically glib" to suggest the specialist's negative attitude towards sociobiology, then the positive "deliberate" to convey Wilson's own more positive response. The correct answer is Choice B.

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**Tactic 6** When Asked About Specific Details in the Passage, Spot Key Words in the Question and Scan the Passage to Find Them (or Their Synonyms)

In developing the main idea of a passage, a writer will make statements to support his or her point. To answer questions about such supporting details, you must find a word or group of words in the passage supporting your choice of answer. The words "according to the passage" or "according to the author" should focus your attention on what the passage explicitly states. Do not be misled into choosing an answer (even one that makes good sense) if you cannot find it supported by the text.

Detail questions often ask about a particular phrase or line. In such cases, use the following technique:

1. Look for key words (nouns or verbs) in the answer choices.
2. Scroll through the passage, looking for those key words or their synonyms. (This is Scanning. It is what you do when you look up someone's number in the phone directory.)
3. When you find a key word or its synonym in a sentence, reread that sentence to make sure the test-makers haven't used the original wording to mislead you.

Read the following brief passage and apply this tactic.

What is involved in the process of visual recognition? First, like computer data, visual memories of an object must be stored; then, a

(1) Line mechanism must exist for them to be retrieved.
(5) But how does this process work? The eye triggers the nerves into action. This neural activity constructs a picture in the brain's memory system, an internal image of the object observed. When the eye once again confronts that object, the object is compared with its internal image; if the two images match, recognition takes place.

Among psychologists, the question as to whether visual recognition is a parallel, single-step operation or a sequential, step-by-step one is the subject of much debate. Gestalt psychologists contend that objects are perceived as wholes in a parallel operation: the internal image is matched with the retinal impression in one single step. Psychologists of other schools, however, suggest the opposite, maintaining that the individual features of an object are matched serially with the features of its internal image. Some experiments have demonstrated that the more well-known an object is, the more holistic its internal image becomes, and the more parallel the process of recognition tends to be. Nonetheless, the bulk of the evidence appears to uphold the serial hypothesis, at least for simple objects that are relatively unfamiliar to the viewer.

Now look at the following question on a specific detail in the passage.
According to the passage, psychologists of the Gestalt school assume which of the following about the process of visual recognition?

I. The image an object makes on the retina is exactly the same as its internal image.
II. The mind recognizes a given object as a whole; it has no need to analyze the object's constituent parts individually.
III. The process of matching an object with its internal image takes place in a single step.

(A) II only
(B) III only
(C) I and III only
(D) II and III only
(E) I, II, and III

You can arrive at the correct answer to this question by elimination.

First, quickly scan the passage looking for the key word Gestalt. The sentence mentioning Gestalt psychologists states they maintain that objects are recognized as wholes in a parallel procedure. The sentence immediately preceding defines a parallel procedure as one that takes only one step.

Now examine the statements. Do Gestalt psychologists maintain that an object's retinal image is exactly the same as its internal image? Statement I is unsupported by the passage. Therefore, you can eliminate Choices C and E.

Statement II is supported by the passage: lines 15–17 indicate that Gestalt psychologists believe objects are recognized as wholes. Therefore, you can eliminate Choice B.

Statement III is supported by the passage: lines 17–18 indicate that Gestalt psychologists believe matching is a parallel process that occurs in one step. Therefore, you can eliminate Choice A.

Only Choice D is left. It is the correct answer.

Note how necessary it is to point to specific lines in the passage when you answer questions on specific details.

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Table 7
When Asked to Make Inferences, Base Your Answers on What the Passage Implies, Not What It States Directly

In *Language in Thought and Action*, S. I. Hayakawa defines an inference as "a statement about the unknown made on the basis of the known."

Inference questions require you to use your own judgment. You must not take anything directly stated by the author as an inference. Instead, you must look for clues in the passage that you can use in deriving your own conclusion. You should choose as your answer a statement that is a logical development of the information the author has provided.

Try this relatively easy inference question, based on the previous passage about visual recognition.

One can infer from the passage that, in visual recognition, the process of matching

(A) requires neural inactivity
(B) cannot take place if an attribute of a familiar object has been altered in some way
(C) cannot occur when the observer looks at an object for the very first time
(D) has now been proven to necessitate both serial and parallel processes
(E) can only occur when the brain receives a retinal image as a single unit

Go through the answer choices, eliminating any choices that obviously contradict what the passage states or implies. Remember that in answering inference questions you must go beyond the obvious, beyond what the authors explicitly state, to look for logical implications of what they say.

Choice A is incorrect. Nothing in the passage suggests that the matching process requires or demands neural inactivity. Rather, the entire process of visual recognition, including the matching of images, requires neural activity.

Choice D is incorrect. It is clear from the passage that the matching process is not fully understood; nothing yet has been absolutely proven. The weight of the evidence seems to support the serial hypothesis, but controversy still surrounds the entire question.

Choice E is incorrect. It can be eliminated because it directly contradicts information in the passage stating that recognition most likely is a serial or step-by-step process rather than a parallel one receiving an image as a single unit.

Choices B and C are left. Which is a possible inference? Choice C seems a possible inference. Although the author never says so, it seems logical that you could not match an object if you had never seen it before. After
all, if you had never seen the object before, you would have no prior internal image of it and would have nothing with which to match it. What of Choice B? Nothing in the passage mentions altering any attributes or features of a familiar object. Therefore, on the basis of the passage you have no way to deduce whether matching would or would not be possible if such a change took place. There is not enough information in the passage to justify Choice B as an inference. The correct answer is Choice C.

Another, more difficult inference question is based on the previous excerpt reviewing Wilson’s *Sociobiology*. Review the passage briefly and see how you do with a question that very few of the examinees would have answered correctly.

According to Wilson, only when we are able to apply the same parameters and mathematical principles to weighing both troops of rhesus macaques and termite colonies will a unified science of sociobiology finally exist. While recognizing that many of his colleagues question such an outcome, Wilson, one of sociobiology’s leading proponents, finds himself simultaneously more and more struck by the functional similarities that characterize both insect and vertebrate societies and less concerned with the structural differences that divide them into such an apparently irremediable degree. Thus, he freely compares termites and macaques, pointing out numerous likenesses between them. Both societies are territorial: they occupy a particular home range, which they defend against intruders. Likewise, both are cooperative: members organize themselves into working groups that observe a clearly-defined division of labor. In addition, members of both groups can convey to each other a range of basic emotions and personal information: animosity, fright, hunger, rank within a particular caste, and ability to reproduce. Wilson readily concedes that, from a specialist’s perspective, such a likeness may at first appear superficial, even unscientifically glib. Nonetheless, in this eminent scholar’s judgment, “it is out of such deliberate oversimplification that the beginnings of a general theory are made.”

In analyzing insect and vertebrate societies, the passage suggests which of the following?

(A) A clearly-defined division of labor is a distinguishing feature of most insect and vertebrate societies.  

(B) The caste structures of insect and vertebrate societies share certain likenesses.  

(C) Most insect and vertebrate societies utilize cooperative groups to hold and defend their home range.  

(D) The system of communication employed by members of insect societies resembles the system that members of vertebrate societies follow.  

(E) Major structural differences exist between insect and vertebrate societies.

Why would most examinees answer this question incorrectly? The reason is simple: it is easy to confuse statements made about specific insect and vertebrate societies with statements made about insect and vertebrate societies in general. In this passage, in the fourth sentence, the author switches from talking about Wilson’s views of insect and vertebrate societies in general and refers to his comments on termites and macaques in specific.

Go through the answer choices one by one. Does the passage suggest that a clearly-defined division of labor distinguishes most insect and vertebrate societies? No. It merely states that, according to Wilson, a clearcut division of labor is a characteristic of termite and rhesus macaque societies. Choice A is incorrect: you cannot justify leaping from a single type of insect (termites) and a single type of vertebrate (rhesus macaques) to most insects and most vertebrates.

Does the passage suggest that the caste structure of insect societies shares certain likenesses with that of their counterparts in vertebrate societies? No. It merely states that, according to Wilson, termites and macaques both can communicate rank within a particular caste. Choice B is incorrect. You cannot assume that the caste structure of insect societies is similar to the caste structure of vertebrate societies just because termites and rhesus macaques both have some way to communicate caste status or rank.

Does the passage suggest that most insect and vertebrate societies form cooperative groups in order to hold and defend their home range or territory? No. It merely states that termites and macaques organize themselves into cooperative groups, and that both species occupy and defend territories. Choice C is incorrect: again, you cannot justify leaping from termites and rhesus macaques to most insects and most vertebrates.

Does the passage suggest that the system of communication employed by members of insect societies resembles that employed by members of vertebrate societies? No. It merely states that communication among termites and macaques serves similar ends: it says nothing about the specific systems of communication they use, nor about those systems of communication used by other insects and vertebrates. Choice D is incorrect.

The correct answer is Choice E. In the passage, the author states that Wilson has grown less impressed “with the structural differences that divide them (i.e., insect and vertebrate societies) to such an apparently irremediable degree.” This suggests that, even though Wilson may be unimpressed with them, these differences exist and are major.
When Asked to Apply Ideas from the Passage to a New Situation, Put Yourself in the Author's Place

GRE application questions require you to do three things:

1. **Reason**—If X is true, then Y must also be true.
2. **Perceive Feelings**—If the author feels this way about subject A, he probably feels a certain way about subject B.
3. **Sense a Larger Structure**—This passage is part of an argument for a proposal, or part of a description of a process, or part of a critique of a hypothesis.

Like inference questions, application questions require you to go beyond what the author explicitly states. Application questions, however, ask you to go well beyond a simple inference, using clues in the passage to interpret possible reasons for actions and possible outcomes of events. Your concern is to comprehend how the author's ideas might apply to other situations, or be affected by them. To do so, you have to put yourself in the author's place.

Imagine you are the author. What are you arguing for? Given what you have just stated in the passage, what would you want to say next? What might hurt your argument? What might make it stronger? What kind of audience would appreciate what you have to say? Whom are you trying to convince? If you involve yourself personally with the passage, you will be better able to grasp it in its entirety and see its significance.

Answer the following application question based on the previous passage discussing Wilson's *Sociobiology*.

**Question:** Which of the following statements would be most likely to begin the paragraph immediately following the passage?

(A) Wilson has raised a problem in ethical philosophy in order to characterize the essence of the discipline of sociobiology.

(B) It may not be too much to say that sociology and the other social sciences are the last branches of biology waiting to be integrated into neo-Darwinist evolutionary theory.

(C) Although behavioral biology is traditionally spoken of as if it were a unified subject, it is now emerging as two distinct disciplines centered on neurophysiology and sociobiology, respectively.

(D) The formulation of a theory of sociobiology constitutes, in Wilson's opinion, one of the great manageable problems of biology for the next twenty or thirty years.

(E) In the past, the development of sociobiology has been slowed by too close an identification with ethology and behavioral psychology.

As you know from answering the previous main idea and attitude questions, Wilson's point is that students of insect and vertebrate societies may be on the verge of devising a general theory of sociobiology. Like Wilson, the author of the passage appears optimistic about the likelihood of developing this unified science. At the same time, again like Wilson, he is cautious; he too does not wish to overstate the case.

Put yourself in the author's place. What would you be likely to say next? The author has just been describing Wilson's hopeful view of the prospects for putting together a general theory of sociobiology. What would be more natural than for him next to discuss Wilson's opinion of a time frame for formulating this general theory? Choice D, with its confident yet judicious view of the formulation of a theory of sociobiology as "one of the great manageable problems of biology for the next twenty or thirty years," seems a logical extension of what the passage has just been saying. While Choices A, B, C, and E all touch on sociobiology in some way, none of them follows as naturally from the passage's immediate argument.

When Asked to Give the Meaning of an Unfamiliar Word, Look for Nearby Context Clues

When a question in the reading comprehension part of an examination asks for the meaning of a word, that meaning can usually be deduced from the word's context. The purpose of this kind of question is to determine how well you can extract meaning from the text, not how extensive your general vocabulary is.
Sometimes the unknown word is a common word used in one of its special or technical meanings. For example:

He threw the pot in an hour. The wheel turned busily and the shape grew quickly as his fingers worked the wet, spinning clay. (Throw here means to shape on a potter's wheel.)

At other times, the unknown word may bear a deceptive resemblance to a known word.

He fell senseless to the ground. (He was unconscious. He did not fall foolishly or nonsensically to the ground.)

Just because you know one meaning of a word, do not assume that you know its meaning as it is used in a particular passage. You must look within the passage for clues. Often authors will use an unfamiliar word and then immediately define it within the same sentence. The two words or groups of words are juxtaposed—set beside one another—to make their relationship clear. Commas, hyphens, and parentheses may signal this relationship.

1. The rebec, a medieval stringed instrument played with a bow, has only three strings.

2. Paleontologists—students of fossil remains—explore the earth's history.

3. Most mammals are quadrupeds (four-footed animals).

Often an unfamiliar word in one clause of a sentence will be defined or clarified in the sentence's other clause.

1. The early morning dew had frozen, and everything was covered with a thin coat of rime.

2. Cowards, we use euphemisms when we cannot bear the truth, calling our dead "the dear departed," as if they have just left the room.

Refer once more to the passage on visual recognition to answer the following question.

What is involved in the process of visual recognition? First, like computer data, visual memories of an object must be stored; then, a line mechanism must exist for them to be retrieved.

But how does this process work? The eye triggers the nerves into action. This neural activity constructs a picture in the brain's memory system, an internal image of the object observed. When the eye once again confronts that object, the object is compared with its internal image; if the two images match, recognition takes place.

Among psychologists, the question as to whether visual recognition is a parallel, single-step operation or a sequential, step-by-step one is the subject of much debate. Gestalt psychologists contend that objects are perceived as wholes in a parallel operation; the internal image is matched with the retinal impression in one single step. Psychologists of other schools, however, suggest the opposite, maintaining that the individual features of an object are matched serially with the features of its internal image. Some experiments have demonstrated that the more well-known an object is, the more holistic its internal image becomes, and the more parallel the process of recognition tends to be. Nonetheless, the bulk of the evidence appears to uphold the serial hypothesis, at least for simple objects that are relatively unfamiliar to the viewer.

Which of the following phrases could best replace "the more holistic its internal image becomes" (lines 24–25) without significantly changing the sentence's meaning?

(A) the more its internal image increases in detail
(B) the more it integrates its internal image grows
(C) the more its internal image decreases in size
(D) the more it reflects its internal image
(E) the more indistinct its internal image appears

What words or phrases in the vicinity of "the more holistic its internal image becomes" give you a clue to the phrase's meaning? The phrase immediately following, "becomes more parallel." If the recognition process becomes more parallel as an object becomes more familiar, then matching takes place in one step in which all the object's features are simultaneously transformed into a single internal representation. Thus, to say that an object's internal image becomes more holistic is to say that it becomes more integrated or whole. The correct answer is Choice B.

Familiarize Yourself with the Technical Terms Used to Describe a Passage's Organization

Another aspect of understanding the author's point is understanding how the author organizes what he has to say. You have to understand how the author makes his point, figure out whether he begins with his thesis or main idea or works up to it gradually. Often this means observing how the opening sentence or paragraph relates to the passage as a whole.
Here is a technique question based on the last two sentences of the passage about sociobiology. These lines are repeated here so that you can easily refer to them.

Wilson readily concedes that, from a specialist's perspective, such a likeness may at first appear superficial, even unscientifically glib. Nonetheless, in this eminent scholar's judgment, "it is out of such deliberate oversimplification that the beginnings of a general theory are made."

Which of the following statements best describes the organization of the author's discussion of the importance of the termite/macaque comparison in the development of a unified science of sociobiology (lines 24–31)?

(A) He provides an example of a comparison and then rejects its implications.
(B) He concedes that current data are insufficient and modifies his initial assertion of their importance.
(C) He acknowledges hypothetical objections to the comparison, but concludes by reaffirming its significance.
(D) He cites critical appraisals of the comparison, but refrains from making an appraisal of his own.
(E) He notes an ambiguity in the comparison, but finally concedes its validity.

Consider the first clause of each answer choice.

Practice Exercises

Reading Comprehension Exercise A

Directions: Each of the following reading comprehension questions are based on the content of the following passage. Read the passage and then determine the best answer choice for each question. Base your choice on what this passage states directly or implies, not on any information you may have gained elsewhere.

One phase of the business cycle is the expansion phase. This phase is a twofold one, including recovery and prosperity. During the recovery period there is ever-growing expansion of existing facilities, and new facilities for production are created. More businesses are created and older ones expanded. Improvements of various kinds are made. There is an ever-increasing optimism about the future of economic growth. Much capital is invested in machinery or "heavy" industry. More labor is employed. More raw materials are required. As one part of the economy develops, other parts are affected. For example, a great expansion in automobiles results in an expansion of the steel, glass, and rubber industries. Roads are required; thus the cement and machinery industries are stimulated. Demand for labor and materials results in greater prosperity for workers and suppliers of raw materials, including farmers.

(20) This increases purchasing power and the volume of goods bought and sold. Thus prosperity is diffused among the various segments of the population. This prosperity period may continue to rise and rise without an apparent end. However, a time comes when this phase reaches a peak and stops spiralling upwards. This is the end of the expansion phase.

1. Which of the following statements is the best example of the optimism mentioned in line 8 of the passage as being part of the expansion phase?
(A) Public funds are designated for the construction of new highways designed to stimulate tourism.
(B) Industrial firms allocate monies for the purchase of machine tools.
(C) The prices of agricultural commodities are increased at the producer level.
(D) Full employment is achieved at all levels of the economy.
(E) As technology advances, innovative businesses replace antiquated firms.
2. It can be inferred from the passage that the author believes that
   (A) when consumers lose their confidence in the market, a recession follows
   (B) cyclical ends to business expansion are normal
   (C) luxury goods such as jewelry are unaffected by industrial expansion
   (D) with sound economic policies, prosperity can become a fixed pattern
   (E) the creation of new products is essential for prosperity

3. Which of the following statements would be most likely to begin the paragraph immediately following the passage?
   (A) Union demands may also have an effect on business cycles.
   (B) Some industries are, by their very nature, cyclical, having regular phases of expansion and recession.
   (C) Inflation is a factor that must be taken into consideration in any discussion of the expansion phase.
   (D) The farmer's role during the expansion phase is of vital importance.
   (E) The other phase of the business cycle is called the recession phase.

The history of mammals dates back at least to Triassic time. Development was retarded, however, until the sudden acceleration of evolutionary change that occurred in the oldest Paleocene. This led in Eocene time to increase in average size, larger mental capacity, and special adaptations for different modes of life. In the Oligocene Epoch, there was further improvement, with appearance of some new lines and extinction of others.

(Mioocene and Pliocene time was marked by culmination of several groups and continued approach toward modern characters. The peak of the career of mammals in variety and average large size was attained in the Miocene.

The adaptation of mammals to almost all possible modes of life parallels that of the reptiles in Mesozoic time, and except for greater intelligence, the mammals do not seem to have done much better than corresponding reptilian forms. The bat is doubtless a better flying animal than the pterosaur, but the dolphin and whale are hardly more fishlike than the ichthyosaur. Many swift-running mammals of the plains, like the horse and the antelope, must excel any of the dinosaurs. The tyrannosaur was a more ponderous and powerful carnivore than any flesh-eating mammal, but the lion or tiger is probably a more efficient and dangerous beast of prey because of a superior brain. The significant point to observe is that different branches of the

mammals gradually fitted themselves for all sorts of life, grazing on the plains and able to run swiftly (horse, deer, bison), living in rivers and swamps (hippopotamus, beaver), dwelling in trees (sloth, monkey), digging underground (mole, rodent), feeding on flesh in the forest (tiger) and on the plain (wolf), swimming in the sea (dolphin, whale, seal), and flying in the air (bat). Man is able by mechanical means to conquer the physical world and to adapt himself to almost any set of conditions.

This adaptation produces gradual changes of form and structure. It is biologically characteristic of the youthful, plastic stage of a group. Early in its career, an animal assemblage seems to possess capacity for change, which, as the unit becomes old and fixed, disappears. The generalized types of organisms retain longest the ability to make adjustments when required, and it is from them that new, fecund stocks take origin—certainly not from any specialized end products. So, in the mammals, we witness the birth, plastic spread in many directions, increasing specialization, and in some branches, the extinction, which we have learned from observation of the geologic record of life is a characteristic of the evolution of life.

4. Which of the following would be the most appropriate title for the passage?
   (A) From Dinosaur to Man
   (B) Adaptation and Extinction
   (C) The Superiority of Mammals
   (D) The Geologic Life Span
   (E) Man, Conqueror of the Physical World

5. It can be inferred from the passage that the chronological order of the geologic periods is
   (A) Paleocene, Miocene, Triassic, Mesozoic
   (B) Paleocene, Triassic, Mesozoic, Miocene
   (C) Miocene, Paleocene, Triassic, Mesozoic
   (D) Mesozoic, Oligocene, Paleocene, Miocene
   (E) Mesozoic, Paleocene, Eocene, Miocene

6. It can be inferred from the passage that the pterosaur
   (A) resembled the bat
   (B) was a Mesozoic mammal
   (C) was a flying reptile
   (D) lived in the sea
   (E) evolved during the Miocene period

7. According to the passage, the greatest number of forms of mammalian life is found in the
   (A) Triassic period
   (B) Eocene period
   (C) Oligocene period
   (D) Pliocene period
   (E) Miocene period
8. Which of the following statements, if true, would weaken the statement made by the author in lines 15-19?  
(A) Tyrannosaur has been found to have a larger brain than was previously thought.  
(B) Mammals will become extinct within the next thousand years.  
(C) Forms of flying ichthyosaurs have been more recently discovered.  
(D) The tiger has now been proved to be more powerful than the carnivorous reptiles.  
(E) Computers have been developed that can double human mental capacity.

9. It can be inferred from the passage that the evidence the author uses in discussing the life of past time periods  
(A) was developed by Charles Darwin  
(B) was uncovered by the author  
(C) has been negated by more recent evidence  
(D) was never definitely established  
(E) is based on fossil remains

10. With which of the following proverbial expressions about human existence would the author be most likely to agree?  
(A) It’s a cruel world.  
(B) All the world's a stage.  
(C) The more things change, the more things remain the same.  
(D) Footprints in the sands of time.  
(E) A short life, but a merry one.

For me, scientific knowledge is divided into mathematical sciences, natural sciences or sciences dealing with the natural world (physical and biological sciences), and sciences dealing with mankind (psychology, sociology, all the sciences of cultural achievements, every kind of historical knowledge). Apart from these sciences is philosophy, about which we will talk shortly. In the first place, all this is pure or theoretical knowledge, sought only for the purpose of understanding, in order to fulfill the need to understand that is intrinsic and constitutive to man. What distinguishes man from animal is that he knows and needs to know. If man did not know that the world existed, and that the world was of a certain kind, that he was in the world and that he himself was of a certain kind, he wouldn’t be Man. The technical aspects of applications of knowledge are equally necessary for man and are of the greatest importance, because they also contribute to defining him as man and permit him to pursue a life increasingly more truly human.

But even while enjoying the results of technical progress, he must defend the primacy and autonomy of pure knowledge. Knowledge sought directly for its practical applications will have immediate and foreseeable success, but not the kind of important result whose revolutionary scope is in large part unforeseen, except by the imagination of the Utopians. Let me recall a well-known example. If the Greek mathematicians had not applied themselves to the investigation of conic sections, zealously and without the least suspicion that it might someday be useful, it would not have been possible centuries later to navigate far from shore. The first men to study the nature of electricity could not imagine that their experiments, carried on because of mere intellectual curiosity, would eventually lead to modern electrical technology, without which we can scarcely conceive of contemporary life. Pure knowledge is valuable for its own sake, because the human spirit cannot resign itself to ignorance. But, in addition, it is the foundation for practical results that would not have been reached if this knowledge had not been sought disinterestedly.

11. The author points out that the Greeks who studied conic sections  
(A) invented modern mathematical applications  
(B) were interested in navigation  
(C) were unaware of the value of their studies  
(D) worked with electricity  
(E) were forced to resign themselves to failure

12. The title below that best expresses the ideas of this passage is  
(A) Technical Progress  
(B) A Little Learning Is a Dangerous Thing  
(C) Man’s Distinguishing Characteristics  
(D) Learning for Its Own Sake  
(E) The Difference Between Science and Philosophy

13. It can be inferred from the passage that to the author man’s need to know is chiefly important in that it  
(A) allows the human race to progress technically  
(B) encompasses both the physical and social sciences  
(C) demonstrates human vulnerability  
(D) defines man’s essential humanity  
(E) has increased as our knowledge of the world has grown

When you first saw a piece of African art, it impressed you as a unit; you did not see it as a collection of shapes or forms. This, of course, means that the shapes and volumes within the sculpture itself were coordinated so successfully that the viewer was affected emotionally. It is entirely valid to ask, from a purely artistic point of view, this unity was achieved. And we must also inquire whether there is a recurrent pattern or rules or a plastic language and vocabulary which is responsible for the powerful communication of emotion which the best African sculpture
17. The information in the passage suggests that an African carver might best be compared to a
(A) chef following a recipe
(B) fluent speaker of English who is just beginning to study French
(C) batter who hits a home run in his or her first baseball game
(D) concert pianist performing a well-rehearsed concerto
(E) writer who is grammatically expert but stylistically uncreative

18. Which of the following does the passage imply about art?
(A) Content is more important than form.
(B) There is no room for untrained artists.
(C) Form is more important than content.
(D) Western artists are too concerned with technique.
(E) Great art must be consistent.

19. The author’s presentation of the material includes all of the following EXCEPT
(A) comparison
(B) cause and effect
(C) rhetorical questioning
(D) direct quotation
(E) concrete example

20. Which of the following titles best expresses the content of the passage?
(A) The Apprenticeship of the African Sculptor
(B) The History of African Sculpture
(C) How African Art Achieves Unity
(D) Analyzing African Art
(E) The Unconscious Rules of African Art

Reading Comprehension Exercise B

Directions: Each of the following reading comprehension questions is based on the content of the following passage. Read the passage and then determine the best answer choice for each question. Base your choice on what this passage states directly or implies, not on any information you may have gained elsewhere.

Both plants and animals of many sorts show remarkable changes in form, structure, growth habits, and even mode of reproduction in becoming adapted to different climatic environment. Types of food supply, or mode of living. This divergence in response to evolution is commonly expressed by altering the form and function of some part or parts of the organism, the original identity of which is clearly discernible. For example, the creeping foot of the snail is seen in related marine pteropods to be modified into a flapping organ useful for swimming, and is
changed into prehensile arms that bear suckorial disks in the squids and other cephalopods. The limbs of various mammals are modified according to several different modes of life—for swift running (cursorial) as in the horse and antelope, for swinging in trees (arboreal) as in the monkeys, for digging (tunnorial) as in the moles and gophers, for flying (volant) as in the bats, for swimming (aquatic) as in the seals, whales, and dolphins, and for other adaptations. The structures or organs that show main change in connection with this adaptive divergence are commonly identified readily as homologous, in spite of great alterations. Thus, the finger and wristbones of a bat and whale, for instance, have virtually nothing in common except that they are definitely equivalent elements of the mammalian limb.

1. Which of the following is the most appropriate title for the passage, based on its content?
   (A) Adaptive Divergence
   (B) Evolution
   (C) Unusual Structures
   (D) Changes in Organs
   (E) Our Changing Bodies

2. The author provides information that would answer which of the following questions?
   I. What factors cause change in organisms?
   II. What is the theory of evolution?
   III. How are horses’ legs related to seals’ flippers?
   (A) I only
   (B) II only
   (C) I and II only
   (D) I and III only
   (E) I, II, and III

3. Which of the following words could best be substituted for “homologous” (line 25) without substantially changing the author’s meaning?
   (A) altered
   (B) mammalian
   (C) corresponding
   (D) divergent
   (E) tactile

4. The author’s style can best be described as
   (A) humorous
   (B) objective
   (C) patronizing
   (D) esoteric
   (E) archaic

Plato—who may have understood better what forms the mind of man than do some of our contemporaries who want their children exposed only to “real” people and everyday events—knew what intellectual experiences make for true humanity. He suggested that the future citizens of his ideal republic begin their literacy education with the telling of myths, rather than with mere facts or so-called rational teachings. Even Aristotle, master of pure reason, said: “The friend of wisdom is also a friend of myth.”

Modern thinkers who have studied myths and fairy tales from a philosophical or psychological viewpoint arrive at the same conclusion, regardless of their original persuasion. Mircea Eliade, for one, describes these stories as “models for human behavior [that], by that very fact, give meaning and value to life.” Drawing on anthropological parallels, he and others suggest that myths and fairy tales were derived from, or give symbolic expression to, initiation rites or rites of passage—such as metaphoric death of an old, inadequate self in order to be reborn on a higher plane of existence. He feels that this is why these tales meet a strongly felt need and are carriers of such deep meaning.

Other investigators with a depth-psychological orientation emphasize the similarities between the fantastic events in myths and fairy tales and those in adult dreams and daydreams—the fulfillment of wishes, the winning out over all competitors, the destruction of enemies—and conclude that one attraction of this literature is its expression of that which is normally prevented from coming to awareness.

There are, of course, very significant differences between fairy tales and dreams. For example, in dreams more often than not the wish fulfillment is disguised, while in fairy tales much of it is openly expressed. To a considerable degree, dreams are the result of inner pressures which have found no relief, of problems which beset a person to which he knows no solution and to which the dream finds none. The fairy tale does the opposite: it projects the relief of all pressures and not only offers ways to solve problems but promises that a “happy” solution will be found.

We cannot control what goes on in our dreams. Although our inner censorship influences what we may dream, such control occurs on an unconscious level. The fairy tale, on the other hand, is very much the result of common conscious and unconscious content having been shaped by the conscious mind, not of one particular person, but the consensus of many in regard to what they view as universal human problems, and what they accept as desirable solutions. If all these elements were not present in a fairy tale, it would not be retold by generation after generation. Only if a fairy tale met the conscious and unconscious requirements of many people was it repeatedly retold, and listened to with great interest. No dream of a person could arouse such persistent interest unless it was worked into a myth, as was the story of the pharaoh’s dream as interpreted by Joseph in the Bible.
5. It can be inferred from the passage that the author’s interest in fairy tales centers chiefly on their
   (A) literary qualities
   (B) historical background
   (C) factual accuracy
   (D) psychological relevance
   (E) ethical weakness

6. According to the passage, fairy tales differ from dreams in which of the following characteristics?
   I. The communal nature of their creation
   II. Their convention of a happy ending
   III. Their enduring general appeal
   (A) I only
   (B) II only
   (C) I and II only
   (D) II and III only
   (E) I, II, and III

7. It can be inferred from the passage that Mircea Eliade is most likely
   (A) a writer of children’s literature
   (B) a student of physical anthropology
   (C) a twentieth-century philosopher
   (D) an advocate of practical education
   (E) a contemporary of Plato

8. Which of the following best describes the author’s attitude toward fairy tales?
   (A) Reluctant fascination
   (B) Wary skepticism
   (C) Scornful disapprobation
   (D) Indulgent tolerance
   (E) Open approval

9. The author cites Plato and Aristotle primarily in order to
   (A) define the nature of myth
   (B) contrast their opposing points of view
   (C) support the point that myths are valuable
   (D) prove that myths originated in ancient times
   (E) give an example of depth psychology

10. The author mentions all of the following as reasons for reading fairy tales EXCEPT
    (A) emotional catharsis
    (B) behavioral paradigm
    (C) uniqueness of experience
    (D) sublimation of aggression
    (E) symbolic satisfaction

Nothing more unlucky, I sometimes think, could have befallen Chaucer than that he should have been christened "the father of English poetry." For "father" in such a context conveys to most of us, I fear, a faint suggestion of vicarious glory—the derivative celebrity of parents, otherwise obscure, who shine, moon-like, in the reflected luster of their sons. What else than progenitors were the fathers of Plato, or Caesar, or Shakespeare, or Napoleon? And so to call Chaucer the father of English poetry is often tantamount to dismissing him, not unkindly, as the estimable but archaic ancestor of a brilliant line. But Chaucer—if I may risk the paradox—is himself the very thing he began. He is English poetry incarnate, and only two, perhaps, of all his sons outshine his fame. It is with Chaucer himself, then, and not save incidentally with his ancestral eminence that we shall be concerned.

But five hundred and thirty-three years have passed since Chaucer died. And to overlap five centuries is to find ourselves in another world, a world at once familiar and strange. Its determining concepts are implicit in all that Chaucer, who was of it, thought and wrote. And, woven as they are into his web, they at once lend to it and gain from it fresh significance. To us they are obsolete; in the Canterbury Tales, and the Troilus, and the House of Fame they are current and alive.

And it is in their habit as they lived, and not as mere curious lore, that I mean to deal with them. Let me begin with the very tongue which Chaucer spoke—a speech at once our own and not our own. "You know," he wrote—and for the moment I rudely modernize lines as liquid in their rhythm as smooth-sliding brandy—"you know that in a thousand years there is change in the forms of speech, and words which were then judged apt and choice now seem to us wondrous quaint and strange, and yet they spoke them so, and managed as well in love with them as men now do." And to us, after only half a thousand years, those very lines are an embodiment of what they state:

Ye knowe eek, that in forme of speche is chaungue
With inne a thousand yeere, and words tho That hadden pryse, now wonder nyce of straungue

Us thinketh hem; and yet they spake hem so,
And spedde as wel in love as men now do.

But it is not only Chaucer’s speech which has undergone transformation. The change in his world is greater still. And the situation which confronts us is this. In Chaucer’s greatest work we have to do with timeless creations upon a time-determined stage. And it is one of the inescapable ironies of time that creations of the imagination which are at once of no time and for all time must nevertheless think and speak and act in terms and in ways which are as transient as they themselves are permanent. Their world—the stage on which they play their parts, and in terms of which they think—has become within a few lifetimes strange and obsolete, and must be deciphered before it can be read. For the immortal puts on mortality when great conceptions are
11. The author of the passage does all of the following in the discussion of Chaucer and his verse except
(A) pose a rhetorical question
(B) cite specific examples
(C) offer a personal opinion
(D) propose a solution
(E) use figurative language

12. The author’s attitude toward “mere curious lore” (line 31) can best be described as
(A) skeptical but resigned
(B) admiring and intrigued
(C) dismissive
(D) incredulous
(E) completely detached

13. The author uses the Middle English quotation (lines 45–51) to
(A) refute the contention that Chaucer wrote awkwardly
(B) demonstrate the idiosyncratic spelling common in Chaucer’s time
(C) convey the power of reading poetry in its original form
(D) support his hypothesis about the aptness of Chaucer’s choice of words
(E) illustrate the degree of linguistic change that has occurred

14. How would the author most likely respond to another critic’s use of the term “Father of English Poetry” to describe Chaucer?
(A) The term “Father of English Poetry” is an accurate assessment of an exceptionally distinguished literary figure.
(B) The term implies Chaucer is important not as a great poet in his own right but as the somewhat outdated forerunner of the great poets of today.
(C) The epithet “Father of English Poetry” has been applied to so many poets that it has lost whatever meaning it originally possessed.
(D) “Father of English Poetry” is a sexist term that should be replaced by more inclusive language.
(E) It is appropriate to acknowledge the impact Chaucer had on posterity by revering him as the glorious ancestor of all English poets.

15. Of the 197 million square miles making up the surface of the globe, 71 percent is covered by the interconnected bodies of marine water; the Pacific Ocean alone covers half the Earth and averages nearly 14,000 feet in depth. The continents—Eurasia, Africa, North America, South America, Australia, and Antarctica—are the portions of the continental masses rising above sea level. The submerged borders of the continental masses are the continental shelves, beyond which lie the deep-sea basins.

The oceans attain their greatest depths not in their central parts, but in certain elongated furrows, or long narrow troughs, called deeps. These profound troughs have a peripheral arrangement, notably around the borders of the Pacific and Indian oceans. The position of the deeps near the continental masses suggests that the deeps, like the highest mountains, are of recent origin, since otherwise they would have been filled with waste from the lands. This suggestion is strengthened by the fact that the deeps are frequently the sites of world-shaking earthquakes. For example, the “tidal wave” that in April, 1946, caused widespread destruction along Pacific coasts resulted from a strong earthquake on the floor of the Aleutian Deep.

The topography of the ocean floors is none too well known, since in great areas the available soundings are hundreds or even thousands of miles apart. However, the floor of the Atlantic is becoming fairly well known as a result of special surveys since 1920. A broad, well-defined ridge—the Mid-Atlantic ridge—runs north and south between Africa and the two Americas, and numerous other major irregularities diversify the Atlantic floor. Closely spaced soundings show that many parts of the oceanic floors are as rugged as mountainous regions of the continents.

Use of the recently perfected method of echo sounding is rapidly enlarging our knowledge of submarine topography. During World War II great strides were made in mapping submarine surfaces, particularly in many parts of the vast Pacific basin.

The continents stand on the average 2870 feet—slightly more than half a mile—above sea level. North America averages 2300 feet; Europe averages only 1150 feet; and Asia, the highest of the larger continental subdivisions, averages 3200 feet. The highest point on the globe, Mount Everest in the Himalayas, is 29,000 feet above the sea; and as the greatest known depth in the sea is over 35,000 feet, the maximum relief (that is, the difference in altitude between the lowest and highest points) exceeds 64,000 feet, or exceeds 12 miles. The continental masses and the deep-sea basins are relief features of the first order; the deeps, ridges, and volcanic cones that diversify the sea floor, as well as the plains, plateaus, and mountains of the continents, are relief features of
the second order. The lands are unendingly sub-
ject to a complex of activities summarized in the
term erosion, which first sculptures them in great
detail and then tends to reduce them ultimately to
sea level. The modeling of the landscape by
weather, running water, and other agents is appar-
et to the keenly observant eye and causes think-
ing people to speculate on what must be the final
result of the ceaseless wearing down of the lands.
Long before there was a science of geology,
Shakespeare wrote "the revolution of the times
makes mountains level."

15. Which of the following would be the most ap-
propriate title for the passage?
(A) Features of the Earth's Surface
(B) Marine Topography
(C) The Causes of Earthquakes
(D) Primary Geologic Considerations
(E) How to Prevent Erosion

16. It can be inferred from the passage that the largest
ocean is the
(A) Atlantic
(B) Pacific
(C) Indian
(D) Antarctic
(E) Arctic

17. The "revolution of the times" as used in the final
sentence means
(A) the passage of years
(B) the current rebellion
(C) the science of geology
(D) the action of the ocean floor
(E) the overthrow of natural forces

18. According to the passage, the peripheral furrows or
deeps are found
(A) only in the Pacific and Indian oceans
(B) near earthquakes
(C) near the shore
(D) in the center of the ocean
(E) to be 14,000 feet in depth in the Pacific

19. The passage contains information that would
answer which of the following questions?
I. What is the highest point on North America?
II. Which continental subdivision is, on the
average, 1150 feet above sea level?
III. How deep is the deepest part of the ocean?
(A) I only
(B) II only
(C) III only
(D) I and II only
(E) II and III only

20. From this passage, it can be inferred that
earthquakes

(A) occur only in the peripheral furrows
(B) occur more frequently in newly formed land or
sea formations
(C) are a prime cause of soil erosion
(D) will ultimately "make mountains level"
(E) are caused by the weight of the water

Reading Comprehension Exercise C

Directions: Each of the following reading compre-
hension questions are based on the content of the following
passage. Read the passage and then determine the best
answer choice for each question. Base your choice on
what this passage states directly or implies, not on any
information you may have gained elsewhere.

An essay which appeals chiefly to the intellect is
Francis Bacon's "Of Studies." His careful tripartite
division of studies expressed succinctly in aphor-
istic prose demands the complete attention of the
mind of the reader. He considers studies as they
should be: for pleasure, for self-improvement, for
business. He considers the evils of excess study:
laziness, affectation, and preciosity. Bacon divides
books into three categories: those to be read in
part, those to be read cursorily, and those to be
read with care. Studies should include reading,
which gives depth, speaking, which adds readiness
of thought; and writing, which trains precision.
Somewhat mistakenly, the author ascribes
certain virtues to individual fields of study: wis-
dom to history, wit to poetry, subtlety to math-
ematics, and depth to natural philosophy. Bacon's
four-hundred-word essay, studded with Latin
phrases and highly compressed in thought, has
intellectual appeal indeed.

1. Which of the following is the most appropriate title
for the passage, based on its content?
(A) Francis Bacon and the Appeal of the Essay
(B) "Of Studies": A Tripartite Division
(C) An Intellectual Exercise: Francis Bacon's "Of
Studies"
(D) The Categorization of Books According to
Bacon
(E) A Method for Reading Books

2. Which of the following words could best be substi-
tuted for "aphoristic" (lines 3–4) without substan-
tially changing the author's meaning?
(A) abstruse
(B) pithy
(C) tripartite
(D) proverbial
(E) realistic

3. The passage suggests that the author would be
most likely to agree with which of the following
statements?
(A) "Of Studies" belongs in the category of works
that demand to be read with care.
(B) Scholars' personalities are shaped by the academic discipline in which they are engaged.
(C) It is an affectation to use foreign words in one's writing.
(D) An author can be more persuasive in a long work than in a shorter one.
(E) Studies should be undertaken without thought of personal gain.

Rocks which have solidified directly from molten materials are called igneous rocks. Igneous rocks are commonly referred to as primary rocks because they are the original source of material found in sedimentaries and metamorphics. Igneous rocks compose the greater part of the earth's crust, but they are generally covered at the surface by a relatively thin layer of sedimentary or metamorphic rocks. Igneous rocks are distinguished by the following characteristics: (1) they contain no fossils; (2) they have no regular arrangement of layers; and (3) they are nearly always made up of crystals. Sedimentary rocks are composed largely of minute fragments derived from the disintegration of existing rocks and in some instances from the remains of animals. As sediments are transported, individual fragments are assorted according to size. Distinct layers of such sediments as gravels, sand, and clay build up, as they are deposited by water and occasionally wind. These sediments vary in size with the material and the power of the eroding agent. Sedimentary materials are laid down in layers called strata. When sediments harden into sedimentary rocks, the names applied to them change to indicate the change in physical state. Thus, small stones and gravel cemented together are known as conglomerates; cemented sand becomes sandstone; and hardened clay becomes shale. In addition to these, other sedimentary rocks such as limestone frequently result from the deposition of dissolved material. The ingredient parts are normally precipitated by organic substances, such as shells of clams or hard skeletons of other marine life. Both igneous and sedimentary rocks may be changed by pressure, heat, solution, or cementing action. When individual grains from existing rocks tend to deform and interlock, they are called metamorphic rocks. For example, granite, an igneous rock, may be metamorphosed into a gneiss or a schist. Limestone, a sedimentary rock, when subjected to heat and pressure may become marble, a metamorphic rock. Shale under pressure becomes slate.

4. The primary purpose of the passage is to
   (A) differentiate between and characterize igneous and sedimentary rocks
   (B) explain the factors that may cause rocks to change in form

5. All of the following are sedimentary rocks EXCEPT
   (A) shale
   (B) gravel
   (C) sand
   (D) limestone
   (E) schist

6. The passage would be most likely to appear in a
   (A) technical article for geologists
   (B) teaching manual accompanying an earth science text
   (C) pamphlet promoting conservation of natural resources
   (D) newspaper feature explaining how oil is found
   (E) nonfiction book explaining where to find the results of sedimentation

7. The relationship between igneous and sedimentary rocks may best be compared to the relationship between
   (A) leaves and compost
   (B) water and land
   (C) DNA and heredity
   (D) nucleus and cell wall
   (E) sand and clay

8. The passage contains information that would answer which of the following questions?
   I. Which elements form igneous rocks?
   II. What produces sufficient pressure to alter a rock?
   III. Why is marble called a metamorphic rock?
   (A) I only
   (B) III only
   (C) I and II only
   (D) II and III only
   (E) I, II, and III

9. Which of the following methods is NOT used by the author?
   (A) inclusion of concrete examples
   (B) classification and discussion
   (C) comparison and contrast
   (D) observation and hypothesis
   (E) cause and effect

10. The author's tone in the passage can best be described as
    (A) meditative
    (B) objective
    (C) ironic
    (D) concerned
    (E) bombastic
Although vocal cords are lacking in cetaceans, phonation is undoubtedly centered in the larynx. The toothed whales or odontocetes (sperm whale and porpoises) are much more vociferous than the whalebone whales, or mysticetes. In this country observers have recorded only occasional sounds from two species of mysticetes (the humpback and right whale). A Russian cetologist reports hearing sounds from at least five species of whalebone whales but gives no details of the circumstances or descriptions of the sounds themselves. Although comparison of the sound-producing apparatus in the two whale groups cannot yet be made, it is interesting to note that the auditory centers of the brain are much more highly developed in the odontocetes than in the mysticetes, in fact, to a degree unsurpassed by any other mammalian group.

11. The passage contains information that would answer which of the following questions?

I. What are odontocetes and mysticetes?
II. In which part of the body do whales produce sounds?
III. In which animals is the auditory center of the brain most developed?

(A) I only
(B) II only
(C) I and II only
(D) II and III only
(E) I, II, and III

12. The author’s attitude toward the observations reported by the Russian cetologist mentioned in lines 8–11 is best described as one of

(A) admiration
(B) indignation
(C) surprise
(D) skepticism
(E) pessimism

13. It can be inferred from the passage that

(A) animals with more highly developed auditory apparatuses tend to produce more sounds
(B) animals without vocal cords tend to produce as much sound as those with vocal cords
(C) highly intelligent animals tend to produce more sound than less intelligent species
(D) the absence of vocal cords has hindered the adaptation of cetaceans
(E) sound is an important means of communication among whales

*Like her white friends Eleanor Roosevelt and Aubrey Williams, Mary Bethune believed in the fundamental commitment of the New Deal to assist the black American’s struggle and in the need for blacks to assume responsibilities to help win that struggle. Unlike those of her white liberal associates, however, Bethune’s ideas had evolved out of a long experience as a “race leader.” Founder of a small black college in Florida, she had become widely known by 1935 as an organizer of black women’s groups and as a civil and political rights activist. Deeply religious, certain of her own capabilities, she held a relatively uncluttered view of what she felt were the New Deal’s and her own people’s obligations to the cause of racial justice. Unafraid to speak her mind to powerful whites, including the President, or to differing black factions, she combined faith in the ultimate willingness of whites to discard their prejudice and bigotry with a strong sense of racial pride and commitment to Negro self-help.

More than her liberal white friends, Bethune argued for a strong and direct black voice in initiating and shaping government policy. She pursued this in her conversations with President Roosevelt, in numerous memoranda to Aubrey Williams, and in her administrative work as head of the National Youth Administration’s Office of Negro Affairs. With the assistance of Williams, she was successful in having blacks selected to NYA posts at the national, state, and local levels. But she also wanted a black presence throughout the federal government. At the beginning of the war she joined other black leaders in demanding appointments to the Selective Service Board and to the Department of the Army; and she was instrumental in 1941 in securing Earl Dickerson’s membership on the Fair Employment Practices Committee. By 1944, she was still making appeals for black representation in “all public programs, federal, state, and local,” and “in policymaking posts as well as rank and file jobs.”

Though recognizing the weakness in the Roosevelt administration’s response to Negro needs, Mary Bethune remained in essence a black partisan champion of the New Deal during the 1930s and 1940s. Her strong advocacy of administration policies and programs was predicated on a number of factors: her assessment of the low status of black Americans during the Depression; her faith in the willingness of some liberal whites to work for the inclusion of blacks in the government’s reform and recovery measures; her conviction that only massive federal aid could elevate the Negro economically; and her belief that the thirties and forties were producing a more self-aware and self-assured black population. Like a number of her white friends in government, Bethune assumed that the preservation of democracy and black people’s “full integration into the benefits and the responsibilities” of American life were inextricably tied together. She was convinced that, with the help of a friendly government, a militant, aggressive “New Negro” would emerge out of the devastation of depression and war, a “New Negro” who would “save America from itself,” who would lead America toward the full realization of its democratic ideas.

*Note that this passage is representative of the time it discusses, and therefore uses the terminology commonly accepted in that period.
14. The author's main purpose in this passage is to
   (A) criticize Mary Bethune for adhering too closely to New Deal policies
   (B) argue that Mary Bethune was too optimistic in her assessment of race relations
   (C) demonstrate Mary Bethune's influence on black progress during the Roosevelt years
   (D) point out the weaknesses of the white liberal approach to black needs
   (E) summarize the attainments of blacks under the auspices of Roosevelt's New Deal

15. It can be inferred from the passage that Aubrey Williams was which of the following?
    I. A man with influence in the National Youth Administration
       II. A white liberal
       III. A man of strong religious convictions
       (A) I only
       (B) II only
       (C) I and II only
       (D) II and III only
       (E) I, II, and III

16. The author mentions Earl Dickerson (line 37) primarily in order to
    (A) cite an instance of Bethune's political impact
    (B) contrast his career with that of Bethune
    (C) introduce the subject of a subsequent paragraph
    (D) provide an example of Bethune's "New Negro"
    (E) show that Dickerson was a leader of his fellow blacks

17. It can be inferred from the passage that Bethune believed the "New Negro" would "save America from itself" (lines 66-67) by
    (A) joining the army and helping America overthrow its Fascist enemies
    (B) helping America accomplish its egalitarian ideals
    (C) voting for administration antipoverty programs
    (D) electing other blacks to government office
    (E) expressing a belief in racial pride

18. The tone of the author's discussion of Bethune is best described as
    (A) deprecatory
    (B) sentimental
    (C) ironic
    (D) objective
    (E) recriminatory

19. The author uses all the following techniques in the passage EXCEPT
    (A) comparison and contrast
    (B) development of an extended analogy
    (C) direct quotation
    (D) general statement and concrete examples
    (E) reiteration of central ideas

20. Which of the following statements about the New Deal does the passage best support?
    (A) It was strongly committed to justice for all races.
    (B) It encouraged black participation in making policy decisions.
    (C) It was actively involved in military strategy.
    (D) It was primarily the province of Eleanor Roosevelt.
    (E) It shaped programs for economic aid and growth.

Reading Comprehension Exercise D

Directions: Each of the following reading comprehension questions is based on the content of the following passage. Read the passage and then determine the best answer choice for each question. Base your choice on what this passage states directly or implies, not on any information you may have gained elsewhere.

"The emancipation of women," James Joyce told one of his friends, "has caused the greatest revolution in our time in the most important area of relationship there is—that between men and women." Other modernists agreed: Virginia Woolf, claiming that in about 1910 "human character changed," and, illustrating the new balance between the sexes, urged, "Read the 'Agamemnon,' and see whether...your sympathies are not almost entirely with Clytemnestra." D.H. Lawrence wrote, "perhaps the deepest fight for 2000 years and more, has been the fight for women's independence."

But if modernist writers considered women's revolt against men's domination one of their "greatest" and "deepest" themes, only recently—in perhaps the past 15 years—has literary criticism begun to catch up with it. Not that the images of sexual antagonism that abound in modern literature have gone unremarked; far from it. But what we are able to see in literary works depends on the perspectives we bring to them, and now that women—enough to make a difference—are reforming canons and interpreting literature, the landscapes of literary history and the features of individual books have begun to change.

1. According to the passage, women are changing literary criticism by
   (A) noting instances of hostility between men and women
   (B) seeing literature from fresh points of view
   (C) studying the works of early twentieth-century writers
   (D) reviewing books written by feminists
   (E) resisting masculine influence
2. The author quotes James Joyce, Virginia Woolf, and D.H. Lawrence primarily in order to show that
(A) these were feminist writers
(B) although well-meaning, they were ineffectual
(C) before the twentieth century, there was little interest in women's literature
(D) modern literature is dependent on the women's movement
(E) the interest in feminist issues is not new

3. The author's attitude toward women's reformation of literary canons can best be described as one of
(A) ambivalence
(B) antagonism
(C) indifference
(D) endorsement
(E) skepticism

4. Which of the following titles best describes the content of the passage?
(A) Modernist Writers and the Search for Equality
(B) The Meaning of Literary Works
(C) Toward a New Criticism
(D) Women in Literature, from 1910 On
(E) Transforming Literature

Ocean water plays an indispensable role in supporting life. The great ocean basins hold about 300 million cubic miles of water. From this vast

amount, about 80,000 cubic miles of water are sucked into the atmosphere each year by evaporation and returned by precipitation and drainage to the ocean. More than 24,000 cubic miles of rain descend annually upon the continents. This vast amount is required to replenish the lakes and

streams, springs and water tables on which all flora and fauna are dependent. Thus, the hydrosphere permits organic existence.

The hydrosphere has strange characteristics because water has properties unlike those of any other liquid. One anomaly is that water upon freezing expands by about 9 percent, whereas most liquids contract on cooling. For this reason, ice floats on water bodies instead of sinking to the bottom. If the ice sank, the hydrosphere would soon be frozen solidly, except for a thin layer of surface melt water during the summer season. Thus, all aquatic life would be destroyed and the interchange of warm and cold currents, which moderates climate, would be notably absent.

Another outstanding characteristic of water is that water has a heat capacity which is the highest of all liquids and solids except ammonia. This characteristic enables the oceans to absorb and store vast quantities of heat, thereby often preventing climatic extremes. In addition, water dissolves more substances than any other liquid. It is this characteristic which helps make oceans a great storehouse for minerals which have been washed down from the continents. In several

areas of the world these minerals are being commercially exploited. Solar evaporation of salt is widely practiced, potash is extracted from the Dead Sea, and magnesium is produced from seawater along the American Gulf Coast.

5. The author's main purpose in this passage is to
(A) describe the properties and uses of water
(B) illustrate the importance of conserving water
(C) explain how water is used in commerce and industry
(D) reveal the extent of the earth's ocean masses
(E) compare water with other liquids

6. According to the passage, fish can survive in the oceans because
(A) they do not need oxygen
(B) ice floats
(C) evaporation and condensation create a water cycle
(D) there are currents in the oceans
(E) water absorbs heat

7. Which of the following characteristics of water does the author mention in the passage?
   I. Water expands when it is frozen.
   II. Water is a good solvent.
   III. Water can absorb heat.
   (A) I only
   (B) II only
   (C) I and II only
   (D) II and III only
   (E) I, II, and III

8. According to the passage, the hydrosphere is NOT
   (A) responsible for all forms of life
   (B) able to modify weather
   (C) a source of natural resources
   (D) in danger of freezing over
   (E) the part of the earth covered by water

9. The author's tone in the passage can best be described as
   (A) dogmatic
   (B) dispassionate
   (C) speculative
   (D) biased
   (E) hortatory

10. The author organizes the passage by
    (A) comparison and contrast
    (B) juxtaposition of true and untrue ideas
    (C) general statements followed by examples
    (D) hypothesis and proof
    (E) definition of key terms

11. Which of the following statements would be most likely to begin the paragraph immediately following the passage?
The opposite of adaptive divergence is an interesting and fairly common expression of evolution. Whereas related groups of organisms take on widely different characters in becoming (5) adapted to unlike environments, in the case of adaptive divergence, we find that unrelated groups of organisms exhibit adaptive convergence when they adopt similar modes of life or become suited for special sorts of environments. For (10) example, invertebrate marine animals living firmly attached to the sea bottom or to some foreign object tend to develop a subcylindrical or conical form. This is illustrated by coral individuals, by many sponges, and even by the diminutive tubes (15) of bryozoa. Adaptive convergence in taking this coral-like form is shown by some brachiopods and pelecypods that grew in fixed position. More readily appreciated is the streamlined fitness of most fishes for moving swiftly through water; (20) they have no neck, the contour of the body is smoothly curved so as to give minimum resistance, and the chief propelling organ is a powerful tail fin. The fact that some fossil reptiles (ichthyosaurs) and modern mammals (whales, (25) dolphins) are wholly fishlike in form is an expression of adaptive convergence, for these air-breathing reptiles and mammals, which are highly efficient swimmers, are not closely related to fishes. Unrelated or distantly related organisms that develop similarity of form are sometimes designated as homeomorphs (having the same form).

12. The author mentions ichthyosaurs and dolphins (lines 24 and 25) as examples of (A) modern mammalian life forms that are aquatic (B) species of slightly greater mobility than brachiopods (C) air-breathing reptiles closely related to fish (D) organisms that have evolved into fishlike forms (E) invertebrate and vertebrate marine animals

13. According to the passage, adaptive convergence and adaptive divergence are (A) manifestations of evolutionary patterns (B) hypotheses unsupported by biological phenomena (C) ways in which plants and animals adjust to a common environment (D) demonstrated by brachiopods and pelecypods (E) compensatory adjustments made in response to unlike environments

14. It can be inferred that in the paragraph immediately preceding this passage the author discussed (A) marine intelligence (B) adaptive divergence (C) air-breathing reptiles (D) environmental impacts (E) organisms with similar forms

Nearly two thousand years have passed since a census decree by Caesar Augustus became part of the greatest story every told. Many things have changed in the intervening years. The hotel industry worries more about overbuilding than overcrowding, and if they had to meet an unexpected influx, few inns would have a manager to accommodate the weary guests. Now it is the census taker that does the traveling in the fond hope that (10) a highly mobile population will stay put long enough to get a good sampling. Methods of gathering, recording, and evaluating information have presumably been improved a great deal, And where then it was the modest purpose of Rome to obtain a simple head count as an adequate basis for levying taxes, now batteries of complicated statistical series furnished by governmental agencies and private organizations are eagerly scanned and interpreted by sages and seers to get a clue to future events. The Bible does not tell us how the Roman census takers made out, and as regards our immediate concern, the reliability of present-day economic forecasting, there are considerable differences of opinion. They were aired (25) at the celebration of the 125th anniversary of the American Statistical Association. There was the thought that business forecasting might well be on its way from an art to a science, and some speakers talked about newfangled computers and high-falutin mathematical systems in terms of excitement and endearment which we, at least in our younger years when these things matter, would have associated more readily with the description of a fair maiden. But others pointed to the deplorable record of highly esteemed forecasts and forecasters with a batting average below that of the Mets, and the president-elect of the Association cautioned that "high powered statistical methods are usually in order where the facts (30) are crude and inadequate, the exact contrary of what crude and inadequate statisticians assume." We left this birthday party somewhere between hope and despair and with the conviction, not really newly acquired, that proper statistical methods applied to ascertainable facts have their merits in economic forecasting as long as neither forecaster nor public is deluded into mistaking the delineation of probabilities and trends for a prediction of certainties of mathematical exactitude.
15. The passage would be most likely to appear in
(A) a journal of biblical studies
(B) an introductory college textbook on statistics
(C) the annual report of the American Statistical Association
(D) a newspaper review of a recent professional festivity
(E) the current bulletin of the census bureau

16. According to the passage, taxation in Roman times was based on
(A) mobility
(B) wealth
(C) population
(D) census takers
(E) economic predictions

17. The author refers to the Romans primarily in order to
(A) prove the superiority of modern sampling methods to ancient ones
(B) provide a historical framework for the passage
(C) relate an unfamiliar concept to a familiar one
(D) show that statistical forecasts have not significantly deteriorated
(E) cite an authority to support the thesis of the passage

18. The author refers to the Mets primarily in order to
(A) show that sports do not depend on statistics
(B) provide an example of an unreliable statistic
(C) contrast verifiable and unverifiable methods of record keeping
(D) indicate the changes in attitudes from Roman days to the present
(E) illustrate the failure of statistical predictions

19. On the basis of the passage, it can be inferred that the author would agree with which of the following statements?
(A) Computers have significantly improved the application of statistics in business.
(B) Statistics is not, at the present time, a science.
(C) It is useless to try to predict the economy.
(D) Most mathematical systems are inexact.
(E) Statisticians should devote themselves to the study of probability.

20. The author's tone can best be described as
(A) jocular
(B) scornful
(C) pessimistic
(D) objective
(E) humanistic

Reading Comprehension Exercise E

Directions: Each of the following reading comprehension questions are based on the content of the following passage. Read the passage and then determine the best answer choice for each question. Base your choice on what this passage states directly or implies, not on any information you may have gained elsewhere.

Observe the dilemma of the fungus: it is a plant, but it possesses no chlorophyll. While all other plants put the sun's energy to work for them combining the nutrients of ground and air into the body structure, the chlorophyllless fungus must look elsewhere for an energy supply. It finds it in those other plants which, having received their energy free from the sun, relinquish it at some point in their cycle either to animals (like us humans) or to fungi.

In this search for energy the fungus has become the earth's major source of rot and decay. Wherever you see mold forming on a piece of bread, or a pile of leaves turning to compost, or a blown-down tree becoming pulp on the ground, you are watching a fungus eating. Without fungus action the earth would be piled high with the dead plant life of past centuries. In fact, certain plants which contain resins that are toxic to fungi will last indefinitely; specimens of the redwood, for instance, can still be found resting on the forest floor centuries after having been blown down.

1. Which of the following words best describes the fungus as depicted in the passage?
(A) Unwieldy
(B) Sporadic
(C) Enigmatic
(D) Parasitic
(E) Toxic

2. The passage states all the following about fungi EXCEPT:
(A) They are responsible for the decomposition of much plant life.
(B) They cannot live completely apart from other plants.
(C) They are vastly different from other plants.
(D) They are poisonous to resin-producing plants.
(E) They cannot produce their own store of energy.

3. The author's statement that "you are watching a fungus eating" (line 16) is best described as
(A) figurative
(B) ironical
(C) parenthetical
(D) erroneous
(E) contradictory

4. The author is primarily concerned with
(A) warning people of the dangers of fungi
(B) writing a humorous essay on fungi
(C) relating how most plants use solar energy
(D) describing the actions of fungi
(E) explaining the long life of some redwoods
The establishment of the Third Reich influenced events in American history by starting a chain of events which culminated in war between Germany and the United States. The complete destruction of democracy, the persecution of Jews, the war on religion, the cruelty and barbarism of the Nazis, and especially the plans of Germany and her allies, Italy and Japan, for world conquest caused great indignation in this country and brought on fear of another world war. While speaking out against Hitler's atrocities, the American people generally favored isolationist policies and neutrality. The Neutrality Acts of 1935 and 1936 prohibited trade with any belligerents or loans to them. In 1937 the President was empowered to declare an arms embargo in wars between nations at his discretion. American opinion began to change somewhat after President Roosevelt's "quarantine the aggressor" speech at Chicago (1937), in which he severely criticized Hitler's policies. Germany's seizure of Austria and the Munich Pact for the partition of Czechoslovakia (1938) also aroused the American people. The conquest of Czechoslovakia in March 1939 was another rude awakening to the menace of the Third Reich. In August 1939 came the shock of the Nazi-Soviet Pact and in September the attack on Poland and the outbreak of European war. The United States attempted to maintain neutrality in spite of sympathy for the democracies arrayed against the Third Reich. The Neutrality Act of 1939 repealed the arms embargo and permitted "cash and carry" exports of arms to belligerent nations. A strong national defense program was begun. A draft act was passed (1940) to strengthen the military services. A Lend-Lease Act (1941) authorized the President to sell, exchange, or lend materials to any country deemed necessary by him for the defense of the United States. Help was given to Britain by exchanging certain overseas destroyers for the right to establish American bases in British territory in the Western Hemisphere. In August 1941 President Roosevelt and Prime Minister Churchill met and issued the Atlantic Charter, which proclaimed the kind of a world that should be established after the war. In December 1941 Japan launched an unprovoked attack on the United States at Pearl Harbor. Immediately thereafter, Germany declared war on the United States.

5. The author is primarily concerned with
(A) evaluating various legislative efforts to strengthen national defense
(B) summarizing the events that led up to America's involvement in the war
(C) criticizing the atrocities perpetrated by the Third Reich
(D) explaining a basic distinction between American and German policy
(E) describing the social and psychological effects of war

6. During the years 1933–36, American foreign policy may best be described as being one of
(A) overt belligerence
(B) deliberate uninvolved
(C) moral indignation
(D) veiled contempt
(E) reluctant admiration

7. According to the passage, the United States, while maintaining neutrality, showed its sympathy for the democracies by which of the following actions?
I. It came to the defense of Poland.
II. It conscripted recruits for the armed forces.
III. It supplied weapons to friendly countries.

(A) I only
(B) III only
(C) I and II only
(D) II and III only
(E) I, II, and III

8. According to the passage, all of the following events occurred in 1939 EXCEPT
(A) the invasion of Poland
(B) the invasion of Czechoslovakia
(C) the annexation of Austria
(D) passage of the Neutrality Act
(E) the beginning of the war in Europe

9. With which of the following statements would the author of the passage be most likely to agree?
(A) American neutrality during the 1930s was a natural consequence of the course of world events.
(B) Every nation should be free to determine its own internal policy without interference.
(C) The United States, through its aggressive actions, invited an attack on its territory.
(D) Americans were slow to realize the full danger posed by Nazi Germany.
(E) President Roosevelt showed undue sympathy for Britain.

10. Which of the following best describes the organization of the passage?
(A) The author presents a thesis and then lists events that support that thesis in chronological order.
(B) The author presents a thesis and then cites examples that support the thesis as well as evidence that tends to negate it.
(C) The author summarizes a historical study and then discusses an aspect of the study in detail.
(D) The author describes historical events and then gives a personal interpretation of them.
(E) The author cites noted authorities as a means of supporting his or her own opinion.
Not a few of Jane Austen’s personal acquaintances might have echoed Sir Samuel Egerton Brydges, who noticed that “she was fair and handsome, slight and elegant, but with cheeks a little too full,” while “never suspect[ing] she was an authoress.” For this novelist whose personal obscurity was more complete than that of any other famous writer was always quick to insist either on complete anonymity or on the propriety of her limited craft, her delight in delineating just “3 or 4 Families in a Country Village.” With her self-deprecatory remarks about her inability to join “strongly, spirited sketches, full of Variety and Glow” with her “little bit (two inches wide) of Ivory,” Jane Austen perpetuated the belief among her friends that her art was just an accomplishment “by a lady,” if anything “rather too light and bright and sparkling.” In this respect she resembled one of her favorite contemporaries, Mary Brunton, who would rather have “glid[ed] through the world unknown” than been “suspected of literary airs—to be shunned, as literary women are, by the more pretending of their own sex, and abhorred, as literary women are, by the more pretending of the other!—my dear, I would sooner exhibit as a ropedancer.”

Yet, decorous though they might first seem, Austen’s self-effacing anonymity and her modest description of her miniaturist art also imply a criticism, even a rejection, of the world at large. For, as Gaston Bachlard explains, the miniature “allows us to be world conscious at slight risk.” While the creators of satirically conceived diminutive landscapes seem to see everything as small because they are themselves so grand, Austen’s analogy for her art—her “little bit (two inches wide) of Ivory”—suggests a fragility that reminds us of the risk and instability outside the fictional space. Besides seeing her art metaphorically, as her critics would too, in relation to female arts severely devalued until quite recently (for painting on ivory was traditionally a “lady-like” occupation), Austen attempted through self-imposed novelistic limitations to define a secure place, even as she seemed to admit the impossibility of actually inhabiting such a small space with any degree of comfort. And always, for Austen, it is women—because they are too vulnerable in the world at large—who must acquiesce in their own confinement, no matter how stifling it may be.

11. The passage focuses primarily on
(A) Jane Austen’s place in English literature
(B) the literary denigration of female novelists
(C) the implications of Austen’s attitude to her work
(D) critical evaluations of the novels of Jane Austen
(E) social rejection of professional women in the 18th and 19th centuries

12. According to the passage, Austen concentrated on a limited range of subjects because
(A) she had a limited degree of experience of fiction
(B) her imagination was incapable of creating other worlds
(C) women in her time were prohibited from writing about significant topics
(D) she wanted to create a safe niche for the exercise of her talents
(E) she did not wish to be acknowledged as an author

13. Which of the following best expresses the relationship of the first sentence to the rest of the passage?
(A) Specific instance followed by generalizations
(B) Assertion followed by analysis
(C) Objective statement followed by personal opinion
(D) Quotation from an authority followed by conflicting views
(E) Challenge followed by debate

The atmosphere is a mixture of several gases. There are about ten chemical elements which remain permanently in gaseous form in the atmosphere under all natural conditions. Of these permanent gases, oxygen makes up about 21 percent and nitrogen about 78 percent. Several other gases, such as argon, carbon dioxide, hydrogen, neon, krypton, and xenon, comprise the remaining 1 percent of the volume of dry air. The amount of water vapor, and its variations in amount and distribution, are of extraordinary importance in weather changes. Atmospheric gases hold in suspension great quantities of dust, pollen, smoke, and other impurities which are always present in considerable, but variable amounts.

The atmosphere has no definite upper limits but gradually thins until it becomes imperceptible. Until recently it was assumed that the air above the first few miles gradually grew thinner and colder at a constant rate. It was also assumed that upper air had little influence on weather changes. Recent studies of the upper atmosphere, currently being conducted by earth satellites and missile proings, have shown these assumptions to be incorrect. The atmosphere has three well-defined strata.

The layer of the air next to the earth, which extends upward for about 10 miles, is known as the troposphere. On the whole, it makes up about 75 percent of all the weight of the atmosphere. It is the warmest part of the atmosphere because most of the solar radiation is absorbed by the earth’s surface, which warms the air immediately surrounding it. A steady decrease of temperature with increasing elevation is a most striking characteristic. The upper layers are colder because of their greater distance from the earth’s surface.
and rapid radiation of heat into space. The temperatures within the troposphere decrease about
3.5 degrees per 1000-foot increase in altitude.
Within the troposphere, winds and air currents distribute heat and moisture. Strong winds, called jet streams, are located at the upper levels of the troposphere. These jet streams are both
complex and widespread in occurrence. They normally show a waveshaped pattern and move from west to east at velocities of 150 mph, but velocities as high as 400 mph have been noted. The influences of changing locations and
strengths of jet streams upon weather conditions and patterns are no doubt considerable. Current intensive research may eventually reveal their true significance.

Above the troposphere to a height of about 50 miles is a zone called the stratosphere. The stratosphere is separated from the troposphere by a zone of uniform temperatures called the tropopause. Within the lower portions of the stratosphere is a layer of ozone gases which filters out most of the ultraviolet rays from the sun. The ozone layer varies with air pressure. If this zone were not there, the full blast of the sun’s ultraviolet light would burn our skins, blind our eyes, and eventually result in our destruction. Within the stratosphere, the temperature and atmospheric composition are relatively uniform.

The layer upward of about 50 miles is the most fascinating but the least known of these three strata. It is called the ionosphere because it consists of electrically charged particles called ions, thrown from the sun. The northern lights (aurora borealis) originate within this highly charged portion of the atmosphere. Its effect upon weather conditions, if any, is as yet unknown.

14. Which of the following titles best summarizes the content of the passage?
(A) New Methods for Calculating the Composition of the Atmosphere
(B) New Evidence Concerning the Stratification of the Atmosphere
(C) The Atmosphere: Its Nature and Importance to Our Weather
(D) The Underlying Causes of Atmospheric Turbulence
(E) Stratosphere, Troposphere, Ionosphere: Three Similar Zones

15. The passage supplies information that would answer which of the following question?
I. How do the troposphere and the stratosphere differ?
II. How does the ionosphere affect the weather?
III. How do earth satellites study the atmosphere?
(A) I only
(B) III only
(C) I and II only
(D) I and III only
(E) I, II, and III

16. According to the passage, life as we know it exists on earth because the atmosphere
(A) contains a layer of ozone gases
(B) contains electrically charged particles
(C) is warmest at the bottom
(D) carries the ultraviolet rays of the sun
(E) provides the changes in weather

17. It can be inferred from the passage that a jet plane will usually have its best average rate of speed on its run from
(A) New York to San Francisco
(B) Los Angeles to New York
(C) Boston to Miami
(D) Bermuda to New York
(E) London to Washington, D.C.

18. It can be inferred from the passage that at the top of Jungfrau, which is 12,000 feet above the town of Interlaken in Switzerland, the temperature is usually
(A) below freezing
(B) about 42 degrees colder than on the ground
(C) warmer than in Interlaken
(D) affected by the ionosphere
(E) about 75 degrees colder than in Interlaken

19. The passage states that the troposphere is the warmest part of the atmosphere because it
(A) is closest to the sun
(B) contains electrically charged particles
(C) radiates heat into space
(D) has winds and air current that distribute the heat
(E) is warmed by the earth’s heat

20. According to the passage, the atmosphere consists of all of the following EXCEPT
(A) 21 percent oxygen
(B) a definite amount of water vapor
(C) ten permanent elements
(D) less than 1 percent xenon
(E) considerable waste products
### Answer Key

#### Reading Comprehension Exercise A
1. B  
2. B  
3. E  
4. B  
5. E  
6. C  
7. E  
8. A  
9. E  
10. D  
11. C  
12. D  
13. D  
14. A  
15. B  
16. D  

#### Reading Comprehension Exercise B
1. A  
2. D  
3. C  
4. B  
5. D  
6. E  
7. C  
8. E  
9. C  
10. C  
11. D  
12. C  
13. E  
14. B  
15. A  
16. B  

#### Reading Comprehension Exercise C
1. C  
2. B  
3. A  
4. D  
5. E  
6. B  
7. A  
8. B  
9. D  
10. B  
11. C  
12. D  
13. A  
14. C  
15. C  
16. A  

#### Reading Comprehension Exercise D
1. B  
2. E  
3. D  
4. C  
5. A  
6. B  
7. E  
8. D  
9. B  
10. C  
11. A  
12. D  
13. A  
14. B  
15. D  
16. C  
17. B  
18. E  
19. B  
20. A  

#### Reading Comprehension Exercise E
1. D  
2. D  
3. A  
4. D  
5. B  
6. B  
7. D  
8. C  
9. D  
10. A  
11. C  
12. D  
13. B  
14. C  
15. A  
16. A  
17. B  
18. B  
19. E  
20. B
8 Reviewing Vocabulary

- GRE High-Frequency Words
- Master Word List
- Basic Word Parts

Now that you have mastered the appropriate strategies for dealing with the four basic types of questions on the Graduate Record Examination that test your verbal ability, you have the opportunity to spend some time refining your vocabulary and acquainting yourself with the fine shades of meaning that words possess. Studies show that, where the average high school graduate recognizes around 50,000 words, the average college graduate recognizes around 70,000. The increase indicates that during your four years of college you have rapidly acquired about 20,000 new words (many of them technical terms from a variety of disciplines), some of which may have connotations and nuances that still escape you.

The best way to develop a powerful vocabulary is to read extensively and well. However, it is possible to fine-tune your vocabulary by exploring unabridged dictionaries, in which usage notes make clear the fine distinctions between related words, and by studying high-level vocabulary lists, such as our 3,500-word Master Word List.

This chapter presents the Master Word List and a Basic Word Parts List, a chart of prefixes, roots, and suffixes that may provide you with clues to the meanings of unfamiliar words. The chapter begins with the GRE High-Frequency Word List, 333 words that have occurred and reoccurred on GREs published in the 1980s and 1990s.

The GRE High-Frequency Word List

How many of the following words do you think you know? Half? Even more? First, check off those words that you recognize. Then, look up all 333 words and their definitions in our Master Word List. Pay particular attention to the following:

1. Words you recognize but cannot use in a sentence or define. You have a feel for these words—you are on the brink of knowing them. Effort you put into mastering these "borderline" words will pay off soon.

2. Words you thought you knew—but didn’t. See whether any of them are defined in an unexpected way. If they are, make a special note of them. As you know from the preceding chapters, the GRE often stumps students with questions based on unfamiliar meanings of familiar-looking words.

In the course of your undergraduate career, you have undoubtedly developed your own techniques for building your vocabulary. One familiar technique—flash cards—often is used less than effectively. Students either try to cram too much information onto a flash card or try to cram too many flash cards into a practice session. If you wish to work with flash cards, try following these suggestions.

Writing the Flash Card Be brief—but include all the information you need. On one side write the word. On the other side write a concise definition—two or three words at most—for each major meaning of the word you want to learn. Include an antonym, too: the synonym-antonym associations can help you remember both words. To fix the word in your mind, use it in a short phrase. Then write that phrase down.

Memorizing the Flash Card Carry a few of your flash cards with you every day. Look them over whenever you have a spare moment or two. Work in short bursts. Try going through five flash cards at a time, shuffling through them quickly so that you can build up your rapid sight recognition of the words for the test. You want these words and their antonyms to spring to your mind instantaneously.

Test your memory: don’t look at the back of the card unless you must. Go through your five cards several times a day. Then, when you have mastered two or three of the cards and have them down pat, set those cards aside and add a couple of new ones to your working pile. That way you will always be working with a limited group, but you won’t be wasting time reviewing words you already recognize on sight.

Never try to master a whole stack of flash cards in one long cram session. It won’t work.
**GRE High-Frequency Words**

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presumptuous
prevaricate
pristine
probity
problematic
prodigal
profound
prohibitive
proliferate
propensity
propitiate
propriety
proscribe
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recalcitrant
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recluse
recondite
refractory
refute
relegate
reproof
reprobate
repudiate
rescind
resolution
resolve
relicent
reverent
sage [n.]
salubrious
sanction
satiate
saturate
savor
secrete
shard
skeptic
solicitous
soporific
specious
spectrum
sporadic
stigma
stint [v.]
stipulate
stolid
striated
strut [n.]
subpoena
subside
substantiate
supersede
supposition
tacit
tangential
tenuous
tirade
torpid
tortuous
tractable
transgression
trunculence
vaginate
venerate
veracious
verse
viable
viscous
vituperative
volatile
warranted
wary
welter
whimsical
zealot

The 3,500-Word Master Word List

The 3,500-Word Master Word List begins on the following page. As a graduate student you should be familiar with the majority of these words. You do not, however, need to memorize every word.

The best way to enlarge your vocabulary is to read extensively in a variety of fields. You can, however, assess the extent of your vocabulary by exploring specialized word lists such as this one.

For those of you who wish to work your way through the word list and feel the need for a plan, we recommend that you follow the procedure described below in order to use the lists and the exercises most profitably:

1. Allot a definite time each day for the study of a list.
2. Devote at least one hour to each list.
3. First go through the list looking at the short, simple-looking words (seven letters at most). Mark those you don't know. In studying, pay particular attention to them.
4. Go through the list again looking at the longer words. Pay particular attention to words with more than one meaning and familiar-looking words with unusual definitions that come as a surprise to you. Many tests make use of these secondary definitions.
5. List unusual words on index cards, which you can shuffle and review from time to time. (Use the flash card technique described earlier in this chapter.)
6. Using the illustrative sentences in the list as models, make up new sentences on your own.
7. Take the test that follows each list at least one day after studying the words. In this way, you will check your ability to remember what you have studied.
8. If you can answer correctly 12 of the 15 questions in the test, you may proceed to the next list; if you cannot answer this number, restudy the list.
9. Keep a record of your guesses and of your success as a guesser.

For each word, the following is provided:
1. The word (printed in heavy type).
2. Its part of speech (abbreviated).
3. A brief definition.
4. A sentence or sentences illustrating the word's use.
5. Whenever appropriate, related words together with their parts of speech.

The word lists are arranged in strict alphabetical order. In each list, words that appear also on the High-Frequency GRE Word List are marked with a square bullet (●).
Master Word List

Word List 1  abase-adoit

abase  v. lower; degrade; humiliate. Anna expected to have to curtsey to the King of Siam; when told to cast herself down on the ground before him, however, she refused to abase herself. 

abash  v. embarrass. He was not at all abashed by her open admiration.

abate  v. subside or moderate. Rather than leaving immediately, they waited for the storm to abate.

abbreviate  v. shorten. Because we were running out of time, the lecturer had to abbreviate her speech.

abdicating  v. renounce; give up. When Edward VIII abdicated the British throne, he surprised the entire world.

aberrant  ADJ. abnormal or deviant. Given the aberrant nature of the data, we came to doubt the validity of the entire experiment.

aberration  N. abnormality; departure from the norm; mental irregularity or disorder. It remains the consensus among investors on Wall Street that current high oil prices are a temporary aberration and that we shall soon see a return to cheap oil.

abet  v. assist, usually in doing something wrong; encourage. She was unwilling to abet him in the swindle he had planned.

abeyance  N. suspended action. The deal was held in abeyance until her arrival.

abhor  v. detest; hate. She abhorred all forms of bigotry.

abhorrence, N

abject  ADJ. wretched; lacking pride. On the streets of New York the homeless live in abject poverty, huddling in doorways to find shelter from the wind.

abjure  v. renounce upon oath; disavow. Pressure from university authorities caused the young scholar to abjure his heretical opinions. 

abjuration, N

ablation  N. washing. His daily ablutions were accompanied by loud noises that he humorously labeled “Opera in the Bath.”

abnegation  N. renunciation; self-sacrifice. Though Rudolph and Duchess Flavia loved one another, their love was doomed, for she had to wed the king; their act of abnegation was necessary to preserve the kingdom.

abolish  v. cancel; put an end to. The president of the college refused to abolish the physical education requirement. 

abolition, N

abominable  ADJ. detestable; extremely unpleasant; very bad. Mary liked John until she learned he was also dating Susan; then she called him an abominable young man, with abominable taste in women.

abominate  v. loathe; hate. Moses scolded the idol worshippers in the tribe because he abominated the custom.

aboriginal  ADJ., N. being the first of its kind in a region; primitive; native. Her studies of the primitive art forms of the aboriginal Indians were widely reported in the scientific journals. 

aborigine, N

abortive  ADJ. unsuccessful; fruitless. Attacked by armed troops, the Chinese students had to abandon their abortive attempt to democratize Beijing peacefully.

abort, v.

abrasive  ADJ. rubbing away; tending to grind down. Just as abrasive cleaning powders can wear away a shiny finish, abrasive remarks can wear away a listener’s patience.

abrade, v.

abridge  v. condense or shorten. Because the publishers felt the public wanted a shorter version of War and Peace, they proceeded to abridge the novel.

abrogate  v. abolish. The king intended to abrogate the decree issued by his predecessor.

abscond  v. depart secretly and hide. The teller who absconded with the bonds went uncaptured until someone recognized him from his photograph on America’s Most Wanted.

absolute  ADJ. complete; totally unlimited; certain. Although the King of Siam was an absolute monarch, he did not want to behead his unfaithful wife without absolute evidence of her infidelity.

absolve  v. pardon (an offense). The father confessor absolved him of his sins. 

absolution, N

abstain  v. refrain; withhold from participation. After considering the effect of alcohol on his athletic performance, he decided to abstain from drinking while he trained for the race.

abstemious  ADJ. sparing in eating and drinking; temperate. Concerned whether her vegetarian son’s abstemious diet provided him with sufficient protein, the worried mother pressed food on him.

abstinence  N. restraint from eating or drinking. The doctor recommended total abstinence from salted foods. 

abstain, v.

abstract  ADJ. theoretical; not concrete; nonrepresentational. To him, hunger was an abstract concept; he had never missed a meal.

abstruse  ADJ. obscure; profound; difficult to understand. Baffled by the abstruse philosophical texts assigned in class, Dave asked Lexy to explain Kant’s Critique of Pure Reason.
abusive adj. coarsely insulting; physically harmful. An abusive parent damages a child both mentally and physically.

abut v. border upon; adjoin. Where our estates abut, we must build a fence.

abyss n. enormous chasm; vast, bottomless pit. Darth Vader seized the evil emperor and hurled him into the abyss.

academic adj. related to a school; not practical or directly useful. The dean’s talk about reforming academic policies was only an academic discussion; we knew little, if anything, would change.

accede v. agree. If I accede to this demand for blackmail, I am afraid that I will be the victim of future demands.

accelerate v. move faster. In our science class, we learn how falling bodies accelerate.

accessible adj. easy to approach; obtainable. We asked our guide whether the ruins were accessible on foot.

accessory n. additional object; useful but not essential thing. She bought an attractive handbag as an accessory for her dress. Also adj.

acclaim v. applaud; announce with great approval. The sportscasters acclaimed every American victory in the Olympics and decried every American defeat. Acclamation n.

acclimate v. adjust to climate or environment; adapt. One of the difficulties of our present air age is the need of travelers to acclimate themselves to their new and often strange environments.

acclivity n. sharp upslope of a hill. The car could not go up the acclivity in high gear.

accolade n. award of merit. In Hollywood, an “Oscar” is the highest accolade.

accommodate v. oblige or help someone; adjust or bring into harmony; adapt. Mitch always did everything possible to accommodate his elderly relatives, from driving them to medical appointments to helping them with paperwork. (secondary meaning)

accomplice n. partner in crime. Because he had provided the criminal with the lethal weapon, he was arrested as an accomplice in the murder.

accord n. agreement. She was in complete accord with the verdict.

accost v. approach and speak first to a person. When the two young men accosted me, I was frightened because I thought they were going to attack me.

accometré v. equip. The fisherman was accoutered with the best that the sporting goods store could supply. Accouterment n.

accretion n. growth; increase. Over the years Bob put on weight, because of this accretion of flesh, he went from size M to size XL.

accrete v. come about by addition. You must pay the interest that has accrued on your debt as well as the principal sum. Accrual n.

acerbic adj. bitter or sour in nature; sharp and cutting. Noted for her acerbic wit and gossiping, Alice Roosevelt Longworth had a pillow in her home embroidered with the legend “If you can’t say something good about someone, sit right here by me.”

acerbity n. bitterness of speech and temper. The meeting of the United Nations Assembly was marked with such acerbity that observers held little hope of reaching any useful settlement of the problem.

acetic adj. vinegar. The salad had an exceedingly acetic flavor.

acidulous adj. slightly sour; sharp; caustic. James was unpopular because of his sarcastic and acidulous remarks.

acknowledge v. recognize; admit. Although I acknowledge that the Beatles’ tunes sound pretty dated nowadays, I still prefer them to the gangsta rap songs my brothers play.

acme n. peak; pinnacle; highest point. Welles’s success in Citizen Kane marked the acme of his career as an actor; never again did he achieve such popular acclaim.

acoustics n. science of sound; quality that makes a room easy or hard to hear in. Carnegie Hall is liked by music lovers because of its fine acoustics.

acquiesce v. assent; agree passively. Although she appeared to acquiesce to her employer’s suggestions, I could tell she had reservations about the changes he wanted made. Acquiescence n.; acquiescent adj.

acquitment n. deliverance from a charge. His acquittal by the jury surprised those who had thought him guilty. Acquit v.

acrid adj. sharp; bitterly pungent. The acrid odor of burnt gunpowder filled the room after the pistol had been fired.

acrimonious adj. bitter in words or matter. The candidate attacked his opponent in highly acrimonious terms. Acrimony n.

acrophobia n. fear of heights. A born salesman, he could convince someone with a bad case of acrophobia to sign up for a life membership in a sky-diving club.

actuarial adj., calculating, pertaining to insurance statistics. According to recent actuarial tables, life expectancy is greater today than it was a century ago.

actuate v. motivate. I fail to understand what actuated you to reply to this letter so hastily.

acuity n. sharpness. In time his youthful acuity of vision failed him, and he needed glasses.

acumen n. mental keenness. Her business acumen helped her to succeed where others had failed.

acute adj. quickly perceptive, keen; brief and severe. The acute young doctor realized immediately that the gradual deterioration of her patient’s once-acute hearing was due to a chronic illness, not an acute one.
adage  n. wise saying; proverb. There is much truth in the old adage about fools and their money.
adament  adj. hard, inflexible. In this movie Bronson played the part of a revenge-driven man, adamant in his determination to punish the criminals who destroyed his family. adamancy, n.
adap  v. alter; modify. Some species of animals have become extinct because they could not adapt to a changing environment.
addendum  n. addition; appendix to book. Jane’s editor approved her new comparative literature text but thought it would be even better with an addendum on recent developments in literary criticism.
adiction  n. compulsive, habitual need. His addiction to drugs caused his friends much grief.
addle  v. muddle; drive crazy; become rotten. This idiotic plan is confusing enough to addle anyone. addled, adj.
address  v. direct a speech to; deal with or discuss. Due to address the convention in July, Brown planned to address the issue of low-income housing in his speech.
adert  adj. expert at. She was adept at the fine art of irritating people also n.
adhere  v. stick fast. I will adhere to this opinion until proof that I am wrong is presented. adhesion, n.; adherence, n.

adherent  n. supporter; follower. In the wake of the scandal, the senator’s one-time adherents quietly deserted him.
adjacent  adj. adjoining; neighboring; close by. Philip’s best friend Jason lived only four houses down the block, near but not immediately adjacent.
adjunct  n. something (generally nonessential or inferior) added on or attached. Although I don’t absolutely need a second computer, I plan to buy a laptop to serve as an adjunct to my desktop model. also adj.
adjudication  n. solemn urging. Her adjudication to tell the truth did not change the witnesses’ testimony. adjure, v.
adjudant  n. staff officer assisting the commander; assistant. Though Wellington delegated many tasks to his chief adjudant Lord Fitzclarence, Somerset was in no doubt as to who made all major decisions.
admonish  v. warn; reprove. When her courtiers questioned her religious beliefs, Mary Stuart admonished them, declaring that she would worship as she pleased.
adorn  v. decorate. Wall paintings and carved statues adorned the temple. adornment, n.
adroit  adj. skillful. Her adroit handling of the delicate situation pleased her employers.

Test

Word List 1 Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

1. ABASE (A) incur (B) tax (C) estimate (D) elope (E) humiliate
2. ABERRATION (A) deviation (B) abhorrence (C) dislike (D) absence (E) anecdote
3. ABET (A) conceive (B) wager (C) encourage (D) evade (E) protect
4. ABYRANCE (A) obedience (B) discussion (C) excitement (D) suspended action (E) editorial
5. ABJURE (A) discuss (B) renounce (C) run off secretly (D) perjure (E) project
6. ABLUTION (A) censure (B) forgiveness (C) mutiny (D) survival (E) washing
7. ABNEGATION (A) blackness (B) self-denial (C) selfishness (D) cause (E) effectiveness

8. ABORIGINE (A) first design (B) absolution (C) finale (D) concept (E) primitive inhabitant
9. ABORTIVE (A) unsuccessful (B) consuming (C) financing (D) familiar (E) fruitful
10. ABSTINENCE (A) restrained eating or drinking (B) vulgar display (C) deportment (D) reluctance (E) population
11. ABSTRUSE (A) profound (B) irrespective (C) suspended (D) protesting (E) not thorough
12. ABUT (A) stimulate (B) grasp (C) oppose (D) widen (E) adjoin
13. ABYSMAL (A) bottomless (B) eternal (C) meagre (D) diabolic (E) internal
14. ACCEDE (A) fail (B) compromise (C) correct (D) consent (E) mollify
15. ACCLIVITY (A) index (B) report (C) upslope of a hill (D) character (E) negotiator
Word List 2  
adulation-amend

adulation  N. flattery; admiration. The rock star thrived on the adulation of his groupies and yes-men. Adulate, v.

adulterate  v. make impure by adding inferior or tainted substances. It is a crime to adulterate foods without informing the buyer; when consumers learned that Beechnut had adulterated its apple juice by mixing the juice with water, they protested vigorously. Adulteration, N.

advent  N. arrival. Most Americans were unaware of the advent of the Nuclear Age until the news of Hiroshima reached them.

adventitious  A.DJ. accidental; casual. She found this adventitious meeting with her friend extremely fortunate.

adversary  N. opponent; enemy. Batman struggled to save Gotham City from the machinations of his wicked adversary, the Joker.

adverse  A.DJ. unfavorable; hostile. The recession had a highly adverse effect on Father's investment portfolio: he lost so much money that he could no longer afford the Butler and the upstairs maid.

adversity  N. poverty; misfortune. We must learn to meet adversity gracefully.

advert  v. refer (to). Since you advert to this matter so frequently, you must regard it as important.

advocacy  N. support; active pleading on behalf of someone or something. No threats could dissuade Bishop Desmond Tutu from his advocacy of the human rights of black South Africans.

advocate  v. urge, plead for. The abolitionists advocated freedom for the slaves, also N.

aegis  N. shield; defense. Under the aegis of the Bill of Rights, we enjoy our most treasured freedoms.

aerie  N. nest of a large bird of prey (eagle, hawk). The mother eagle swooped down on the rabbit and bore it off to her aerie high in the Rocky Mountains.

aesthetic  A.DJ. artistic; dealing with or capable of appreciating the beautiful. The beauty of Tiffany's stained glass appealed to Alice's aesthetic sense.

affable  A.DJ. easily approachable; warmly friendly. Accustomed to cold, aloof supervisors, Nicholas was amazed at how affable his new employer was.

affected  A.DJ. artificial; pretended; assumed in order to impress. His affected mannerisms—his "Harvard" accent, his air of boredom, his use of obscure foreign words—bugged us; he acted as if he thought he was too good for his old high school friends. Affection, N.

affidavit  N. written statement made under oath. The court refused to accept her statement unless she presented it in the form of an affidavit.

affiliation  N. joining; associating with. His affiliation with the political party was of short duration for he soon disagreed with his colleagues.

affinity  N. kinship. She felt an affinity with all who suffered; their pains were her pains.

affirmation  N. positive assertion; confirmation; solemn pledge by one who refuses to take an oath. Despite Tom's affirmations of innocence, Aunt Polly still suspected he had eaten the pie.

affix  v. attach or add on; fasten. First the registrar had to affix his signature to the license; then he had to affix his official seal.

affliction  N. state of distress; cause of suffering. Even in the midst of her affliction, Elizabeth tried to keep up the spirits of those around her.

affluence  N. abundance; wealth. Foreigners are amazed by the affluence and luxury of the American way of life.

affront  N. insult; offense; intentional act of disrespect. When Mrs. Proudie was not seated beside the Archdeacon at the head table, she took it as a personal affront and refused to speak to her hosts for a week, also v.

agape  A.DJ. openmouthed. She stared, agape, at the many strange animals in the zoo.

agenda  N. items of business at a meeting. We had so much difficulty agreeing upon an agenda that there was very little time for the meeting.

agglomeration  N. collection; heap. It took weeks to assort the agglomeration of miscellaneous items she had collected on her trip.

aggrandize  v. increase or intensify; raise in power, wealth, rank or honor. The history of the past quarter century illustrates how a President may aggrandize his power to act aggressively in international affairs without considering the wishes of Congress.

aggregate  v. gather; accumulate. Before the Wall Street scandals, dealers in so-called junk bonds managed to aggregate great wealth in short periods of time. Also A.DJ. aggregation, N.

aggressor  N. attacker. Before you punish both boys for fighting, see whether you can determine which one was the aggressor.

aghast  A.DJ. horrified; dumbfounded. Miss Manners was agghast at the crude behavior of the fraternity brothers at the annual toga party.

agility  N. nimbleness. The agility of the acrobat amazed and thrilled the audience.

agitate  v. stir up; disturb. Her fiery remarks agitated the already angry mob.

agnostic  N. one who is skeptical of the existence of a god or any ultimate reality. Agnostics say we can neither prove nor disprove the existence of God; we simply have no way to know, also A.DJ.

agog  A.DJ. highly excited; intensely curious. We were all agog at the news that the celebrated movie star was giving up his career in order to enter a monastery.
agrarian adj. pertaining to land or its cultivation. As a result of its recent industrialization, the country is gradually losing its agrarian traditions.

alacrity n. cheerful promptness; eagerness. Phil and Dave were raring to get off to the mountains; they packed up their ski gear and climbed into the van with alacrity.
alchemy n. medieval form of speculative thought that aimed to transform base metals (lead or copper) into silver or gold and to discover a means of prolonging a means of a life. Although alchemy anticipated science in its belief that physical reality was determined by an unvarying set of natural laws, the alchemist’s experimental method was hardly scientific.
cove cove. n.nook; recess. Though their apartment lacked a full-scale dining room, an alcove adjacent to the living room made an adequate breakfast nook for the young couple.
alias n. an assumed name. John Smith’s alias was Bob Jones. Also ADJ.
alienate v. make hostile; separate. Her attempts to alienate the two friends failed because they had completed faith in each other.
alimentary ADJ. supplying nourishment. The alimentary canal in our bodies is so named because digestion of foods occurs there. When asked for the name of the digestive tract, Sherlock Holmes replied, “Alimentary, my dear Watson.”
almighty n. payments made to an ex-spouse after divorce. Because Tony had supported Tina through medical school, on their divorce he asked the court to award him $500 a month in alimony.
aley v. calm; pacify. The crew tried to allay the fears of the passengers by announcing that the fire had been controlled.
allege v. state without proof. Although it is alleged that she has worked for the enemy, she denies the allegation and, legally, we can take no action against her without proof. Allegation, N.
allegiance n. loyalty. Not even a term in prison could shake Lech Walesa’s allegiance to Solidarity, the Polish trade union he had helped to found.
allegory n. story in which characters are used as symbols; fable. Pilgrim’s Progress is an allegory of the temptations and victories of the human soul. Allegorical, ADJ.
alleviate v. relieve. This should alleviate the pain; if it does not, we shall have to use stronger drugs.
allegation n. repetition of beginning sound in poetry. “The furrow followed free” is an example of alliteration.
allocate v. assign. Even though the Red Cross had allocated a large sum for the relief of the sufferers of the disaster, many people perished.
ally n. a mixture of metals. Alloys of gold are used more frequently than the pure metal.
alloy v. mix; make less pure; lessen or moderate. Our delight at the Mets’ victory was alloyed by our concern for Al Laite, who injured his pitching arm in the game.
allude v. refer indirectly. Try not to mention divorce in Jack’s presence because he will think you are alluding to his marital problems with Jill.
allure v. entice; attract. Allured by the song of the sirens, the helmsman steered the ship toward the reef. Also N. Indirect reference. When Amanda said to the ticket-scamper, “One hundred bucks? What do you want, a pound of flesh?” she was making an allusion to Shakespeare’s Merchant of Venice.
aluvial adj. pertaining to soil deposits left by running water. The farmers found the alluvial deposits at the mouth of the river very fertile.
aloof ADJ. apart; reserved. Shy by nature, she remained aloof while the rest conversed.
alooft ADJ. upward. The sailor climbed aloft into the rigging.
alteration n. noisy quarrel; heated dispute. In that hot-tempered household, no meal ever came to a peaceful conclusion; the inevitable altercation sometimes even ended in blows.
altruistic adj. unselfishly generous, concerned for others. In providing tutorial assistance and college scholarships for hundreds of economically disadvantaged youths, Eugene Lang performed a truly altruistic deed. Altruism, N.
allegmate v. combine; unite in one body. The unions will attempt to amalgamate their groups into one national body.
amass v. collect. The miser’s aim is to amass and hoard as much gold as possible.
amazon N. female warrior. Eer since the days of Greek mythology we refer to strong and aggressive women as amazons.
ambedextrous adj. capable of using either hand with equal ease. A switch-hitter in baseball should be naturally ambidextrous.
ambience n. environment; atmosphere. She went to the restaurant not for the food but for the ambience.
ambiguous adj. unclear or doubtful in meaning. His ambiguous instructions misled us; we did not know which road to take. Ambiguity, N.
ambivalence N. the state of having contradictory or conflicting emotional attitudes. Torn between loving her parents one minute and hating them the next, she was confused by her ambivalence towards her feelings. Ambivalent, ADJ.
amble n. moving at an easy pace. When she first mounted the horse, she was afraid to urge the animal to go faster than a gentle amble. Also v.
ambrosia n. food of the gods. Ambrosia was supposed to give immortality to any human who ate it.
ambulatory adj. able to walk; not bedridden. Calvin was a highly ambulatory patient; not only did he refuse to be confined to bed, but also he insisted on riding his skateboard up and down the halls.
ameliorate v. improve. Many social workers have attempted to ameliorate the conditions of people living in the slums.
amenable adj. readily managed or willing to be led; answerable or accountable legally. Although the ambassador was usually amenable to friendly suggestions, he balked when we hinted he should pay his parking tickets. As a foreign diplomat, he claimed he was not amenable to minor local laws.
amend v. correct, change, generally for the better. Hoping to amend his condition, he left Vietnam for the United States.

Test

Word List 2  Antonyms

Each of the following questions consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

16. ADULATION (A) youth (B) purity (C) brightness (D) defense (E) criticism
17. ADVOCATE (A) define (B) oppose (C) remove (D) inspect (E) discern
18. AFFABLE (A) rude (B) ruddy (C) needy (D) useless (E) conscious
19. AFFECTED (A) weary (B) unfriendly (C) divine (D) unfeigned (E) slow
20. AFFLUENCE (A) poverty (B) fear (C) persuasion (D) consideration (E) neglect
21. AGILITY (A) awkwardness (B) solidity (C) temper (D) harmony (E) warmth
22. ALACRITY (A) slowness (B) plenty (C) filth (D) courtesy (E) despair
23. ALLEVIATE (A) endure (B) worsen (C) enlighten (D) maneuver (E) humiliate
24. ALLURE (A) hinder (B) repel (C) ignore (D) leave (E) wellow
25. ALOOF (A) triangular (B) gregarious (C) comparable (D) honorable (E) savory
26. AMALGAMATE (A) equip (B) separate (C) generate (D) materialize (E) repress
27. AMBIGUOUS (A) salvageable (B) corresponding (C) responsible (D) clear (E) auxiliary
28. AMBLE (A) befriend (B) hasten (C) steal (D) browse (E) prattle
29. AMBULATORY (A) convalescent (B) valedictory (C) bedridden (D) emergency (E) congenital
30. AMELIORATE (A) make slow (B) make sure (C) make young (D) make worse (E) make able

Word List 3 amenities-apothecary

amenities n. convenient features; courtesies. In addition to the customary amenities for the business traveler—fax machines, modems, a health club—the hotel offers the services of a butler versed in the social amenities.
amiable adj. agreeable; lovable; warmly friendly. In Little Women, Beth is the amiable daughter whose loving disposition endears her to all who know her.
amicable adj. politely friendly; not quarrelsome. Beth's sister Jo is the hot-tempered tomboy who has a hard time maintaining amicable relationships with those around her. Jo's quarrel with her friend Laurie finally reaches an amicable settlement, but not because Jo turns amiable overnight.
amiss adj. wrong; faulty. Seeing her frown, he wondered if anything were amiss. Also adv.
amity n. friendship. Student exchange programs such as the Experiment in International Living were established to promote international amity.
amnesia n. loss of memory. Because she was suffering from amnesia, the police could not get the young girl to identify herself.
amnesty n. pardon. When his first child was born, the king granted amnesty to all in prison.
amoral adj. nonmoral. The amoral individual lacks a code of ethics; he cannot tell right from wrong. The immoral person can tell right from wrong; he chooses to do something he knows is wrong.
amorous adj. moved by sexual love; loving. "Love them and leave them" was the motto of the amorous Don Juan.
amorphous adj. formless; lacking shape or definition. As soon as we have decided on our itinerary, we shall send you a copy; right now, our plans are still amorphous.
amphibian adj. able to live both on land and in water. Frogs are classified as amphibian, also n.
amphitheater n. oval building with tiers of seats. The spectators in the amphitheater cheered the gladiators.
ample adj. abundant. Bond had ample opportunity to escape. Why, then, did he let us capture him?
amplify v. broaden or clarify by expanding; intensify; make stronger. Charlie Brown tried to amplify his remarks, but he was drowned out by jeers from the audience. Lucy was smarter: she used a loudspeaker to amplify her voice.
amputate v. cut off part of body; prune. When the doctors had to amputate Ted Kennedy’s leg to prevent the spread of cancer, he did not let the loss of his leg keep him from participating in sports.

amok (also amuck) adj. in a state of rage. The police had to be called in to restrain him after he ran amok in the department store.

amulet N. charm; talisman. Around her neck she wore the amulet that the witch doctor had given her.

anachronism N. something or someone misplaced in time. Shakespeare’s reference to clocks in Julius Caesar is an anachronism; no clocks existed in Caesar’s time. anachronistic, adj.

analgesic adj. causing insensitivity to pain. The analgesic qualities of this lotion will provide temporary relief.

analogous adj. comparable. She called our attention to the things that had been done in an analogous situation and recommended that we do the same.

analogy N. similarity; parallelism. A well-known analogy compares the body’s immune system with an army whose defending troops are the lymphocytes or white blood cells.

anarchist N. person who seeks to overturn the established government; advocate of abolishing authority. Denying she was an anarchist, Katya maintained she wished only to make changes in our government, not to destroy it entirely.

anarchy N. absence of governing body; state of disorder. The assassination of the leaders led to a period of anarchy.

anathema N. solemn curse; someone or something regarded as a curse. The Ayatolla Khomeini heaped anathema upon “the Great Satan,” that is, the United States. To the Ayatolla, America and the West were anathema; he loathed the democratic nations, cursing them in his dying words. anathematize, v.

ancestry N. family descent. David can trace his ancestry as far back as the seventeenth century, when one of his ancestors was a court trumpeter somewhere in Germany. ancestral, adj.

anchor v. secure or fasten firmly; be fixed in place. We set the post in concrete to anchor it in place. anchorage, N.

ancillary adj. serving as an aid or accessory; auxiliary. In an ancillary capacity Doctor Watson was helpful; however, Holmes could not trust the good doctor to solve a perplexing case on his own. also N.

anecdote N. short account of an amusing or interesting event. Rather than make concrete proposals for welfare reform, President Reagan told anecdotes about poor people who became wealthy despite their impoverished backgrounds.

anemia N. condition in which blood lacks red corpuscles. The doctor ascribes her tiredness to anemia. anemic, adj.

anesthetic N. substance that removes sensation with or without loss of consciousness. His monotonous voice acted like an anesthetic; his audience was soon asleep. anesthesia, N.

anguish N. acute pain; extreme suffering. Visiting the site of the explosion, the president wept to see the anguish of the victims and their families.

angular adj. sharp-cornered; stiff in manner. Mr. Spock’s features, though angular, were curiously attractive, in a Vulcan way.

aniradversion N. critical remark. He resented the aniradversion of his critics, particularly because he realized they were true.

animated adj. lively; spirited. Jim Carrey’s facial expressions are highly animated; when he played Ace Ventura, he was practically rubber-faced.

animosity N. active enmity. He incurred the animosity of the ruling class because he advocated limitations of their power.

animus N. hostile feeling or intent. The animus of the speaker became obvious to all when he began to indulge in sarcastic and insulting remarks.

annals N. records; history. In the annals of this period, we find no mention of democratic movements.

annul v. reduce brittleness and improve toughness by heating and cooling. After the glass is annealed, it will be less subject to chipping and cracking.

annex v. attach; take possession of. Mexico objected to the United States’ attempts to annex the territory that later became the state of Texas.

annihilate v. destroy. The enemy in its revenge tried to annihilate the entire population.

annotate v. comment; make explanatory notes. In the appendix to the novel the critic sought to annotate many of the more esoteric references.

annuity N. yearly allowance. The annuity she set up with the insurance company supplements her social security benefits so that she can live very comfortably without working.

annul v. make void. The parents of the eloped couple tried to annul the marriage.

anodyne N. drug that relieves pain; opiate. His pain was so great that no anodyne could relieve it.

anoint v. consecrate. The prophet Samuel anointed David with oil, crowning him king of Israel.

anomalous adj. abnormal; irregular. She was placed in the anomalous position of seeming to approve procedures that she despised.

anomaly N. irregularity. A bird that cannot fly is an anomaly.

anonymity N. state of being nameless; anonymity. The donor of the gift asked the college not to mention her by name; the dean readily agreed to respect her anonymity. anonymous, adj.

antagonism N. hostility; active resistance. Barry showed his antagonism toward his new stepmother by ignoring her whenever she tried talking to him. antagonistic, adj.

antecedent v. precede. The invention of the radiotelegraph antecedent the development of television by a quarter of a century.
antecedents. N. preceding events or circumstances that influence what comes later; ancestors or early background. Susi Bechhofer’s ignorance of her Jewish background had its antecedents in the chaos of World War II. Smuggled out of Germany and adopted by a Christian family, she knew nothing of her birth and antecedents until she was reunited with her Jewish family in 1989.

antediluvian ADJ. antiquated; extremely ancient. Looking at his great-aunt’s antique furniture, which must have been cluttering up her attic since before Noah’s flood, the young heir exclaimed, “Heavens! How positively antediluvian!”

anthem N. song of praise or patriotism. Let us now all join in singing the national anthem.

anthology N. book of literary selections by various authors. This anthology of science fiction was compiled by the late Isaac Asimov. anthologize, v.

anthropoid ADJ. manlike. The gorilla is the strongest of the anthropoid animals. Also N.

anthropologist N. student of the history and science of humankind. Anthropologists have discovered several relics of prehistoric humans in this area.

anthropomorphic ADJ. having human form or characteristics. Primitive religions often have deities with anthropomorphic characteristics.

antic ADJ. extravagantly odd. Putting on an antic disposition, Hamlet acts so odd that the Danish court thinks him mad. Also N.

anticlimax N. letdown in thought or emotion. After the fine performance in the first act, the rest of the play was an anticlimactic. ADJ.

antidote N. remedy to counteract a poison or disease. When Marge’s child accidentally swallowed some cleaning fluid, the local poison control hotline instructed Marge how to administer the antidote.

# antipathy N. aversion; dislike. Tom’s extreme antipathy for disputes keeps him from getting into arguments with his temperamental wife. Noise in any form is antipathetic to him. Among his other antipathies are honking cars, boom boxes, and heavy metal rock.

antiquated ADJ. obsolete; outdated. Accustomed to editing his papers on word processors, Philip thought typewriters were too antiquated for him to use.

antiseptic N. substance that prevents infection. It is advisable to apply an antiseptic to any wound, no matter how slight or insignificant. Also ADJ.

antithesis N. contrast; direct opposite of or to. This tyranny was the antithesis of all that he had hoped for, and he fought it with all his strength. antithetical or antithetic. ADJ.

anvil N. iron block used in hammering out metal. After heating the iron horseshoe in the forge, the blacksmith picked it up with his tongs and set it on the anvil.

# apathy N. lack of caring; indifference. A firm believer in democratic government, she could not understand the apathy of people who never bothered to vote. apathetic. ADJ.

ape v. imitate or mimic. In the comedy Young Frankenstein, when the servant Igor limps off, saying, “Walk this way,” the hero apes him, hobbling after Igor in an imitation of his walk.

aperture N. opening; hole. She discovered a small aperture in the wall, through which the insects had entered the room.

apex N. tip; summit; climax. At the apex of his career, the star received offers of leading roles daily; two years later, he was reduced to taking bit parts in B-movies.

aphasia N. loss of speech due to injury or illness. After the automobile accident, the victim had periods of aphasia when he could not speak at all or could only mumble incoherently.

aphorism N. pithy maxim or saying. An aphorism is usually philosophic or scientific, as compared to an adage, which is usually more homely and concrete. “Absolute power corrupts absolutely” is an aphorism. “You can lead a horse to water, but you can’t make him drink” is an adage. aphoristic. ADJ.

apiary N. a place where bees are kept. Although he spent many hours daily in the apiary, he was very seldom stung by a bee.

apomb N. poem; assurance. Gwen’s apomb in handing potentially embarrassing moments was legendary around the office; when one of her clients broke a piece of her best crystal, she coolly picked up her own goblet and hurled it into the fireplace.

apocalyptic ADJ. prophetic; pertaining to revelations. The crowd jeered at the street preacher’s apocalyptic predictions of doom. The Apocalypse or Book of Revelations of Saint John prophesies the end of the world as we know it and foretells marvels and prodigies that signal the coming doom. apocalyptic. N.

apocryphal ADJ. spurious; not authentic; invented rather than true. Although many versions exist of the famous story of Emerson’s visit to Thoreau in jail, in his writings Thoreau never mentions any such visit by Emerson, and so the tale is most likely apocryphal.

apogee N. highest point. When the moon in its orbit is furthest away from the earth, it is at its apogee. Discouraged by the apparent deterioration of America’s space program, the science columnist wondered whether the golden age of space travel had reached its apogee with the Apollo 11 moon landing and would never again achieve such heights.

apolitical ADJ. having an aversion or lack of concern for political affairs. It was hard to remain apolitical during the Vietnam War; even people who generally ignored public issues felt they had to take political stands.

apologist N. one who writes in defense of a cause or institution. Rather than act as an apologist for the current regime in Beijing and defend its brutal actions, the young diplomat decided to defect to the West.

apostate N. one who abandons his religious faith or political beliefs. Because he switched from one party to another, his former friends shunned him as an apostate. An apostle passionately adheres to a belief or cause; an apostate passionately renounces or abandons one. apostasy. N.

apotectomy N. druggist. In Holland, apothecaries still sell spices as well as ointments and pills.
Test

Word List 3  Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

31. AMICABLE (A) penetrating (B) compensating (C) unfriendly (D) zigzag (E) inescapable
32. AMORAL (A) unusual (B) unfriendly (C) ethical (D) suave (E) firm
33. AMORPHOUS (A) nauseous (B) obscene (C) providential (D) definite (E) happy
34. AMPLIFY (A) distract (B) infer (C) publicize (D) decrease (E) pioneer
35. ANALOGOUS (A) not comparable (B) not capable (C) not culpable (D) not corporeal (E) not congenial
36. ANATHEMATIZE (A) locate (B) deceive (C) regulate (D) radiate (E) bless
37. ANEMIC (A) pallid (B) cruel (C) red-blooded (D) ventilating (E) hazardous
38. ANIMATED (A) worthy (B) dull (C) humorous (D) lengthy (E) realistic
39. ANIMUS (A) proractyl (B) bastion (C) giraffe (D) grimace (E) favor
40. ANOMALY (A) desperation (B) requisition (C) registry (D) regularity (E) radiation
41. ANONYMOUS (A) desperate (B) signed (C) defined (D) expert (E) written
42. ANTIDILUVIAN (A) transported (B) subtle (C) isolated (D) celebrated (E) modern
43. ANTIPATHY (A) profundity (B) objection (C) willingness (D) abstention (E) fondness
44. ANTI THERAPY (A) velocity (B) maxim (C) similarity (D) acceleration (E) reaction
45. APHASIA (A) volubility (B) necessity (C) pain (D) crack (E) prayer

Word List 4  apothegm-astigmatism

apothegm  n. pithy, compact saying. Proverbs are apothegms that have become familiar sayings.
apothesis  n. elevation to godhood; an ideal example of something. The Roman empress Livia envied the late emperor Augustus his apothesis; she hoped that on her death she, too, would be exalted to the ranks of the gods. The hero of the novel Generation X was the apothesis of a slacker, the quintessential example of a member of his generation.
appell  v. dismay; shock. We were appalled by the horrifying conditions in the city’s jails.
appiration  n. ghost; phantom. On the castle battlements, an apparition materialized and spoke to Hamlet, warning him of his uncle’s treachery. In Ghostbusters, hordes of appappings materialized, only to be dematerialized by the specialized apparatus wielded by Bill Murray.
appease  v. pacify or soothe; relieve. Tom and Jody tried to appease the crying baby by offering him one toy after another. However, he would not calm down until they appeased his hunger by giving him a bottle. appeasement, n.
appellation  n. name; title. Macbeth was startled when the witches greeted him with an incorrect appellation. Why did they call him Thane of Cawdor, he wondered, when the holder of that title still lived?
append  v. attach. When you append a bibliography to a text, you have created an appendix.
application  n. diligent attention. Pleased with how well Tom had whitewashed the fence, Aunt Polly praised him for his application. (Tom had applied himself to applying the paint.) (secondary meaning) apply, v.
apposite  adj. appropriate; fitting. She was always able to find the opposite phrase, the correct expression for every occasion.
appraise  v. estimate value of. It is difficult to appraise old paintings; it is easier to call them priceless. appraisal, n.
appreciate  v. be thankful for; increase in worth; be thoroughly conscious of. Little Orphan Annie truly appreciated the stocks Daddy Warbucks gave her, whose value appreciated considerably over the years.
apprehend  v. arrest (a criminal); dread; perceive. The police will apprehend the culprit and convict him before long.
apprehensile  adj. fearful; discerning. His apprehensive glances at the people who were walking in the street revealed his nervousness.
apprize  v. inform. When NASA was apprized of the dangerous weather conditions, the head of the space agency decided to postpone the shuttle launch.
approbation  n. approval. Wanting her parents’ regard, she looked for some sign of their approbation. Benjamin Franklin, that shrewd observer of mankind, once wrote, “We must not in the course of public life expect immediate approbation and immediate grateful acknowledgment of our services.”
appropriate  v. acquire; take possession of for one’s own use. The ranch owners appropriated the lands that had originally been set aside for the Indians’ use.
appurtenances N. subordinate possessions. He bought the estate and all its appurtenances.

apropos ADJ. to the point and timely. When Bob spoke out against drunk driving, some of our crowd called him a spoilspurt, but the rest of us found his comments extremely apropos.

apropos PREP. with reference to; regarding. Apropos the walzt, the dance has its faults.

aptitude N. fitness; talent. The American aviator Bessie Coleman grew up in Waxahachie, Texas, where her mathematical aptitude freed her from working in the cotton fields with her twelve brothers and sisters.

aquiline ADJ. curved, hooked. He can be recognized by his aquiline nose, curved like the beak of the eagle.

arabesque N. style of decoration involving intertwined plants and abstract curves; ballet position with one leg supporting the weight of the body, while the other leg is extended in back. Because the Koran prohibits the creation of human and animal images, Moorish arabesques depict plants but not people. The statue of winged Mercury stands poised on one foot, frozen in an eternal arabesque.

arable ADJ. fit for growing crops. The first settlers wrote home glowing reports of the New World, praising its vast acres of arable land ready for the plow.

arbiter N. person with power to decide a matter in dispute; judge. As an arbiter in labor disputes, she has won the confidence of the workers and the employers.

arbitrary ADJ. unreasonable or capricious; tyrannical. The coach claimed the team lost because the umpire made some arbitrary calls.

arbitrate V. act as judge. She was called upon to arbitrate the dispute between the union and the management.

arboretum N. place where different varieties of trees and shrubs are studied and exhibited. Waking along the treelined paths of the arboretum, Rita noted poplars, firs, and some particularly fine cypressoles.

arcade N. covered passageway, usually lined with shops. The arcade was popular with shoppers because it gave them protection from the summer sun and the winter rain.

arcane ADJ. secret; mysterious; known only to the initiated. Secret brotherhoods surround themselves with arcane rituals and trappings to mystify outsiders. So do doctors. Consider the arcane terminology they use and the impression they try to give that what is arcane to us is obvious to them.

archaeology N. study of artifacts and relics of early mankind. The professor of archaeology headed an expedition to the Gobi Desert in search of ancient ruins.

archaic ADJ. antiquated. "Methinks," "thee," and "thou" are archaic words that are no longer part of our normal vocabulary.

archetype N. prototype; primitive pattern. The Brooklyn Bridge was the archetype of the many spans that now connect Manhattan with Long Island and New Jersey.

archipelago N. group of closely located islands. When he looked at the map and saw the archipelagoes in the South Seas, he longed to visit them.

archives N. public records; place where public records are kept. These documents should be part of the archives so that historians may be able to evaluate them in the future.

ardor N. heat; passion; zeal. Katya's ardor was contagious; soon all her fellow demonstrators were busily making posters and handing out flyers, inspired by her ardent enthusiasm for the cause. ardent, ADJ.

arduous ADJ. hard; strenuous. Her arduous efforts had sapped her energy.

argot N. slang. In the argot of the underworld, she was taken for a ride.

aria N. operatic solo. At her Metropolitan Opera audition, Marian Anderson sang an aria from Norma.

arid ADJ. dry; barren. The cactus has adapted to survive in an arid environment.

aristocracy N. hereditary nobility; privileged class. Americans have mixed feelings about hereditary aristocracy; we say all men are created equal, but we describe particularly outstanding people as natural aristocrats.

armada N. fleet of warships. Queen Elizabeth's navy was able to defeat the mighty armada that threatened the English coast.

aromatic ADJ. fragrant. Medieval sailing vessels brought aromatic herbs from China to Europe.

arraign V. charge in court; indict. After his indictment by the Grand Jury, the accused man was arraigned in the County Criminal Court.

array V. marshal; draw up in order. His actions were bound to array public sentiment against him. also N.

array V. clothe; adorn. She liked to watch her mother array herself in her finest clothes before going out for the evening. also N.

arrears N. being in debt. Because he was in arrears with his car payments, the repo men repossessed his Porsche.

arrest V. stop or check; seize or capture (the attention). According to Connolly's "Theory of Permanent Adolescence," the triumphs and disappointments that boys experience at the great British public schools are so intense as to dominate their lives and to arrest their development.

arrhythmic ADJ. lacking rhythm or regularity. The doctor feared his arrhythmic heartbeat might be the first symptom of an imminent heart attack. arrhythmia, N.

arrogance N. pride; haughtiness. Convinced that Emma thought she was better than anyone else in the class, Ed rebuked her for her arrogance.

arroyo N. gully. Until the heavy rains of the past spring, this arroyo had been a dry bed.

arsenal N. storage place for military equipment. People are forbidden to smoke in the arsenal lest a stray spark set off the munitions stored there.
artful adj. cunning; crafty; sly. By using accurate details to suggest a misleading picture of the whole, the artful propagandist turns partial truths into more effective instruments of deception than lies.

articulate adj. effective; distinct. Her articulate presentation of the advertising campaign impressed her employers. Also v.

artifact n. object made by human beings, either handmade or mass-produced. Archaeologists debated the significance of the artifacts discovered in the ruins of Asia Minor but came to no conclusion about the culture they represented.

artificer n. deception; trickery. The Trojan War proved to the Greeks that cunning and artifice were often more effective than military might.

artisan n. manually skilled worker; craftsman, as opposed to artist. Elderly artisans from Italy trained Harlem teenagers to carve the stone figures that would decorate the new wing of the cathedral.

artless adj. without guile; open and honest. Red Riding Hood's artless comment, "Grandma, what big eyes you have!" indicates the child's innocent surprise at her "grandmother's" changed appearance.

ascendancy n. controlling influence. President Marcos failed to maintain his ascendancy over the Philippines.

ascertain v. find out for certain. Please ascertain her present address.

ascetic adj. practicing self-denial; austere. The wealthy, self-indulgent young man felt oddly drawn to the strict, ascetic life led by members of some monastic orders. Also n. asceticism. n.

ascibe v. refer; attribute; assign. I can ascribe no motive for her acts.

aseptic adj. preventing infection; having a cleansing effect. Hospitals succeeded in lowering the mortality rate as soon as they introduced aseptic conditions.

ashen adj. ash-colored; deadly pale. Her face was ashen with fear.

asinine adj. stupid. Your asinine remarks prove that you have not given this problem any serious consideration.

askance adv. with a sideways or indirect look. Looking askance at her questioner, she displayed her scorn.

askew adv. crookedly; slanted; at an angle. When the clown placed his hat askew upon his head, the children in the audience laughed.

asperity n. sharpness (of temper). These remarks, spoken with asperity, stung the boys to whom they had been directed.

aspersion n. slanderous remark. Rather than attacking President Cleveland's arguments with logic, his oppo-

aspirant n. seeker after position or status. Although I am an aspirant for public office, I am not willing to accept the dictates of the party bosses. Also adj.

aspire v. seek to attain; long for. Because he aspired to a career in professional sports, Philip enrolled in a graduate program in sports management.

assert v. assault. He was assailed with questions after his lecture.

assay v. analyze; evaluate. When they assayed the ore, they found that they had discovered a very rich vein. Also n.

assest n. estimation; appraisal. I would like to have your assessment of the situation in South Africa.

assiduous adj. diligent. It took Rembrandt weeks of assiduous labor before he was satisfied with his portrait of his son.

assimilate v. absorb; cause to become homogenous. The manner in which the United States was able to assimilate the hordes of immigrants during the nineteenth and early part of the twentieth centuries will always be a source of pride.

assuage v. ease or lessen (pain); satisfy (hunger); soothe (anger). Jilted by Jane, Dick tried to assuage her heartache by indulging in ice cream. One gallon later, he had assuaged his appetite but not his grief.

assuagement n. something taken for granted; the taking over or taking possession of. The young princess made the foolish assumption that the regiment would not object to her assumption of power. Assume, v.

assurance n. promise or pledge; certainty; self-confidence. When Guthrie gave Guinness his assurance that rehearsals were going well, he spoke with such assurance that Guinness was convinced.

asteroid n. small planet. Asteroids have become commonplace to the readers of interstellar travel stories in science fiction magazines.

astigmatism n. eye defect that prevents proper focus. As soon as his parents discovered that the boy suffered from astigmatism, they took him to the optometrist for corrective glasses.
Word List 4  Synonyms and Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar or opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

46. APPEASE (A) agitate (B) qualify (C) display (D) predestine (E) interrupt
47. APPROPRIATE (A) inappropriate (B) diagonal (C) exponential (D) uncourting (E) discouraging
48. APPREHEND (A) obviate (B) set free (C) shiver (D) understand (E) contrast
49. APTITUDE (A) sarcasm (B) inversion (C) adulation (D) lack of talent (E) gluttony
50. AQUILINE (A) watery (B) hooked (C) refined (D) antique (E) rodentlike
51. ARCHAIC (A) youthful (B) cautious (C) antiquated (D) placated (E) buttressed

52. ARDOR (A) zeal (B) paint (C) proof (D) group (E) excitement
53. ARRAY (A) swindle (B) tighten (C) strip bare (D) set free (E) cleanse
54. ARROYO (A) crevice (B) guilty (C) value (D) food (E) fabric
55. ARTIFICER (A) spite (B) exception (C) anger (D) candor (E) loyalty
56. ARTISAN (A) educator (B) decider (C) sculptor (D) discoverer (E) unskilled laborer
57. ASCERTAIN (A) amplify (B) master (C) discover (D) retain (E) explode
58. ASPERITY (A) anguish (B) absence (C) innuendo (D) good temper (E) snake
59. ASSUAGE (A) stuff (B) describe (C) wince (D) worsen (E) introduce
60. ASTEROID (A) Milky Way (B) radiance (C) large planet (D) rising moon (E) setting moon

Word List 5  astral-barb

astral ADJ. relating to the stars. She was amazed at the number of astral bodies the new telescope revealed.

astigmatic ADJ. binding; causing contraction; harsh or severe. The astigmatic quality of the unsweetened lemon juice made swallowing difficult, also N.

astronomical ADJ. enormously large or extensive. The government seemed willing to spend astronomical sums on weapons development.

astute ADJ. wise; shrewd; keen. The painter was an astute observer, noticing every tiny detail of her model's appearance and knowing exactly how important each one was.

asunder ADV. into parts; apart. A fierce quarrel split the partnership asunder; the two partners finally severed their connections because their points of view were poles asunder.

asylum N. place of refuge or shelter; protection. The refugees sought asylum from religious persecution in a new land.

asymmetric ADJ. not identical on both sides of a dividing central line. Because one eyebrow was set markedly higher than the other, William's face had a particularly asymmetric appearance. asymmetry, N.

ataxism N. resemblance to remote ancestors rather than to parents; reversion to an earlier type; throwback. In his love for gardening, Martin seemed an atavism to his Tuscan ancestors who lavished great care on their small plots of soil. atavistic, ADJ.

atheist N. one who denies the existence of God. "An atheist is a man who has no invisible means of support."

atonal V. make amends for; pay for. He knew no way in which he could atone for his brutal crime.

atrocity N. brutal deed. In time of war, many atrocities are committed by invading armies.

atrophy N. wasting away. Polio victims need physiotherapy to prevent the atrophy of affected limbs. also V.

attentive ADJ. alert and watchful; considerate; thoughtful. Spellbound, the attentive audience watched the final game of the tennis match, never taking their eyes from the ball. A cold wind sprang up; Stan's attentive daughter slipped a sweater over his shoulders without distracting his attention from the game.

attenuate V. make thinner; weaken or lessen (in density, force, degree). The long, dry spell attenuated the creek to the merest trickle. When a meteor strikes the ground, the initially intense shock attenuates or lessens as it diverges outward.

attest V. testify; bear witness. Having served as a member of a grand jury, I can attest that our system of indicting individuals is in need of improvement.

attribute N. essential quality. His outstanding attribute was his kindness.

attribute V. ascribe; explain. I attribute her success in science to the encouragement she received from her parents.

attrition N. gradual decrease in numbers; reduction in the work force without firing employees; wearing away of opposition by means of harassment. In the 1960s urban churches suffered from attrition as members moved from the cities to the suburbs. Rather than fire staff members, church leaders followed a policy of attrition, allowing elderly workers to retire without replacing them.
atypical adj. not normal. The child psychiatrist reassured Mrs. Keaton that playing doctor was not atypical behavior for a child of young Alex's age. "Perhaps not," she replied, "but charging for house calls is!"

■ audacious adj. daring; bold. Audiences cheered as Luke Skywalker and Princess Leia made their audacious, death-defying leap to freedom and escaped Darth Vader's troops. audacity, n.

audit n. examination of accounts. When the bank examiners arrived to hold their annual audit, they discovered the embezzlements of the chief cashier. Also v.

augment v. increase; add to. Armies augment their forces by calling up reinforcements; teachers augment their salaries by taking odd jobs.

augury n. omen; prophecy. He interpreted the departure of the birds as an augury of evil. augur, v.

august adj. impressive; majestic. Visiting the palace at Versailles, she was impressed by the august surroundings in which she found herself.

aureole n. sun's corona; halo. Many medieval paintings depict saintly characters with aureoles around their heads.

auroral adj. pertaining to the aurora borealis. The auroral display was particularly spectacular that evening.

auspicious adj. favoring success. With favorable weather conditions, it was an auspicious moment to set sail. Thomas, however, had doubts about sailing; a paranoid, he became suspicious whenever conditions seemed auspicious.

■ austere adj. forbiddingly stern; severely simple and unornamented. The headmaster's austere demeanor tended to scare off the more timid students, who never visited his study willingly. The room reflected the man, austere and bare, like a monk's cell, with no touches of luxury to moderate its austerity.

authenticate v. prove genuine. An expert was needed to authenticate the original Van Gogh painting, distinguishing it from its imitation.

authoritarian adj. subordinating the individual to the state; completely dominating another's will. The leaders of the authoritarian regime ordered the suppression of the democratic protest movement. After years of submitting to the will of her authoritarian father, Elizabeth Barrett ran away from home with the poet Robert Browning.

authoritative adj. having the weight of authority; peremptory and dictatorial. Impressed by the young researcher's well-documented presentation, we accepted her analysis of the experiment as authoritative.

authoritarian adj. having absolute, unchecked power; dictatorial. A person accustomed to exercising authority may become authoritarian if his or her power is unchecked. Dictators by definition are authoritarians. Bosses who dictate behavior as well as letters can be authoritarians too. autocracy, n.

automaton n. mechanism that imitates actions of humans. Long before science fiction readers became aware of robots, writers were creating stories of automata who could outperform humans.

■ autonomous adj. self-governing. Although the University of California at Berkeley is just one part of the state university system, in many ways Cal Berkeley is autonomous, for it runs several programs that are not subject to outside control. autonomy, n.

autopsy n. examination of a dead body; postmortem. The medical examiner ordered an autopsy to determine the cause of death. Also v.

auxiliary adj. offering or providing help; additional or subsidiary. To prepare for the emergency, they built an auxiliary power station. Also n.

avalanche n. great mass of falling snow and ice. The park ranger warned the skiers to stay on the main trails, where they would be in no danger of being buried beneath a sudden avalanche.

avance n. greediness for wealth. Montaigne is correct in maintaining that it is not poverty, but rather abundance, that breeds avance; the more shoes Imelda Marcos had, the more she craved.

aveng v. take vengeance for something (or on behalf of someone). Hamlet vowed he would avenge his father's murder and punish Claudius for his horrible crime.

■ aver v. assert confidently or declare; as used in law, state formally as a fact. The self-proclaimed psychic averred that, because he had extrasensory perception on which to base his predictions, he needed no seismographs or other gadgets in order to foretell earthquakes.

averse adj. reluctant; disinclined. The reporter was averse to revealing the sources of his information.

aversion n. firm dislike. Bert had an aversion to yuppies; Alex had an aversion to punks. Their mutual aversion was so great that they refused to speak to one another.

avert v. prevent; turn away. She averted her eyes from the dead cat on the highway.

aviary n. enclosure for birds. The aviary at the zoo held nearly 300 birds.

avid adj. greedy, eager for. He was avid for learning and read everything he could get. avidity, n.

avocation n. secondary or minor occupation. His hobby proved to be so fascinating and profitable that gradually he abandoned his regular occupation and concentrated on his avocation.

avow v. declare openly. Lana avowed that she never meant to steal Debbie's boyfriend, but no one believed her avowal of innocence.

avuncular adj. like an uncle. Avuncular pride did not prevent him from noticing his nephew's shortcomings.

awe n. solemn wonder. The tourists gazed with awe at the tremendous expanse of the Grand Canyon.

awl n. pointed tool used for piercing. She used an awl to punch additional holes in the leather belt she had bought.

avy adj. distorted; crooked. He held his head at avy, giving the impression that he had caught cold in his neck during the night. Also adj.

axiom n. self-evident truth requiring no proof. The Declaration of Independence records certain self-evident truths or axioms, the first of which is "All men are
created equal." To Sherlock Holmes, it was axiomatic that the little things were infinitely the most important; he based his theory of detection on this obvious truth.

azure adj. sky blue. Azure skies are indicative of good weather.
babble v. chatter idly. The little girl babbled about her doll. Also n.
bacchanalian adj. drunken. Emperor Nero attended the bacchanalian orgy.
badger v. pester; annoy. She was forced to change her telephone number because she was badgered by obscene phone calls.
badinage n. teasing conversation. Her friends at work greeted the news of her engagement with cheerful badinage.
baffle v. frustrate; perplex. The new code baffled the enemy agents.
bait v. harass; tease. The school bully baited the smaller children, terrorizing them.
baleful adj. threatening; menacing; sinister; foreshadowing evil. The bully's baleful glare across the classroom warned Tim to expect trouble after school. Blood-red in color, the planet Mars has long been associated with warfare and slaughter because of its ominous, baleful appearance.
balk v. stop short, as if faced with an obstacle, and refuse to continue. The chief of police balked at sending his officers into the riot-torn area.
bank v. foil. When the warden learned that several inmates were planning to escape, he took steps to balk their attempt.
ballast n. heavy substance used to add stability or weight. The ship was listing badly to one side; it was necessary to shift the ballast in the hold to get her back on an even keel. Also v.
balm n. something that relieves pain. Friendship is the finest balm for the pangs of disappointed love.
balmic adj. mild; fragrant. A balmic breeze refreshed us after the sultry blast.
banal adj. hackneyed; commonplace; trite; lacking originality. The hack writer's worn-out clichés made his comic sketch seem banal. He even resorted to the banality of having someone slip on a banana peel!
bandy v. discuss lightly or glibly; exchange (words) heatedly. While the president was happy to banter patriotic generalizations with anyone who would listen to him, he refused to bandy words with unfriendly reporters at the press conference.
bane n. curse; cause of ruin. Lucy's little brother was the bane of her existence, scribbling on walls with her lipstick and pouring her shampoo down the drain. While some factions praised technology as the mainspring of social progress, others criticized it as the bane of modern man, responsible for the tyranny of the machine and the squalor of urban life.
bansful adj. destructive; causing ruin or death. Anointment seems intended to apply the power of natural and supernatural forces to the sick and thus to ward off the baneful influences of diseases and of demons.
banting adj. good-naturedly ridiculing. They resented his banting remarks because they misinterpreted his teasing as sarcasm.
barb n. sharp projection from fishhook or other object; openly cutting remark. If you were a politician, which would you prefer, being caught on the barb of a fishhook or being subjected to malicious verbal barbs? Who can blame the president if he's happier fishing than he is listening to his critics' barbed remarks?

Test

Word List 5 Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

61. ASTUTE (A) sheer (B) noisy (C) astral (D) unusual (E) clever
62. ATROCITY (A) endurance (B) fortitude (C) session (D) heinous act (E) hatred
63. ATROPHY (A) capture (B) waste away (C) govern (D) award prize (E) defeat
64. ATTENUATE (A) appear (B) be absent (C) weaken (D) testify (E) soothe
65. ATYPICAL (A) superfluous (B) fortitude (C) unusual (D) clashing (E) lovely
66. AUDACITY (A) boldness (B) asperity (C) strength (D) stature (E) anchorage
67. AUGMENT (A) make noble (B) anoint (C) increase (D) harvest (E) reach
68. AUXILIARY (A) righteous (B) prospective (C) assistant (D) archaic (E) mandatory
69. AVARICE (A) easiness (B) greed (C) statement (D) invoice (E) power
70. AVERT (A) entertain (B) transform (C) turn away (D) lead toward (E) displeasure
71. AWRY (A) recommended (B) commiserating (C) startled (D) crooked (E) psychological
72. BALEFUL (A) doubtful (B) virtual (C) deadly (D) conventional (E) virtuous
73. BALMY (A) venturesome (B) dedicated (C) mild (D) fanatic (E) memorable
74. BANAL (A) philosophic (B) trite (C) dramatic (D) heedless (E) discussed
75. BANEFUL (A) intellectual (B) thankful (C) decisive (D) poisonous (E) remorseful
bard  N. poet. The ancient bard Homer sang of the fall of Troy.

barefaced ADJ. shameless; bold; un-concealed. Shocked by Huck Finn’s barefaced lies, Miss Watson prayed the good Lord would give him a sense of his un-re-generate wickedness.

baroque ADJ. highly ornate. Ac-customed to the severe, angular lines of modern skyscrapers, they found the flamboyance of baroque architecture amusing.

barrage N. barrier laid down by artillery fire; overwhelm-ing profusion. The company was forced to retreat through the barrage of heavy cannons.

barrister N. counselor-at-law. Galsworthy started as a barrister, but, when he found the practice of law boring, turned to writing.

barterer N. trader. The barterer exchanged trinkets for the natives’ furs.

bask v. luxuriate; take pleasure in warmth. Basking on the beach, she relaxed so completely that she fell asleep.

bastion N. stronghold; something seen as a source of protection. The villagers fortified the town hall, hoping this improvised bastion could protect them from the guerrilla raids.

bate v. let down; restrain. Until it was time to open the presents, the children had to bathe their curiosity, bated, ADJ.

bauble N. trinket; trifile. The child was delighted with the bauble she had won in the grab bag.

bawdy ADJ. indecent; obscene. Jack took offense at Jill’s bawdy remarks. What kind of young man did she think he was?

beatific ADJ. showing or producing joy; blissful. When Johnny first saw the new puppy, a beatific smile spread across his face. In his novel, Waugh praises Limbo, not Heaven: “Limbo is the place. In Limbo one has natural happiness without the beatific vision, no harps, no communal order, but wine and conversation and imperfect, various, humanity.”

beatify v. bless or sanctify; proclaim someone dead to be one of the blessed. In 1996 Pope John Paul II traveled to Belgium to beatify Joseph De Veuster, better known as Father Damien, who died in 1889 after caring for lepers in Hawaii. How can you tell the pope from a cosmologist? A cosmo-logist beautifies someone living; the Pope beatifies someone dead.

beatitude N. blessedness; state of bliss. Growing closer to God each day, the mystic achieved a state of in-describable beatitude.

bedizen v. dress with vulgar finery. The witch doctors were bedizened in their gaudiest costumes.

bedraggle v. wet thoroughly. We were so bedraggled by the severe storm that we had to change into dry clothing.

bedraggled, ADJ.

beeline N. direct, quick route. As soon as the movie was over, Jim made a beeline for the exit.

befuddle v. confuse thoroughly. His attempts to clarify the situation succeeded only in befuddling her further.

beget v. father; produce; give rise to. One good turn may deserve another, it does not necessarily beget another.

begrudge v. resent. I begrudge every minute I have to spend attending meetings.

beguile v. mislead or delude; cheat; pass time. With flattery and big talk of easy money, the con men beguiled Kylo into betting his allowance on the shell game. The men quickly beguiled poor Kyle of his money. Broke, he beguiled himself during the long hours by playing solitaire.

behemoth N. huge creature; something of monstrous size or power. Sportscasters nicknamed the linebacker "The Behemoth."

beholden ADJ. obligated; indebted. Since I do not wish to be beholden to anyone, I cannot accept this favor.

behoove v. be necessary or proper for; be incumbent upon. Because the interest of the ruler and the ruled are incompatible, it behooves the ruler to trust no one; to be suspicious of sycophants; to permit no one to gain undue power or influence; and, above all, to use guile to unearth plots against the throne.

belabor v. explain or go over excessively or to a ridiculous degree; assail verbally. The debate coach warned her student not to bore the audience by belaboring his point.

belated ADJ. delayed. He apologized for his belated note of condolence to the widow of his friend and explained that he had just learned of her husband’s untimely death.

beleaguer v. besiege or attack; harass. The babysitter was surrounded by a crowd of unmanageable brats who relentlessly beleaguered her.

believe v. contradict; give a false impression. His coarse, hard bitten exterior belied his innate sensitivity.

belittle v. disparage; deprecate. Parents should not belittle their children’s early attempts at drawing, but should encourage their efforts.

bellicose ADJ. warlike; pugnacious; naturally inclined to fight. Someone who is spoiling for a fight is by definition bellicose.

belligerent ADJ. quarrelsome. Whenever he had too much to drink, he became belligerent and tried to pick fights with strangers. Belligerence, N.

bemoan v. lament; express disapproval of. The widow bemoaned the death of her beloved husband. Although critics bemoaned the serious flaws in the author’s novels, each year his latest book topped the best-seller list.

bemused ADJ. confused; lost in thought; preoccupied. Jill studied the garbled instructions with a bemused look on her face.

benediction N. blessing. The appearance of the sun after the many rainy days was like a benediction.
benefactor N. gift giver; patron. Scrooge later became Tiny Tim’s benefactor and gave him gifts.

beneficent ADJ. kindly; doing good. The overgenerous philanthropist had to curb his beneficent impulses before he gave away all his money and left himself with nothing.

beneficial ADJ. helpful; useful. Tiny Tim’s cheerful good nature had a beneficial influence on Scrooge’s once-uncharitable disposition.

beneficiary N. person entitled to benefits or proceeds of an insurance policy or will. In Scrooge’s will, he made Tiny Tim his beneficiary, everything he left would go to young Tim.

benevolent ADJ. generous; charitable. Mr. Fezziwig was a benevolent employer who wished to make Christmas merrier for young Scrooge and his other employees.

benign ADJ. kindly; favorable; not malignant. Though her benign smile and gentle bearing made Miss Maple seem a sweet little old lady, in reality she was a tough-minded, shrewd observer of human nature, benignity, N.

benison N. blessing. Let us pray that the benison of peace once more shall prevail among the nations of the world.

bent ADJ.; N. determined; natural talent or inclination. Bent on advancing in the business world, the secretary-heroine of Working Girl had a true bent for high finance.

bequeath v. leave to someone by means of a will; hand down. In his will, Father bequeathed his watch to Philip; the bequest meant a great deal to the boy. bequest, N.

berate v. scold strongly. He feared she would berate him for his forgetfulness.

bereavement N. state of being deprived of something valuable or beloved. His friends gathered to console him upon his sudden bereavement.

bereft ADJ. deprived of; lacking. The foolish gambler soon found himself bereft of funds.

berserk ADJ. frenzied. Angered, he went berserk and began to wreck the room.

beseech v. beg; plead with. The workaholic executive’s wife beseeched him to spend more time with their son.

beset v. harass or trouble; hem in. Many vexing problems beset the American public school system. Sleeping Beauty’s castle was beset on all sides by dense thickets that hid it from view.

besiege v. surround with armed forces; harass (with requests). When the bandits besieged the village, the villagers holed up in the town hall and prepared to withstand a long siege. Members of the new administration were besieged with job applications from people who had worked on the campaign.

besmirch v. soil, defile. The scandalous remarks in the newspaper besmirch the reputations of every member of the society.

bestial ADJ. beastlike; brutal; inhuman. According to legend, the werewolf was able to abandon its human shape and assume a bestial form. The Red Cross sought to put an end to the bestial treatment of prisoners of war.

bestow v. confer. He wished to bestow great honors upon the hero.

betoken v. signify; indicate. The well-equipped docks, tall piles of cargo containers, and numerous vessels being loaded all betokened Oakland’s importance as a port.

betray v. be unfaithful; reveal (unconsciously or unwillingly). The spy betrayed his country by selling military secrets to the enemy. When he was taken in for questioning, the tightness of his lips betrayed his fear of incriminating himself. betrayal, n.

betroth v. become engaged to marry. The announcement that they had become betrothed surprised their friends who had not suspected any romance.

bevy N. large group. The movie actor was surrounded by a bevy of starlets.

bicameral ADJ. two-chambered, as a legislative body. The United States Congress is a bicameral body.

bicker v. quarrel. The children bickered morning, noon and night, exasperating their parents.

biennial ADJ. every two years. Seeing no need to meet more frequently, the group held biennial meetings instead of annual ones. Plants that bear flowers biennially are known as biennials.

bifurcated ADJ. divided into two branches; forked. With a bifurcated branch and a piece of elastic rubber, he made a crude but effective slingshot.

bigotry N. stubborn intolerance. Brought up in a democratic atmosphere, the student was shocked by the bigotry and narrowness expressed by several of his classmates.

bilious ADJ. suffering from a liver complaint; peevishly ill humored. If your tummy’s feeling bilious, try Carter’s Little Liver Pills for fast relief. British linguistic purists regard Americanisms with a bilious eye, pouncing on each supposed barbarism viciously.

bilk v. swindle, cheat. The con man specialized in bilking insurance companies.

bilowing ADJ. swelling out in waves; surging. Standing over the air vent, Marilyn Monroe tried vainly to control her billowing skirts.

bivouac N. temporary encampment. While in bivouac, we spent the night in our sleeping bags under the stars.

bizarre ADJ. fantastic; violently contrasting. The plot of the novel was too bizarre to be believed.

blanch v. bleach; whiten. Although age had blanched his hair, he was still vigorous and energetic.

bland ADJ. soothing or mild; agreeable. Jill tried a bland ointment for her sunburn. However, when Jack absent-mindedly patted her on the sunburned shoulder, she couldn’t maintain her bland persona. blandness, N.

blandish v. coax; flatter. Despite all their sweet-talking, Suzi and Cher were unable to blandish the doorman into letting them into the hot new club.
blandishment  N. flattery. Despite the salesperson's blandishments, the customer did not buy the outfit.

blare  N. loud, harsh roar or screech; dazzling blaze of light. I don't know which is worse: the steady blare of a boom box deafening your ears or a sudden blare of flashbulbs dazzling your eyes. Also V.

blasé  ADJ. bored with pleasure or dissipation. Although Beth was as thrilled with the idea of a trip to Paris as her classmates were, she tried to act supercool and blasé, as if she'd been abroad hundreds of times.

blasphemy  N. irreverence; sacrilege; cursing. In my father's house, the Drodgers were the holiest of holies; to cheer for another team was to utter words of blasphemy. blasphemous, ADJ.

blatant  ADJ. extremely obvious; loudly offensive. Caught in a blatant lie, the scoundrel had only one regret: he wished that he had lied more subtly. blattancy, N.

bleak  ADJ. cold or cheerless; unlikely to be favorable. The frigid, inhospitable Aleutian Islands are bleak military outposts. It's no wonder that soldiers assigned there have a bleak attitude toward their posting.

blighted  ADJ. suffering from a disease; destroyed. The extent of the blighted areas could be seen only when viewed from the air.

blithe  ADJ. carefree and unconcerned (perhaps foolishly so); cheerful and gay. Micawber's blithe optimism that something would turn up proved unfounded, and he wound up in debtors' prison. Marie Antoinette's famous remark, "Let them eat cake!" epitomized her blithe ignorance of the harsh realities endured by the common people.

bloated  ADJ. swollen or puffed as with water or air. Her bloated stomach came from drinking so much water.

blowhard  N. talkative boaster. After all, Soi's talk about his big show business connections led nowhere. Sally decided he was just another blowhard.

bludgeon  N. club; heavy-headed weapon. Attacked by Dr. Moriarty, Holmes used his walking stick as a bludgeon to defend himself. "Watson," he said, "I fear I may have bludgeoned Moriarty to death."

bluff  ADJ. rough but good-natured. Jack had a bluff and hearty manner that belied his actual sensitivity; he never let people know how thin-skinned he really was.

bluff  N. pretense (of strength); deception; high cliff. Claire thought Lord Byron's boast that he would swim the Hellespont was just a bluff; she was astounded when he dove from the high bluff into the waters below.

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Test

Word List 6  Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

76. BAROQUE (A) polished (B) constant (C) transformed (D) simple (E) aglow
77. BEATIFIC (A) glorious (B) dreadful (C) theatrical (D) crooked (E) handsome
78. BELITTLE (A) disobey (B) forget (C) magnify (D) extol (E) envy
79. BELICOSE (A) peaceful (B) naval (C) amusing (D) piecemeal (E) errant
80. BENIGN (A) tenfold (B) peaceful (C) blessed (D) wavering (E) malignant
81. BENISON (A) curse (B) bachelor (C) wedding (D) orgy (E) tragedy
82. BERATE (A) grant (B) praise (C) refer (D) purchase (E) deny
83. BESTIAL (A) animated (B) noble (C) zoological (D) clear (E) dusky
84. BIGOTRY (A) arrogance (B) approval (C) mourning (D) promptness (E) tolerance
85. BIZARRE (A) roomy (B) veiled (C) subdued (D) triumphant (E) normal
86. BLANCH (A) bleach (B) scatter (C) darken (D) analyze (E) subdivide
87. BLAND (A) caustic (B) meager (C) scft (D) uncooked (E) helpless
88. BLÂSE (A) fiery (B) clever (C) intriguing (D) slim (E) ardent
89. BLEAK (A) pale (B) sudden (C) dry (D) narrow (E) cheerful
90. BLITHE (A) spiritual (B) profuse (C) cheerless (D) hybrid (E) comfortable

Word List 7  blunder-canter

blunder  N. error. The criminal's fatal blunder led to his capture. Also v.

blurt  V. utter impulsively. Before she could stop him, he blurted out the news.

bluster  V. blow in heavy gusts; threaten emptily; bully. "Let the stormy winds bluster," cried Jack, "we'll set sail tonight." Jill let Jack bluster; she wasn't going anywhere, no matter what he said. Also n.

bode  V. foreshadow; portend. The gloomy skies and the sulfurous odors from the mineral springs seemed to bode evil to those who settled in the area.

bogus  ADJ. counterfeit; not authentic. The police quickly found the distributors of the bogus twenty-dollar bills.

bohemian  ADJ. unconventional (in an artistic way). Gertrude Stein ran off to Paris to live an eccentric,
bohemian life with her writer friends. Oakland was not bohemian: it was too bourgeois, too middle-class.

boisterous ADJ. violent; rough; noisy. The unruly crowd became even more boisterous when he tried to quiet them.

bolster v. support; reinforce. The debaters amassed file boxes full of evidence to bolster their arguments.

bolt N. door bar; fastening pin or screw; length of fabric. The carpenter shut the workshop door, sliding the heavy metal bolt into place. He sorted through his toolbox for the nuts and bolts and nails required for the job. Before he cut into the bolt of canvas, he measured how much fabric he would need.

bolt v. dash or dart off; hasten (a door); gobble down. Jack was set to bolt out the front door, but Jill bolted the door. "Eat your breakfast," she said, "don't bolt your food."

bombardment N. attack (as with missiles). The enemy bombardment demolished the town. Members of the opposition party bombarded the prime minister with questions about the enemy attack.

bombastic ADJ. pompous; using inflated language. Puffed up with conceit, the orator spoke in such a bombastic manner that we longed to deflate him.

boon N. blessing; benefit. The recent rains that filled our empty reservoirs were a boon to the whole community.

boorish ADJ. rude; insensitive. Though Mr. Potts constantly interrupted his wife, she ignored his boorish behavior, for she had lost hope of teaching him courtesy.

bouillon N. clear beef soup. The cup of bouillon served by the steward was welcomed by those who had been chilled by the cold ocean breezes.

bountiful ADJ. abundant; graciously generous. Thanks to the good harvest, we had a bountiful supply of food and we could be as bountiful as we liked in distributing food to the needy.

bourgeois ADJ. middle class; selfishly materialistic; dully conventional. Technically, anyone who belongs to the middle class is bourgeois, but, given the word's connotations, most people resent it if you call them that.

bovine ADJ. cowlike; placid and dull. Nothing excites Esther; even when she won the state lottery, she still preserved her air of bovine calm.

bowdlerize v. expurgate. After the film editors had bowdlerized the language in the script, the movie picture's rating was changed from "R" to "PG."

boycott v. refrain from buying or using. To put pressure on grape growers to stop using pesticides that harmed the farm workers' health, Cesar Chavez called for consumers to boycott grapes.

brackish ADJ. somewhat saline. He found the only wells in the area were brackish; drinking the water made him nauseous.

braggadocio N. boasting. He was disliked because his manner was always full of braggadocio.

braggart N. boaster. Modest by nature, she was no braggart, preferring to let her accomplishments speak for themselves.

brandish v. wave around; flourish. Alarmed, Doctor Watson wildly brandished his gun until Holmes told him to put the thing away before he shot himself.

bravado N. swagger; assumed air of defiance. The bravado of the young criminal disappeared when he was confronted by the victims of his brutal attack.

brawn N. muscular strength; sturdiness. It takes brawn to become a champion weight-lifter. Brawny, ADJ.

brazen ADJ. insolent. Her brazen contempt for authority angered the officials.

breach N. breaking of contract or duty; fissure or gap. Jill sued Jack for breach of promise, claiming he had broken their engagement. The attackers found a breach in the enemy's fortifications and penetrated their lines. Also v.

breath N. width; extent. We were impressed by the breadth of her knowledge.

brevity N. conciseness. Brevity is essential when you send a telegram or cablegram; you are charged for every word.

brindled ADJ. tawny or grayish with streaks or spots. He was disappointed in the litter because the puppies were brindled; he had hoped for animals of a uniform color.

brittle ADJ. easily broken; difficult. My employer's brittle personality made it difficult for me to get along with her.

breach v. introduce; open up. Jack did not even try to breach the subject of religion with his in-laws. If you breach a touchy subject, the result may be a breach.

brocade N. rich, figured fabric. The sofa was covered with expensive brocade.

brochure N. pamphlet. This brochure of farming was issued by the Department of Agriculture.

brooch N. ornamental clasp. She treasured the brooch because it was an heirloom.

brook v. tolerate; endure. The dean would brook no interference with his disciplinary actions. (secondary meaning)

browbeat v. bully; intimidate. Billy resisted Ted's attempt to browbeat him into handing over his lunch money.

browse v. graze; skim or glance at casually. "How now, brown cow, browsing in the green, green grass. I remember lines of verse that I came across while browsing through the poetry section of the local bookstore.

brunt N. main impact or shock. Tom Sawyer claimed credit for painting the fence, but the brunt of the work fell on others. However, Tom bore the brunt of Aunt Polly's complaints when the paint began to peel.

brusque ADJ. blunt; abrupt. She was offended by his brusque reply.

buccaneer N. pirate. At Disneyland the Pirates of the Caribbean sing a song about their lives as bloody buccaneers.
bucolic ADJ. rustic; pastoral. Filled with browsing cows and bleating sheep, the meadow was a charmingly
bucolic sight.

buffet N. table with food set out for people to serve themselves; meal at which people help themselves to
food that's been set out. (Buffet rhymes with tray.) Please convev the soufflé on the tray to the buffet.

buffet v. slap; batter; knock about. To buffet something is to rough up. (Buffet rhymes with Muffett.) Was Miss
Muffett buffeted by the crowd on the way to the buffet tray?

buffoonery N. clowning. In the Ace Ventura movies, Jim
Carrey's buffoonery was hilarious: like Bozo the Clown,
he's a natural buffoon.

bugaboo N. bugbear; object of baseless terror. If we
become frightened by such bugaboos, we are no wiser
than the birds who fear scarecrows.

bullion N. gold and silver in the form of bars. Much
bullion is stored in the vaults at Fort Knox.

bulwark N. earthwork or other strong defense; person
who defends. The navy is our principal bulwark against
invasion.

bungle v. mismanage; blunder. Don't botch this assign-
ment, Bumstead; if you bungle the job, you're fired!

buoyant ADJ. able to float; cheerful and optimistic. When
the boat capsized, her buoyant life jacket kept Jody
afloat. Scrambling back on board, she was still in a
buoyant mood, certain that despite the delay she'd win
the race, buoyancy, N.

bureaucracy N. overregulated administrative system
marked by red tape. The Internal Revenue Service is the
ultimate bureaucracy: taxpayers wasted so much paper
filling out IRS forms that the IRS bureaucrats printed up
a new set of rules requiring taxpayers to comply with the
Paperwork Reduction Act. Bureaucratic, ADJ.

burgeon v. grow forth; send out buds. In the spring,
the plants that burgeon are a promise of the beauty that
is to come.

burlesque v. give an imitation that ridicules. In Galaxy
Quest, Alan Rickman burlesques Mr. Spock of Star Trek,
outrageously parodying Spock's unemotional manner
and stiff bearing. also N.

burnish v. make shiny by rubbing; polish. The maid
burnished the brass fixtures until they reflected the
lamplight.

buttress v. support; prop up. Just as architects
buttress the walls of cathedrals with flying buttresses,
debaters buttress their arguments with facts. also N.

buxom ADJ. full-figured; plump; jolly. High-fashion
models usually are slender rather than buxom.

cabal N. small group of persons secretly united to
promote their own interests. The cabal was defeated
when its scheme was discovered.

cache N. hiding place. The detectives followed the sus-
pect until he led them to the cache where he had stored
his loot. also v.

cacophonous ADJ. discordant; inharmonious. Do the
students in the orchestra enjoy the cacophonous sounds
they make when they're tuning up? I don't know how they
can stand the racket. cacophony, N.

cadaver N. corpse. In some states, it is illegal to dissect
cadavers.

cadaverous ADJ. like a corpse; pale. From his cadaver-
ous appearance, we could see how the disease had ravaged him.

cadence N. rhythmic rise and fall (of words or sounds):
beat. Marching down the road, the troops sang out, fol-
lowing the cadence set by the sergeant.

cadge v. beg; mooch; panhandle. While his car was in
the shop, Bob had to cadge a ride to work each day.
Unwilling to be a complete moocher, however, he offered
to pay for the gas.

cajole v. coax; wheedle. Cher tried to cajole her father
into letting her drive the family car. cajolery, N.

calamity N. disaster; misery. As news of the calamity
spread, offers of relief poured in to the stricken community.

calculated ADJ. deliberately planned; likely. Levy's
choice of clothes to wear to the debate tournament was
carefully calculated. Her conventional suit was calcu-
lated to appeal to the conservative judges.

caldron N. large kettle. “Why, Mr. Crusoe,” said the
savage heating the giant caldron, “we'd love to have you
for dinner!”

caliber N. ability; quality. Einstein's cleaning the black-
boards again? Albert, quit it! A man of your caliber
shouldn't have to do such menial tasks.

calligraphy N. beautiful writing; excellent penmanship.
As we examine ancient manuscripts, we become
impressed with the calligraphy of the scribes.

callous ADJ. hardened; unfeeling. He had worked in the
hospital for so many years that he was callous to the
suffering in the wards. callus, N.

callow ADJ. youthful, immature; inexperienced. As a
freshman, Jack was sure he was a man of the world; as a
sophomore, he made fun of freshmen as callow youths.
In both cases, his judgment showed just how callow he
was.

calorific ADJ. heat-producing. Coal is much more calorific
than green wood.

calumny N. malicious misrepresentation; slander. He
could endure his financial failure, but he could not bear
the calumny that his foes heaped upon him. According
to Herodotus, someone calumniated is doubly injured,
first by the person who utters the calumny, and then by
the person who believes the slander.

camaraderie N. good-fellowship. What he loved best
about his job was the sense of camaraderie he and his
coworkers shared.

cameo N. shell or jewel carved in relief; star's special
appearance in a minor role in a film. Don't bother buying
cameras from the street peddlers in Rome: the carvings
they sell are clumsy jobs. Did you enjoy Bill Murray's
cameo in Little Shop of Horrors? He was onscreen for
only a minute, but he cracked me up.
camouflage v. disguise; conceal. In order to rescue Han Solo, Princess Leia camouflaged herself in the helmet and cloak of a space bandit. Also n.
canard n. false or unfounded story; fabricated report. Rather than becoming upset by the National Enquirer story about Tony's supposed infidelity, Tina refused to take the canard seriously. To call a lying tale a base canard or a vile canard is to descend to a cliché.
candor n. frankness; open honesty. Jack can carry candor too far: when he told Jill his honest opinion of her, she nearly slapped his face. CANDID, adj.
canine adj. related to dogs; doglike. Some days the canine population of Berkeley seems almost to outnumber the human population.
canker n. any ulcerous sore; any evil. Poverty is a canker in the body politic; it must be cured.
canny adj. shrewd; thrifty. The canny Scotsman was more than a match for the swindlers.
canon n. collection or authoritative list of books (e.g., by an author, or accepted as scripture). Scholars hotly debated whether the newly discovered sonnet should be accepted as part of the Shakespearean canon.
canon n. rule or principle, frequently religious. "One catastrophe, one locality, one day"—these are Aristotle's rules for tragedy, and classic French plays strictly follow them; Shakespeare, however, disregards all these canons. A born rebel, Katye was constitutionally incapable of abiding by the canons of polite society.
cant n. insincere expressions of piety; jargon of thieves. Shocked by news of the minister's extramarital love affairs, the worshippers dismissed his talk about the sacredness of marriage as mere cant. Cant is a form of hypocrisy: those who can, pray; those who cant, pretend.
cantankerous adj. ill-humored; irritable. Constantly complaining about his treatment and refusing to cooperate with the hospital staff, he was a cantankerous patient.
cantata n. story set to music, to be sung by a chorus. The choral society sang the new cantata composed by its leader.
canter n. slow gallop. Because the racehorse had outdistanced its competition so easily, the reporter wrote that the race was won in a canter. Also v.

Test

Word List 7 Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

91. BOISTEROUS (A) conflicting (B) noisy (C) testimonial (D) grateful (E) adolescent
92. BOMBASTIC (A) sensitive (B) pompous (C) rapid (D) sufficient (E) expensive
93. BOORISH (A) brave (B) oafish (C) romantic (D) speedy (E) dry
94. BOUILLON (A) insight (B) chowder (C) gold (D) clear soup (E) stew
95. BRACKISH (A) carful (B) salty (C) chosen (D) tough (E) wet
96. BRAGGADOCIO (A) weaponry (B) boasting (C) skirmish (D) encounter (E) position
97. BRAZEN (A) shameless (B) quick (C) modest (D) pleasant (E) melodramatic
98. BRINDLED (A) equine (B) pathetic (C) hasty (D) spotted (E) mild tasting
99. BROCHURE (A) opening (B) pamphlet (C) censor (D) bureau (E) pin
100. BUCOLIC (A) diseased (B) repulsive (C) rustic (D) twinkling (E) cold
101. BUXOM (A) voluminous (B) indecisive (C) convincing (D) plump (E) bookish
102. CACHE (A) lock (B) hiding place (C) tide (D) automobile (E) grappling hook
103. CACOPHONY (A) discord (B) dance (C) applause (D) type of telephone (E) rooster
104. CALLOW (A) youthful (B) holy (C) mild (D) colored (E) seated
105. CANDID (A) vague (B) outspoken (C) experienced (D) anxious (E) sallow

Word List 8 canto-chameleon

canto n. division of a long poem. Dante's poetic masterpiece The Divine Comedy is divided into cantos.
canvas v. determine or seek opinions, votes, etc. After canvassing the sentiments of his constituents, the congressman was confident that he represented the majority opinion of his district. Also n.
capacious adj. spacious. In the capacious areas of the railroad terminal, thousands of travelers lingered while waiting for their trains.
capacity n. mental or physical ability; role; ability to accommodate. Mike had the capacity to handle several jobs at once. In his capacity as president of SelecTronics, he marketed an electronic dictionary with a capacity of 200,000 words.
capillary adj. having a very fine bore. The changes in surface tension of liquids in capillary vessels is of special interest to physicists. Also n.
capitulate v. surrender. The enemy was warned to capitulate or face annihilation.
caprice N. whim. She was an unpredictable creature, acting on caprice, never taking thought of the consequences.
capricious ADJ. unpredictable; fickle. The storm was capricious: it changed course constantly. Jill was capricious, too; she changed boyfriends almost as often as she changed clothes.
caption N. title; chapter heading; text under illustration. The captions that accompany The Far Side cartoons are almost as funny as the pictures. Also V.
captious ADJ. faultfinding. His criticisms were always captious and frivolous, never offering constructive suggestions.
carafe N. glass water bottle; decanter. With each dinner, the patron receives a carafe of red or white wine.
carapace N. shell covering the back (of a turtle, crab, etc.). At the children’s zoo, Richard perched on top of the giant turtle’s hard carapace as the creature slowly made its way around the enclosure.
carat N. unit of weight for precious stones; measure of fineness of gold. He gave her a diamond that weighed three carats and was mounted in an eighteen-carat gold band.
carcinogenic ADJ. causing cancer. Many supposedly harmless substances have been revealed to be carcinogenic.
cardinal ADJ. chief. If you want to increase your word power, the cardinal rule of vocabulary-building is to read.
cardiologist N. doctor specializing in ailments of the heart. When the pediatrician noticed Philip had a slight heart murmur, she referred him to a cardiologist for further tests.
careen v. lurch; sway from side to side. The taxicab careened wildly as it rounded the corner.
caricature N. distortion; burlesque. The caricatures he drew always emphasized personal weaknesses of the people he burlesqued. Also V.
carillon N. a set of bells capable of being played. The carillon in the bell tower of the Coca-Cola pavilion at the New York World’s Fair provided musical entertainment every hour.
carnage N. destruction of life. The film The Killing Fields vividly depicts the carnage wreaked by Pol Pot’s followers in Cambodia.
carnal ADJ. fleshy. Is the public more interested in carnal pleasures than in spiritual matters? Compare the number of people who read Playboy daily to the number of those who read the Bible every day.
carnivorous ADJ. meat-eating. The lion’s a carnivorous beast; a hunk of meat makes up his feast. A cow is not a carnivore; she likes the taste of grain, not gore.
carnival N. drunken revel. Once the beer-chugging contests started, the drinking got out of control, and the party degenerated into an ugly carnival.
carping N. petty criticism; fault-finding. Welcoming constructive criticism, Lexy appreciated her editor’s comments, finding them free of carping. Also ADJ.
carrion N. rotting flesh of a dead body. Buzzards are nature’s scavengers; they eat the carrion left behind by other predators.
cartographer N. map-maker. Though not a professional cartographer, Tolkien was able to construct a map of his fictional world.
cascade N. small waterfall. We were too tired to appreciate the beauty of the many cascades because we had to detour around them to avoid being drenched by the torrents cascading down.
caste N. one of the hereditary classes in Hindu society, social stratification, prestige. The differences created by caste in India must be wiped out if true democracy is to prevail in that country.
castigation N. punishment; severe criticism. Sensitive even to mild criticism, Woof could not bear the castigation that she found in certain reviews. Ben Jonson was a highly moral playwright: in his plays, his purpose was to castigate vice and hypocrisy by exposing them publicly.
casually ADJ. serious or fatal accident. The number of automotive casualties on this holiday weekend was high.
cataclysm N. deluge; upheaval. A cataclysm such as the French Revolution affects all countries. Cataclysmic, ADJ.
catalyst N. agent that influences the pace of a chemical reaction while it remains unaffected and unchanged; person or thing that causes action. After a banana is harvested, certain enzymes within its cells continue to act as a catalyst for the biochemical processes of ripening, thereby causing the banana eventually to rot. In 1969 the IRA split into two factions: the “officials,” who advocated a unified socialist Ireland but disavowed terrorist activities; and the “provisionals,” who argued that terrorism was a necessary catalyst for unification.
catapult N. slingshot; hurling machine. Airplanes are sometimes launched from battleships by catapults. Also V.
cataract N. great waterfall; eye abnormality. She gazed with awe at the mighty cataract known as Niagara Falls.
catastrophe N. calamity; disaster. The 1906 San Francisco earthquake was a catastrophe that destroyed most of the city. A similar earthquake striking today could have even more catastrophic results.
call N. shout of disapproval; boo. Every major league pitcher has off days during which he must learn to ignore catcalls and angry hisses from the crowd.
catechism N. book for religious instruction; instruction by question and answer. He taught by engaging his pupils in a catechism until they gave him the correct answer.
categorical ADJ. without exceptions; unqualified; absolute. Though the captain claimed he was never, never sick at sea, he finally qualified his categorical denial: he was “hardly ever” sick at sea.
catharsis N. purging or cleansing of any passage of the body. Aristotle maintained that tragedy created a catharsis by purging the soul of base concepts.
cathartic N. purgative. Some drugs act as laxatives when taken in small doses but act as cathartics when taken in much larger doses. Also adj.
catholic adj. universal; wide-ranging liberal. He was extremely catholic in his taste and read everything he could find in the library.
caucus n. private meeting of members of a party to select officers or determine policy. At the opening of Congress the members of the Democratic Party held a caucus to elect the majority leader of the House and the party whip.
caulk v. to make watertight (by plugging seams). When water from the shower leaked into the basement, we knew it was time to caulk the tiles at the edges of the shower stall.
causal adj. implying a cause-and-effect relationship. The psychologist maintained there was a causal relationship between the nature of one's early childhood experiences and one's adult personality. Causality, n.
caustic adj. burning; sarcastically biting. The critic's caustic remarks angered the hapless actors who were the subjects of his sarcasm.
cauterize v. burn with hot iron or caustic. In order to prevent infection, the doctor cauterized the wound.
cavalcade n. procession; parade. As described by Chaucer, the cavalcade of Canterbury pilgrims was a motley group.
cavalier adj. casual and offhand; arrogant. Sensitive about having her ideas taken lightly, Marcia felt insulted by Mark's cavalier dismissal of her suggestion.
cavil v. make frivolous objections. I respect your sensible criticisms, but I dislike the way you cavil about unimportant details. Also n.
cede v. yield (title, territory) to; surrender formally. Eventually the descendants of England's Henry II were forced to cede their French territories to the King of France. Cession, n.
celerity n. speed; rapidity. Hamlet resented his mother's celerity in remarrying within a month after his father's death.
celestial adj. heavenly. She spoke of the celestial joys that awaited virtuous souls in the hereafter.
celibate adj. abstaining from sexual intercourse; unmarried. Though the late Havelock Ellis wrote extensively about sexual customs and was considered an expert in such matters, recent studies maintain he was celibate throughout his life. Celibacy, n.
censor n. overseer of morals; person who eliminates inappropriate matter. Soldiers dislike having their mail read by a censor but understand the need for this precaution. Also v.
censorious adj. critical. Censorious people delight in casting blame.
censure v. blame; criticize. The senator was censured for behavior inappropriate to a member of Congress. Also n.
centaur n. mythical figure, half man and half horse. I was particularly impressed by the statue of the centaur in the Roman Hall of the museum.
centigrade adj. denoting a widely used temperature scale (basically same as Celsius). On the centigrade thermometer, the freezing point of water is zero degrees.
centrifugal adj. radiating; departing from the center. Many automatic drying machines remove excess moisture from clothing by centrifugal force.
centrifuge n. machine that separates substances by whirling them. At the dairy, we employ a centrifuge to separate cream from milk. Also v.
centripetal adj. tending toward the center. Does centripetal force or the force of gravity bring orbiting bodies to the earth's surface?
centurion n. Roman army officer. Because he was in command of a company of one hundred soldiers, he was called a centurion.
cerebral adj. pertaining to the brain or intellect. The content of philosophical works is cerebral in nature and requires much thought.
cerebration n. thought. Mathematics problems sometimes require much cerebration.
ceremonious adj. marked by formality. Ordinary dress would be inappropriate at a ceremonial affair.
certitude n. certainty. Though there was no certitude of his getting the job, Lou thought he had a good chance of being hired.
cessation n. stoppage. The airline's employees threatened a cessation of all work if management failed to meet their demands. Cease, v.
cession n. yielding (something) to another; ceding. The Battle of Lake Erie, a major U.S. naval victory in the War of 1812, ensured U.S. control over Lake Erie and ruled out any territorial cession in the Northwest to Great Britain in the peace settlement.
chafe v. warm by rubbing; make sore (by rubbing). Chilled, he chafed his hands before the fire. The collar of his school uniform chafed Tom's neck, but not as much the school's strict rules chafed his spirit. Also n.
chaff n. worthless products of an endeavor. When you separate the wheat from the chaff, be sure you throw out the chaff.
chaffing adj. bantering; joking. Sometimes Chad's flippancy, chaffing remarks annoy us. Still, Chad's chaffing keeps us laughing.
chagrin n. vexation (caused by humiliation or injured pride); disappointment. Embarrassed by his parents' shabby, working-class appearance, Doug felt their visit to his school would bring him nothing but chagrin. A person filled with chagrin doesn't grin; he's too mortified.
chalice n. goblet; consecrated cup. In a small room adjoining the cathedral, many ornately decorated chalices made by the most famous European goldsmiths were on display.
chameleon n. lizard that changes color in different situations. Like the chameleon, he assumed the political coloration of every group he met.
Test

Word List 8  Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

106. CAPACIOUS (A) warlike (B) cordial (C) curious (D) not spacious (E) not capable

107. CAPRICIOUS (A) satisfied (B) insured (C) photographic (D) scattered (E) steadfast

108. Captious (A) tolerant (B) capable (C) frivolous (D) winning (E) recollected

109. CARNAL (A) impressive (B) minute (C) spiritual (D) actual (E) private

110. CARNIVOROUS (A) gloomy (B) tangential (C) productive (D) weak (E) vegetarian

111. CARPING (A) rapid (B) uncritical (C) unintellectual (D) illegal (E) terse

112. CASTIGATION (A) commendation (B) patience (C) generosity (D) understatement (E) honesty

113. CATEGORICAL (A) negative (B) ironic (C) impartial (D) qualified (E) permanent

114. CATHOLIC (A) religious (B) pacific (C) narrow (D) weighty (E) funny

115. CELEBRITY (A) assurance (B) state (C) acerbity (D) delay (E) infamy

116. CELIBATE (A) investing (B) married (C) retired (D) commodious (E) duchess

117. CENSURE (A) process (B) enclose (C) interest (D) praise (E) penetrate

118. CENTRIFUGAL (A) centripetal (B) ephemeral (C) lasting (D) barometric (E) algebraic

119. CESSATION (A) premium (B) gravity (C) beginning (D) composition (E) apathy

120. CHAFFING (A) achieving (B) serious (C) capitalistic (D) sneezing (E) expensive

Word List 9  champion-colander

champion  v. support militantly. Martin Luther King, Jr., won the Nobel Peace Prize because he championed the oppressed in their struggle for equality. Also n.

chaotic  adj. in utter disorder. He tried to bring order into the chaotic state of affairs. chaos, n.

charisma  n. divine gift; great popular charm or appeal. Political commentators have deplored the importance of a candidate’s charisma in these days of television campaigning.

charlatan  n. quack; pretender to knowledge. When they realized that the Wizard didn’t know how to get them back to Kansas, Dorothy and her friends were sure they’d been duped by a charlatan.

charry  adj. cautious; sparing or restrained about giving. A prudent, thrifty New Englander, DeWitt was as charry of investing money in junk bonds as he was chary of paying people unnecessary compliments.

chase  v. ornament a metal surface by indenting. With his hammer, he carefully chased an intricate design onto the surface of the chalice. (secondary meaning)

chasm  n. abyss. They could not see the bottom of the chasm.

chassis  n. framework and working parts of an automobile. Examining the car after the accident, the owner discovered that the body had been ruined but that the chassis was unharmed.

chaste  adj. pure; virginal; modest. To ensure that his bride would stay chaste while he was off to the wars, the crusader had her fitted out with a chastely bolt. chastely, n.

chasten  v. correct by punishment or scolding; restrain. No matter how much a child deserves to be chastened for doing wrong, the maxim “Spare the rod and spoil the child” never justifies physical abuse. Someone sadder but wiser has been chastened or subdued by experience.

chastened  adj. humbled; subdued; rebuked. After a series of meddlesome and unsuccessful attempts at matchmaking among her friends, a chastened Emma finds her destiny in marriage to her protective neighbor George Knightley, long her mentor and friend.

chastise  v. punish or scold; reprimand. Miss Watson liked nothing better than to chastise Huck for his alleged offenses.

chaunvisn  n. blindly devoted patriot; zealous adherent of a group or cause. A chaunvisn cannot recognize any faults in his country, no matter how flagrant they may be. Likewise, a male chaunvisn cannot recognize how biased he is in favor of his own sex, no matter how flagrant that bias may be. chaunvisnic, adj.

check  v. stop motion; curb or restrain. Thrusting out her arm, Grandma checked Bobby’s urge at his sister. “Young man,” she said, “you’d better check your temper.” (secondary meaning)

checkered  adj. marked by changes in fortune. During his checkered career he had lived in palatial mansions and in dreary boardinghouses.

cherubic  adj. angelic; innocent-looking. With her cheerful smile and rosy cheeks, she was a particularly cherubic child.
chicanery  n. trickery; deception. Those sneaky lawyers misrepresented what occurred, made up all sorts of implausible alternative scenarios to confuse the jurors, and in general depended on chicanery to win the case.

chide  v. scold. Grandma began to chide Steven for his lying.

chimerical  adj. fantastically improbable; highly unrealistic; imaginative. As everyone expected, Ted's chimerical scheme to make a fortune by raising emirines in his backyard proved a dismal failure. chimera, n.

chisel  n. wedgelike tool for cutting. With his hammer and chisel, the sculptor chipped away at the block of marble.

descend  v. swindle or cheat; cut with a chisel. That crook chiseled me out of a hundred dollars when he sold me that "marble" statue he'd chiseled out of some cheap hunk of rock.

chivalrous  adj. courteous; faithful; brave. Chivalrous behavior involves noble words and good deeds.

choleric  adj. hot-tempered; faithful. His flushed, angry face indicated a choleric nature.

chorography  n. art of representing dances in written symbols; arrangement of dances. Merely Cunningham uses a computer in designing choreography; a software program allows him to compose arrangements of possible moves and immediately view them onscreen.

chortle  v. chuckle with delight. When she heard that her rival had just been jailed for embezzlement, she chortled with joy. She was not a nice lady.

chronic  adj. long-established, as a disease. The doctors were finally able to attribute his chronic headaches and nausea to traces of formaldehyde gas in his apartment.

chronicle  v. report; record (in chronological order). The gossip columnist was paid to chronicle the latest escapades of the socially prominent celebrities. also n.

churlish  adj. boorish; rude. Dismayed by his churlish manners at the party, the girls vowed never to invite him again.

climated  adj. having minute hairs. The paramecium is a climated, one-celled animal.

cipher  n. nonentity; worthless person or thing. She claimed her ex-husband was a total cipher and wondered why she had ever married him.

cipher  n. secret code. Lacking his code book, the spy was unable to decode the message sent to him in cipher.

circlet  n. small ring; band. This tiny circlet is very costly because it is set with precious stones.

circumspect  adj. prudent; cautious. Investigating before acting, she tried always to be circumspect.

circumvent  v. outwit; baffle. In order to circumvent the enemy, we will make two preliminary attacks in other sections before starting our major campaign.

cistern  n. reservoir or water tank. The farmers were able to withstand the dry season by using rainwater they had stored in an underground cistern.

citadel  n. fortress. The citadel overlooked the city like a protecting angel.

cite  v. quote; commend. She could cite passages in the Bible from memory. citation, n.

civil  adj. having to do with citizens or the state; courteous and polite. Although Internal Revenue Service agents are civil servants, they are not always civil to suspected tax evaders.

clairvoyant  adj. n. having foresight; fortuneteller. Cassandra's clairvoyant warning was not heeded by the Trojans. clairvoyance, n.

clamber  v. climb by crawling. She clambered over the wall.

clamor  n. noise. The clamor of the children at play outside made it impossible for her to take a nap. also v.

clandestine  adj. secret. After avoiding their chaperon, the lovers had a clandestine meeting.

clangor  n. loud, resounding noise. The blacksmith was accustomed to the clangor of hammers on steel.

clapper  n. striker (tongue) of a bell. Wishing to be undisturbed by the bell, Dale wound his scarf around the clapper to muffle its striking.

clarion  adj. shrill, trumpetlike sound. We woke to the clarion call of the bugle.

claustrophobia  n. fear of being locked in. His fellow classmates laughed at his claustrophobia and often threatened to lock him in his room.

clavicle  n. collarbone. Even though he wore shoulder pads, the football player broke his clavicle during a practice scrimmage.

cleave  v. split or sever; cling to; remain faithful to. With her heavy cleaver, Julia Child can cleave a whole roast duck in two. Soaked through, the soldier huddled at the uniform that cleaved annoyingly to his body. He would cleave to his post, come rain or shine. cleavage, n.

clenched  adj. One clenched his fists in anger.

cliff  n. split. Trying for a fresh handhold, the mountain climber grasped the edge of a cliff in the sheer rock face. also adj.

clerical  adj. Relating to the clergy or to their work.

clerical  adj. Exactness in work.

clerical  adj. Giving to a condition, as of the weather.

clerical  adj. Relating to the work of a lawyer.

clerical  adj. Relating to the work of a lawyer.

clerical  adj. For a person who does clerical work.

clerical  adj. Of a document or record.

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clerical  adj. For a person who does clerical work.

clerical  adj. Of a document or record.

clerical  adj. Relating to the work of a lawyer.
clientele  n. body of customers. The rock club attracted a young, stylish clientele.

climactic adj. relating to the highest point. When he reached the climactic portions of the book, he could not stop reading. climax, n.

clime n. region; climate. His doctor advised him to move to a milder clime.

clique n. small, exclusive group. Fitzgerald wished that he belonged to the clique of popular athletes and big men on campus who seemed to run Princeton’s social life.

cloister n. monastery or convent. The nuns lived in the cloister.

clot n. great influence (especially political or social). Gatsby wondered whether he had enough clout to be admitted to the exclusive club.

cloying adj. distasteful (because excessive); excessively sweet or sentimental. Disliking the cloying sweetness of standard wedding cakes, Jody and Tom chose a homemade carrot cake for their reception. cloy, v.

coagulate v. thicken; congeal; clot. Even after you remove the pudding from the burner, it will continue to coagulate as it stands. coagulant, n.

coalesce v. combine; fuse. The brooks coalesce into one large river. When minor political parties coalesce, their coalescence may create a major coalition.

coalition n. partnership; league; union. The Rainbow Coalition united people of all races in a common cause.

coda n. concluding section of a musical or literary composition; something that rounds out, summarizes, or concludes. The piece concluded with a distinctive coda that strikingly brought together various motifs. Several months after Charlie Chaplin’s death, his body was briefly kidnapped from a Swiss cemetery by a pair of bungling thieves—a macabre coda that Chaplin might have concocted for one of his own two-reelers.

coddle v. treat gently; pamper. Don’t coddle the children so much; they need a taste of discipline.

codici N. supplement to the body of a will. Miss Havisham kept her lawyers busy drawing up codicils to her already complicated will.

codify v. arrange (laws, rules) as a code; classify. We need to take the varying rules and regulations of the different health agencies and codify them into a national health code.

coercion n. use of force to get someone to obey. The inquisitors used both physical and psychological coercion to force Joan of Arc to recant her assertions that her visions were sent by God. coerce, v.

coeval adj. living at the same time as; contemporary. Coeval with the dinosaur, the pterodactyl flourished during the Mesozoic era.

cog n. tooth projecting from a wheel. A bicycle chain moves through a series of cogs in order to propel the bike.

cogent adj. convincing. It was inevitable that David chose to go to Harvard: he had several cogent reasons for doing so, including a full-tuition scholarship. Katy argued her case with such cogency that the jury had to decide in favor of her client.

cogitate v. think over. Cogitate on this problem; the solution will come.

cognate adj. related linguistically; allied by blood; similar or akin in nature. The English word “mother” is cognate to the Latin word “mater,” whose influence is visible in the words “maternal” and “maternity.” Also n.

cognitive adj. having to do with knowing or perceiving related to the mental processes. Though Jack was emotionally immature, his cognitive development was admirable; he was very advanced intellectually.

cognition n. knowledge. During the election campaign, the two candidates were kept in full cognizance of the international situation.

cohabit v. live together. Many unwed couples who cohabit peacefully for years wind up fighting night and day once they marry.

cohere v. stick together. Solids have a greater tendency to cohere than liquids.

cohesion n. tendency to keep together. A firm believer in the maxim “Divide and conquer,” the emperor, by lies and trickery, sought to disrupt the cohesion of the free nations.

cohorts n. armed band. Caesar and his Roman cohorts conquered almost all of the known world.

coifure n. hairstyle. You can make a statement with your choice of coifure in the ’60s many African-Americans affirmed their racial heritage by wearing their hair in Afros.

coin v. make coins; invent or fabricate. Mints coin good money; counterfeiters coin fakes. Slanderers coin nasty rumors; writors coin words. A neologism is a newly coined expression.

coincidence n. the chance occurrence, at the same time, of two or more seemingly connected events. Was it just a coincidence that John and she had met at the market for three days running, or was he deliberately trying to seek her out? Coincidental, adj.

colander n. utensil with perforated bottom used for straining. Before serving the spaghetti, place it in a colander to drain it.
Word List 9  Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

121. CHASTE (A) loyal (B) timid (C) curt (D) pure (E) outspoken
122. CHIDE (A) unite (B) fear (C) record (D) skid (E) scold
123. CHIMERICAL (A) developing (B) brief (C) distant (D) economical (E) fantastic
124. CHOLERIC (A) musical (B) episodic (C) hotheaded (D) global (E) seasonal
125. CHURLISH (A) marine (B) economical (C) impolite (D) compact (E) young
126. CILIATED (A) foolish (B) swift (C) early (D) constructed (E) hairy
127. CIRCUITOUS (A) indirect (B) complete (C) obvious (D) aware (E) tortured
128. CITE (A) galvanize (B) visualize (C) locate (D) quote (E) signal
129. CLANDESTINE (A) abortive (B) secret (C) tangible (D) doomed (E) approved
130. CLAUSTROPHOBIA (A) lack of confidence (B) fear of spiders (C) love of books (D) fear of grammar (E) fear of closed places
131. CLEFT (A) split (B) waterfall (C) assembly (D) adherence (E) surplus
132. CLICHÉ (A) increase (B) vehicle (C) morale (D) platitude (E) pique
133. COERCCE (A) recover (B) begin (C) force (D) license (E) ignore
134. COGNIZANCE (A) policy (B) knowledge (C) advance (D) omission (E) examination
135. COHERE (A) hold together (B) occur simultaneously (C) collect (D) materialize (E) understand

Word List 10  collaborate-congenital

collaborate  v. work together. Two writers collaborated in preparing this book.
collage  n. work of art put together from fragments. Scraps of cloth, paper doilies, and old photographs all went into her collage.
collate  v. examine in order to verify authenticity; arrange in order. They collated the newly found manuscripts to determine their age.
collateral  n. security given for loan. The sum you wish to borrow is so large that it must be secured by collateral.
collation  n. a light meal. Tea sandwiches and cookies were offered at the collation.
colloquial  adj. pertaining to conversational or common speech; informal. Some of the new colloquial reading passages on standardized tests have a conversational tone intended to make them more appealing to test-takers.
colloquy  n. informal discussion. While a colloquium often is a formal seminar or conference, a colloquy traditionally is merely a conversational exchange.
collusion  n. conspiring in a fraudulent scheme. The swindlers were found guilty of collusion.
colossal  adj. huge. Radio City Music Hall has a colossal stage.
colossus  n. gigantic statue. The legendary Colossus of Rhodes, a bronze statue of the sun god that dominated the harbor of the Greek seaport, was one of the Seven Wonders of the World.
comatose  adj. in a coma; extremely sleepy. The long-winded orator soon had his audience in a comatose state.
combustible  adj. easily burned. After the recent outbreak of fires in private homes, the fire commissioner ordered that all combustible materials be kept in safe containers. Also n.
comely  adj. attractive; agreeable. I would rather have a poor and comely wife than a rich and homely one.
comestible  n. something fit to be eaten. The roast turkey and other comestibles, the wines, and the excellent service made this Thanksgiving dinner particularly memorable.
comeuppance  n. rebuke; desert. After his earlier rudeness, we were delighted to see him get his comeuppance.
comity  n. courtesy; civility. A spirit of comity should exist among nations.
commander  v. to draft for military purposes; to take for public use. The policeman commanded the first car that approached and ordered the driver to go to the nearest hospital.
commemorative  adj. remembering; honoring. The new commemorative stamp honors the late Martin Luther King, Jr.
commensurate  adj. corresponding in extent, degree, amount, etc.; proportionate. By the close of World War II much progress had been made in assigning nurses rank and responsibilities commensurate with their training and abilities. Critics in the industry charged that imposing new meat inspection regulations without dismantling the traditional system would raise costs without bringing about a commensurate improvement in safety.
commiserate v. feel or express pity or sympathy for. Her friends commiserated with the widow.

commodious adj. spacious and comfortable. After sleeping in small roadside cabins, they found their hotel suite commodious.

communal adj. held in common; a group of people. When they were divorced, they had trouble dividing their communal property.

compact n. agreement; contract. The signers of the Mayflower Compact were establishing a form of government.

compact adj. tightly packed; firm; brief. His short, compact body was better suited to wrestling than to basketball.

compatible adj. harmonious; in harmony with. They were compatible neighbors, never quarreling over unimportant matters. compatibility, n.

compelling adj. overpowering; irresistible in effect. The prosecutor presented a well-reasoned case, but the defense attorney’s compelling arguments for ieniciency won over the jury.

■ compendium v. brief, comprehensive summary. This text can serve as a compendium of the tremendous amount of new material being developed in this field.

compensatory adj. making up for; repaying. Can a compensatory education program make up for the inadequate schooling he received in earlier years?

compilation n. listing of statistical information in tabular or book form. The compilation of available scholarships serves a very valuable purpose.

compile v. assemble; gather; accumulate. We planned to compile a list of the words most frequently used on the GRE.

complacency n. self-satisfaction; smugness. Full of complacency about his latest victories, he looked smugly at the row of trophies on his mantelpiece. complacent, adj.

■ complaisant adj. trying to please; overly polite; obliging. Fearing that the king might become enraged if his will were thwarted, the complaisant Parliament recognized Henry VIII as king of Ireland. Someone complaisant is not smug or complacent; he yields to others because he has an excessive need to please.

complement v. complete; consummate; make perfect. The waiter recommended a glass of port to complement the cheese. Also n.

complementary adj. serving to complete something. John’s and Lexy’s skills are complementary; he’s good at following a daily routine, while she’s great at improvising and handling emergencies. Together they make a great team.

compliance n. readiness to yield; conformity in fulfilling requirements. Bullheaded Bill was not noted for his easy compliance to the demands of others. As an architect, however, Bill recognized that his design for the new school had to be in compliance with the local building code.

■ compliant adj. yielding; conforming to requirements. Because Joel usually gave in and went along with whatever his friends desired, his mother worried that he might be too compliant.

complicity n. involvement in a crime; participation. Queen Mary’s marriage to Lord Darnley, her suspected complicity in his murder, and her hasty marriage to the earl of Bothwell stirred the Protestant lords to revolt. Although Spanish complicity in the sinking of the battleship Maine was not proved, U.S. public opinion was aroused and war sentiment rose.

component n. element; ingredient. I wish all the components of my stereo system were working at the same time.

comport v. bear one’s self; behave. He comported himself with great dignity.

composure n. mental calmness. Even the latest work crisis failed to shake her composure.

compound v. combine; constitute; pay interest; increase. The makers of the popular cold remedy compound nasal decongestant with an antihistamine. Also n.

comprehensive adj. thorough; inclusive. This book provides a comprehensive review of verbal and math skills for the GRE.

compress v. squeeze or press together; make more compact. Miss Watson compressed her lips in disapproval as she noted the bedraggled state of Huck’s clothes. On farms, roller-packers are used in dry seasons to compress and pack down the soil after plowing.

comprise v. include; consist of. If the District of Columbia were to be granted statehood, the United States of America would comprise fifty-one states, not just fifty.

compromise v. adjust or settle by making mutual concessions; endanger the interests or reputation of. Sometimes the presence of a neutral third party can help adversaries compromise their differences. Unfortunately, you’re not neutral. Therefore, your presence here compromises our chances of reaching an agreement. Also n.

compunction n. remorse. The judge was especially severe in his sentencing because he felt that the criminal had shown no compunction for his heinous crime.

compute v. reckon; calculate. He failed to compute the interest, so his bank balance was not accurate.

concatenate v. link as in a chain. It is difficult to understand how these events could concatenate as they did without outside assistance.

concave adj. hollow. The back-packers found partial shelter from the storm by huddling against the concave wall of the cliff.

concede v. admit; yield. Despite all the evidence Monica had assembled, Mark refused to concede that she was right.

conceit n. vanity or self-love; whimsical idea; extravagant metaphor. Although Jack was smug and puffed up with conceit, he was an entertaining companion, always expressing himself in amusing conceits and witty turns of phrase.

concentric adj. having a common center. The target was made of concentric circles.

conception n. beginning; forming of an idea. At the first conception of the work, he was consulted. conceive, v.

concerted adj. mutually agreed on; done together. All the Girl Scouts made a concerted effort to raise funds for
their annual outing. When the movie star appeared, his fans let out a concerted sigh.

concession N. an act of yielding. Before they could reach an agreement, both sides had to make certain concessions.

conciliatory ADJ. reconciling; soothing. She was still angry despite his conciliatory words. conciliate, v.

concise ADJ. brief and compact. When you define a new word, be concise: the shorter the definition, the easier it is to remember.

clave N. private meeting. He was present at all their conclaves as an unofficial observer.

conclusive ADJ. decisive; ending all debate. When the stolen books turned up in John’s locker, we finally had conclusive evidence of the identity of the mysterious thief.

conciliate v. prepare by combining; make up in concert. How did the inventive chef ever concoct such a strange dish? concoction, N.

concomitant N. that which accompanies. A decrease of gastric juice secretion may be a congenital abnormality or a concomitant of advanced age. The word hubbub emphasizes turbulent activity and concomitant din; the hubbub of Wall Street traders shouting out buy orders, for example.

concord N. harmony. Watching Tweedledum and Tweedledee battle, Alice wondered why the two brothers could not manage to live in concord.

concur v. agree. Did you concur with the decision of the court or did you find it unfair?

concurrent ADJ. happening at the same time. In America, the colonists were resisting the demands of the mother country; at the concurrent moment in France, the middle class was sowing the seeds of rebellion.

condescend v. bestow courtesies with a superior air. The king condescended to grant an audience to the friends of the condemned man. condescension, N.

condign ADJ. appropriate; deserved (almost always, in the sense of deservedly severe, as in condign punishment). To be concerned about a possible miscarriage of justice is rational; to brood over a guilty man’s just and condign punishment makes no sense.

condiment N. food seasoning; spice. Failure is the condiment that gives success its flavor. Many condiments—cayenne pepper, hot mustard, horseradish, wasabi—are too strong for small children, who prefer a less highly spiced diet.

condole v. express sympathetic sorrow. His friends gathered to condole with him over his loss. condolence, N.

condone v. overlook; forgive; give tacit approval; excuse. Unlike Widow Douglass, who condoned Huck’s minor offenses, Miss Watson did nothing but scold.

conducive ADJ. helpful; contributive. Rest and proper diet are conducive to good health.

conduit N. aqueduct; passageway for fluids. Water was brought to the army in the desert by an improvised conduit from the adjoining mountain.

confidant N. trusted friend. He had no confidants with whom he could discuss his problems at home.

confine v. shut in; restrict. The terrorists had confined their prisoner in a small room. However, they had not chained him to the wall or done anything else to confine his movements. confinement, N.

confiscate v. seize; commandeer. The army confiscated all available supplies of uranium.

conflagration N. great fire. In the conflagration that followed the 1906 earthquake, much of San Francisco was destroyed.

conflata v. melt or fuse; confuse; combine into one. In his painting White Crucifixion, which depicts German Jews terrorized by a Nazi mob, Chagall conflates Jewish and Christian symbols, portraying the crucified Christ wrapped in a tallit, a Jewish prayer shawl. The anthropologist Mahmood Mamdani maintains that terrorism is a unique product of the modern world and should not be conflated with Islam.

confluence N. flowing together; crowd. They built the city at the confluence of two rivers.

conformity N. harmony; agreement. In conformity with our rules and regulations, I am calling a meeting of our organization.

confound v. confuse; puzzle. No mystery could confound Sherlock Holmes for long.

congeal v. freeze; coagulate. His blood congealed in his veins as he saw the dread monster rush toward him.

congenial ADJ. pleasant; friendly. My father loved to go out for a meal with congenial companions.

congenital ADJ. existing at birth. Doctors are able to cure some congenital deformities such as cleft palates by performing operations on infants.

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Test

Word List 10 Synonyms and Antonyms

Each of the following questions consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar or opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

136. COLLATION (A) furor (B) emphasis (C) distillery (D) spree (E) lunch

137. COLLOQUIAL (A) burnt (B) polished (C) political (D) gifted (E) problematic

138. COLLOQUIY (A) dialect (B) diversion (C) announcement (D) discussion (E) expansion
139. COMATOSE (A) cozy (B) restrained (C) alert (D) dumb (E) grim
140. COMBUSTIBLE (A) flammable (B) industrious (C) waterproof (D) specific (E) plastic
141. COMELY (A) yielding (B) unattractive (C) extremely sleepy (D) equal in extent (E) roving
142. COMMISERATE (A) communicate (B) expand (C) repay (D) diminish (E) sympathize
143. COMMODOUS (A) numerous (B) yielding (C) leisurely (D) limited (E) expensive
144. COMPLIANT (A) numerous (B) veracious (C) soft (D) adamant (E) vivid
145. CONCiliate (A) defend (B) activate (C) integrate (D) quarrel (E) react
146. CONCOCT (A) thrive (B) wonder (C) intrude (D) drink (E) invent
147. CONDONE (A) build (B) evaluate (C) pierce (D) infuriate (E) overlook
148. CONFISCATE (A) discuss (B) discover (C) seize (D) exist (E) convey
149. CONFORMITY (A) agreement (B) ambition (C) confinement (D) pride (E) restraint
150. CONGENITAL (A) slight (B) obscure (C) thorough (D) existing at birth (E) classified

Word List 11  conglomerate-countermand

conglomerate  n. mass of material sticking together. In such a conglomerate of miscellaneous statistics, it was impossible to find a single area of analysis.

congruence  n. correspondence of parts; harmonious relationship. The student demonstrated the congruence of the two triangles by using the hypotenuse-leg theorem.

congruent  adj. in agreement; corresponding. In formulating a hypothesis, we must keep it congruent with what we know of the real world; it cannot disagree with our experience.

cognate  n. pine tree; cone-bearing tree. According to geologists, the cognates were the first plants to bear flowers.

collected  v. infer on the basis of insufficient data; surmise; guess. In the absence of any eyewitness reports, we can only conjecture what happened in the locked room on the night of the 13th. Would it be a reasonable conjecture to decide that the previous sentence is an excerpt from a mystery novel?

conjugal  adj. pertaining to marriage. Their dreams of conjugal bliss were shattered as soon as their temperaments clashed.

conjure  v. summon a devil; practice magic; imagine or invent. Sorcerers conjure devils to appear. Magicians conjure white rabbits out of hats. Political candidates conjure up images of reformed cities and a world at peace.

convivence  n. pretense of ignorance of something wrong; assistance; permission to offend. With the convivence of his friends, he plotted to embarrass the teacher. connive, v.

connoisseur  n. person competent to act as a judge of art, etc.; a lover of an art. Bernard Berenson, the American art critic and connoisseur of Italian art, was hired by wealthy art lovers to select paintings for their collections.

connotation  n. suggested or implied meaning of an expression. Foreigners frequently are unaware of the connotations of the words they use.

conubial  adj. pertaining to marriage or the matrimonial state. In his telegram, he wished the newlyweds a lifetime of conubial bliss.

consanguinity  n. kinship. Wanting to be rid of yet another wife, Henry VIII sought a divorce on the grounds of consanguinity, claiming their blood relationship was improperly close.

conscientious  adj. scrupulous; careful. A conscientious editor, she checked every definition for its accuracy.

conscription  n. draftee; person forced into military service. Did Rambo volunteer to fight in Vietnam, or was he a conscript, drafted against his will? also v.

consacrate  v. dedicate; sanctify. In 1804, Napoleon forced Pope Pius VII to come to Paris to consacrate him as emperor, or to humble Pius at the last minute by taking the crown from the pope’s hands and crowning himself.

consensus  n. general agreement; opinion reached by a group as a whole. Letty Cottin Pogrebin argues that, although the ultra-right would like us to believe that families disintegrate because of secular education and sexual liberation, the consensus of Americans is that what tears families apart is unemployment, inflation, and financial worries.

consequential  adj. portentous; self-important. Convinced of his own importance, the actor strutted about the dressing room with a consequential air.

conservatory  n. school of the fine arts (especially music or drama). A gifted violinist, Marya was selected to study at the conservatory.

consign  v. deliver officially; entrust; set apart. The court consigned the child to her maternal grandmother’s care. consignment, n.

consistency  n. absence of contradictions; dependability; uniformity; degree of thickness. Holmes judged puddings and explanations on their consistency: he liked his puddings without lumps and his explanations without improbabilities.

console  v. lessen sadness or disappointment; give comfort. When her father died, Marius did his best to console Cosette. consolation, n.

consolidation  n. unification; process of becoming firmer or stronger. The recent consolidation of several small airlines into one major company has left observers of the industry wondering whether room still exists for the "little guy" in aviation. consolidate, v.

consonance  n. harmony; agreement. Her agitation seemed out of consonance with her usual calm. The
1815 so-called “Holy Alliance” of the emperors of Russia and Austria and the king of Prussia accomplished nothing, since it was merely a vague agreement that the sovereigns would conduct themselves in consonance with Christian principles.

consort v. associate with. We frequently judge people by the company with whom they consort.

consort n. husband or wife. The search for a consort for the young Queen Victoria ended happily.

conspiracy n. treacherous plot. Brutus and Cassius joined in the conspiracy to kill Julius Caesar.

constituent n. supporter. The congressman received hundreds of letters from angry constituents after the Equal Rights Amendment failed to pass.

constraint n. compulsion; repression of feelings. There was a feeling of constraint in the room because no one dared to criticize the speaker. constrain v.

construe v. explain; interpret. If I construe your remarks correctly, you disagree with the theory already advanced.

consummate adj. wholly without flaw; supremely skilled; complete and utter. Free of her father’s autocratic rule, safely married to the man she loved, Elizabeth Barrett Browning felt consummate happiness. Da Vinci depicted in his drawings, with scientific precision and consummate artistry, subjects ranging from flying machines to intricate anatomical studies of people, animals, and plants. There is no one as boring as Boris; he is a consummate bore.

contagion n. infection. Fearing contagion, they took drastic steps to prevent the spread of the disease.

contaminate v. pollute. The sewage system of the city so contaminated the water that swimming was forbidden.

contempt n. scorn; disdain. The heavyweight boxer looked on ordinary people with contempt, scorning them as weaklings who couldn’t hurt a fly. We thought it was contemptible of him to be contemptuous of people for being weak.

contend v. struggle; compete; assert earnestly. In Revolt of the Black Athlete, sociologist Harry Edwards contends that young black athletes have been exploited by some college recruiters. contention n.

contention n. claim; thesis. It is our contention that, if you follow our tactics, you will boost your score on the GRE. contend v.

contentious adj. quarrelsome. Disagreeing violently with the referees’ ruling, the coach became so contentious that the referees threw him out of the game.

contest v. dispute. The defeated candidate attempted to contest the election results.

context n. writings preceding and following the passage quoted. Because these lines are taken out of context, they do not convey the message the author intended.

contiguous adj. adjacent to; touching upon. The two countries are contiguous for a few miles; then they are separated by the gulf.

continence n. self-restraint; sexual chastity. At the convent, Connie vowed to lead a life of continence. The question was, could Connie be content with always being continent?

contingent adj. dependent on; conditional. Cher’s father informed her that any increase in her allowance was contingent on her grades. contingency n.

contradict v. contradict. Oppose; infringe on or transgress. Mr. Barrett did not expect his frail daughter Elizabeth to contradict his will by eloping with Robert Browning.

contraband n. illegal trade; smuggling; smuggled goods. The Coast Guard tries to prevent contraband in U.S. waters. Also ad.

contravenge v. contradict; oppose; infringe on or transgress. Mr. Barrett did not expect his frail daughter Elizabeth to contravene his will by eloping with Robert Browning.

contrite adj. penitent. Her contrite tears did not influence the judge when he imposed sentence. contrition n.

contrived adj. forced; artificial; not spontaneous. Feeling ill at ease with his new in-laws, James made a few contrived attempts at conversation and then retreated into silence.

controvert v. oppose with arguments; attempt to refute; contradict. The witness’s testimony was so clear and her reputation for honesty so well established that the defense attorney decided it was wiser to make no attempt to controvert what she said.

contumacious adj. disobedient; resisting authority. The contumacious mob shouted defiantly at the police. contumacy n.

contusion n. bruise. Black and blue after her fall, Sue was treated for contusions and abrasions.

conundrum n. riddle; difficult problem. During the long car ride, she invented conundrums to entertain the children.

convene v. assemble. Because much needed legislation had to be enacted, the governor ordered the legislature to convene in special session by January 15.

convention n. social or moral custom; established practice. Flying in the face of convention, George Sand (Amandine Dudevant) shocked her contemporaries by taking lovers and wearing men’s clothes.

conventional adj. ordinary; typical. His conventional upbringing left him wholly unprepared for his wife’s eccentric family.

converge v. approach; tend to meet; come together. African-American men from all over the United States converged on Washington to take part in the historic Million Man March. convergence n.

conversant adj. familiar with. In this age of specialization, someone reasonably conversant with modern French literature may be wholly unacquainted with the novels of Latin America and Spain.

converse n. opposite. The inevitable converse of peace is not war but annihilation.
convert N. one who has adopted a different religion or opinion. On his trip to Japan, though the president spoke at length about the merits of American automobiles, he made few converts to his beliefs. also v.

convex adj. curving outward. She polished the convex lens of her telescope.

conveyance n. vehicle; transfer. During the transit strike, commuters used various kinds of conveyances.

conviction n. judgment that someone is guilty of a crime; strongly held belief. Even her conviction for murder did not shake Lord Peter's conviction that Harriet was innocent of the crime.

convivial adj. festive; gay; characterized by joviality. The convivial celebrants of the victory sang their college songs.

convoked v. call together. Congress was convoked at the outbreak of the emergency. convocation, n.

convoluted adj. coiled around; involved; intricate. His argument was so convoluted that few of us could follow it intelligently.

copious adj. plentiful. She had copious reasons for rejecting the proposal.

coquette n. flirt. Because she refused to give him an answer to his proposal of marriage, he called her a coquette. also v.

cordial adj. gracious; heartfelt. Our hosts greeted us at the airport with a cordial welcome and a hearty hug.

cordon n. extended line of men or fortifications to prevent access or egress. The police cordon was so tight that the criminals could not leave the area. also v.

cornice n. projecting molding on building (usually above columns). Because the stones forming the cornice had been loosened by the storms, the police closed the building until repairs could be made.

cornucopia n. horn overflowing with fruit and grain; symbol of abundance. The encyclopedia salesman claimed the new edition was a veritable cornucopia of information, an inexhaustible source of knowledge for the entire family.

corollary n. consequence; accompaniment. Brotherly love is a complex emotion, with sibling rivalry its natural corollary.

corporeal adj. bodily; material. The doctor had no patience with spiritual matters: his job was to attend to his patients' corporeal problems, not to minister to their souls.

corrupt adj. very fat. The corrupt man resolved to reduce corpulence, n.

correlation n. mutual relationship. He sought to determine the correlation that existed between ability in algebra and ability to interpret reading exercises. correlate, v., n.

corraborate v. confirm; support. Though Huck was quite willing to corroborate Tom's story, Aunt Polly knew better than to believe either of them.

corrise v. destroy by chemical action. The girders supporting the bridge corroded so gradually that no one suspected any danger until the bridge suddenly collapsed. corrosion, n.

corrosive adj. eating away by chemicals or disease. Stainless steel is able to withstand the effects of corrosive chemicals.

corrugated adj. wrinkled; ridged. Crack open the rough shell of the walnut and you will find within it a ridged and corrugated edible seed or nut.

cosmic adj. pertaining to the universe; vast. Cosmic rays derive their name from the fact that they bombard the earth's atmosphere from outer space. cosmos, n.
coterie n. group that meets socially; select circle. After his book had been published, he was invited to join the literary coterie that dined daily at the hotel.

countenance v. approve; tolerate. Miss Manners refused to countenance such rude behavior on their part.
countenance n. face. When José saw his newborn daughter, a proud smile spread across his countenance.
countermand v. cancel; revoke. The general countermanded the orders issued in his absence.

Test

Word List 11 Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

151. CONJECTURE (A) magic (B) guess (C) position (D) form (E) place

152. CONNOISSEUR (A) gourmand (B) lover of art (C) humidor (D) delinquent (E) interpreter

153. CONSANGUINITY (A) kinship (B) friendship (C) bloodlettering (D) relief (E) understanding

154. CONSENSUS (A) general agreement (B) project (C) insignificance (D) shelf (E) crevice

155. CONSTRUE (A) explain (B) promote (C) reserve (D) erect (E) block

156. CONTAMINATE (A) arrest (B) prepare (C) pollute (D) beam (E) inform

157. CONTENDIOUS (A) squealing (B) surprising (C) quarreling (D) smug (E) creative

158. CONTINENCE (A) humanity (B) research (C) embryology (D) bodies of land (E) self-restraint

159. CONTRABAND (A) purpose (B) rogue (C) rascality (D) difficulty (E) smuggling
160. CONTRITE (A) smart (B) penitent (C) restful (D) recognized (E) perspiring

161. CONTROVERT (A) turn over (B) contradict (C) mind (D) explain (E) swing

162. CONVENE (A) propose (B) restore (C) question (D) gather (E) motivate

163. CONVERSANT (A) ignorant (B) speaking (C) incorporated (D) familiar (E) pedantic

164. COPIOUS (A) plentiful (B) cheating (C) dishonorable (D) adventurous (E) inspired

165. CORPULENT (A) regenerate (B) obese (C) different (D) hungry (E) bloody

Word List 12 counterpart-decelerate

counterpart
N. A thing that completes another; things very much alike. Night and day are counterparts.
coup
N. Highly successful action or sudden attack. As the news of his coup spread throughout Wall Street, his fellow brokers dropped by to congratulate him.
couple
V. Join; unite. The Flying Karamazovs couple expert juggling and amateur joking in their nightclub act.
courier
N. Messenger. The publisher sent a special courier to pick up the manuscript.
covenant
N. Agreement. We must comply with the terms of the covenant.
covert
ADJ. Secret; hidden; implied. Investigations of the Central Intelligence Agency and other secret service networks reveal that such covert operations can get out of control.
covetous
ADJ. Avaricious; eagerly desirous of. The poor man wants many things; the covetous man, all. During the Civil War, the Confederates cast covetous eyes on California, hoping to seize ports for privateers, as well as gold and silver to replenish the South's sagging treasury.
covet
V. Terrorize; intimidate. The little boy was so cowed by the hulking bully that he gave up his lunch money without a word of protest.
cower
V. Shrink quivering, as from fear. The frightened child cowered in the corner of the room.
coy
ADJ. Shy; modest; coquettish. Reluctant to commit herself so early in the game, Kay was coy in her answers to Ken's offer.
cozen
V. Cheat; hoodwink; swindle. He was the kind of individual who would cozen his friends in a cheap card game but remain eminently ethical in all his business dealings.
crabbed
ADJ. Sour; peevish. The children avoided the crabbed old man because he scolded them when they made noise.
crass
ADJ. Very unrefined; grossly insensible. The film critic deplored the crass commercialism of movie-makers who abandon artistic standards in order to make a quick buck.

• craven
ADJ. Cowardly. Lillian's craven refusal to join the protest was criticized by her comrades, who had expected her to be brave enough to stand up for her beliefs.

credence
N. Belief. Do not place any credence in his promises.

credo
N. Creed. Just two months before his death, as he talked about life with some friends, the writer Jack London proclaimed his credo: "The proper function of man is to live, not to exist. I shall not waste my days in trying to prolong them. I shall use my time."

credulity
N. Belief on slight evidence; gullibility; naiveté. Con artists take advantage of the credulity of inexperienced investors to swindle them out of their savings.
credulous
ADJ.
creed
N. System of religious or ethical belief. I have a dream that one day this nation will rise up and live out the true meaning of its creed. "We hold these truths to be self-evident that all men are created equal." (Martin Luther King, Jr.)
crescendo
N. Increase in the volume or intensity, as in a musical passage; climax. The overture suddenly changed from a quiet pastoral theme to a crescendo featuring blaring trumpets and clashing cymbals.
crestfallen
ADJ. Dejected; dispirited. We were surprised at his reaction to the failure of his project; instead of being crestfallen, he was busily engaged in planning new activities.
crevise
N. Crack; fissure. The mountain climbers found footholds in the tiny crevices in the mountainside.
cringe
V. Shrink back, as if in fear. The dog cringed, expecting a blow.
criteria
N. Pl. Standards used in judging. What criteria did you use when you selected this essay as the prize winner? Criterion, SING.
crone
N. Hag. The toothless crone frightened us when she smiled.
crotchety
ADJ. Eccentric; whimsical. Although he was reputed to be a crrotchy old gentleman, I found his ideas substantially sound and sensible.
crux
N. Essential or main point. This is the crux of the entire problem: everything centers on its being resolved.
crucial
ADJ.
crypt
N. Secret recess or vault usually used for burial. Until recently only bodies of rulers and leading statesmen were interred in this crypt.
cryptic
ADJ. Mysterious; hidden; secret. Thoroughly baffled by Holmes's cryptic remarks, Watson wondered whether Holmes was intentionally concealing his thoughts about the crime.
cubicle  N. small chamber used for sleeping. After her many hours of intensive study in the library, she retired to her cubicle.

cuisine  N. style of cooking. French cuisine is noted for its use of sauces and wines.

culinary  ADJ. relating to cooking. Many chefs attribute their culinary success to the wise use of spices.

cull  v. pick out; reject. Every month the farmer culls the nonlaying hens from his flock and sends them to the local butcher. also N.

culmination  N. attainment of highest point. His inauguration as President of the United States marked the culmination of his political career.

culpable  ADJ. deserving blame. Corrupt politicians who condone the activities of the gamblers are equally culpable.

culvert  N. artificial channel for water. If we build a culvert under the road at this point, we will reduce the possibility of the road's being flooded during the rainy season.

cumbrous  ADJ. heavy; hard to manage. She was burdened with cumbrous parcels.

cumulative  ADJ. growing by addition. Vocabulary-building is a cumulative process: as you go through your flash cards, you will add new words to your vocabulary, one by one.

cupidity  N. greed. The defeated people could not satisfy the cupidity of the conquerors, who demanded excessive tribute.

curator  N. superintendent; manager. The members of the board of trustees of the museum expected the new curator to plan events and exhibits that would make the museum more popular.

curmudgeon  N. curmudgeonly; miserly individual. Although many regarded him as a curmudgeon, a few of us were aware of the many kindnesses and acts of charity that he secretly performed.

cursive  ADJ. flowing, running. In normal writing we run our letters together in cursive form; in printing, we separate the letters.

cursory  ADJ. casual; hastily done. Because a cursory examination of the ruins indicates the possibility of arson, we believe the insurance agency should undertake a more extensive investigation of the fire's cause.

curtail  v. shorten; reduce. When Elton asked Cher for a date, she said she was really sorry she couldn't go out with him, but her dad had ordered her to curtail her social life.

cynical  ADJ. skeptical or distrustful of human motives. Cynical from birth, Sidney was suspicious whenever anyone gave him a gift "with no strings attached." cync, N. Cynicism, N.

cynosure  N. object of general attention. As soon as the movie star entered the room, she became the cynosure of all eyes.

dabble  v. work at in a nonserious fashion; splash around. The amateur painter dabbled at art, but seldom produced a finished piece. The children dabbled their hands in the bird bath, splashing one another gleefully.

dais  N. raised platform for guests of honor. When she approached the dais, she was greeted by cheers from the people who had come to honor her.

dally  v. trifle with; procrastinate. Laertes told Ophelia that Hamlet would only dally with her affections.

damp  v. lessen in intensity; diminish; mute. Not even the taunts of his brother, who considered ballet no proper pursuit for a lad, could damp Billy Elliot's enthusiasm for dancing.

dank  ADJ. damp. The walls of the dungeon were dank and slimy.

dapper  ADJ. neat and trim. In The Odd Couple, Tony Randall played Felix Unger, an excessively dapper soul who could not stand to have a hair out of place.

dappled  ADJ. spotted. The sunlight filtering through the screens created a dappled effect on the wall.

daub  v. smear (as with paint). From the way he daubed his paint on the canvas, I could tell he knew nothing of oils. also N.

daunt  v. intimidate; frighten. "Boast all you like of your prowess. Mere words cannot daunt me," the hero answered the villain.

dauntless  ADJ. bold. Despite the dangerous nature of the undertaking, the dauntless soldier volunteered for the assignment.

dawdle  v. loiter; waste time. We have to meet a deadline. Don't dawdle; just get down to work.

deadlock  N. standstill, stalemate. Because negotiations had reached a deadlock, some of the delegates had begun to mutter about breaking off the talks. also v.

deadpan  ADJ. wooden; impassive. We wanted to see how long he could maintain his deadpan expression.

dearth  N. scarcity. The dearth of skilled labor compelled the employers to open trade schools.

debacle  N. sudden downfall; complete disaster. In the Airplane movies, every flight turns into a debacle, with passengers and crew members collapsing, engines falling apart, and carry-on baggage popping out of the overhead bins.

debase  v. reduce the quality or value; lower in esteem; degrade. In The King and I, Anna refuses to kneel down and prostrate herself before the king; she feels that to do so would debase her position, and she will not submit to such debasement.

debauch  v. corrupt; seduce from virtue. Did Socrates' teachings lead the young men of Athens to be virtuous citizens, or did they debauch the young men, causing them to question the customs of their fathers? Clearly, Socrates' philosophical talks were nothing like the wild debauchery of the toga parties in Animal House.

debilitate  v. weaken; enfeeble. Michael's severe bout of the flu debilitated him so much that he was too tired to go to work for a week.

debonair  ADJ. urbane and suave; amiable; cheerful and carefree. Reporters frequently describe polished and charming leading men—Cary Grant or Pierce Brosnan, for example—as debonair.
debris n. rubble. A full year after the earthquake in Mexico City, workers were still carting away the debris.

debunk v. expose as false, exaggerated, worthless, etc.; ridicule. Pointing out that he consistently had voted against strengthening antipollution legislation, reporters debunked the candidate’s claim that he was a fervent environmentalist.

debutante n. young woman making formal entrance into society. As a debutante, she was often mentioned in the society columns of the newspapers.

decadence n. decay. The moral decadence of the people was reflected in the lewd literature of the period.

decant v. pour off gently. Be sure to decant this wine before serving it.

decapitate v. behead. They did not hang Lady Jane Grey; they decapitated her. “Off with her head!” cried the Duchess, eager to decapitate poor Alice.

decelerate v. slow down. Seeing the emergency blinkers in the road ahead, he decelerated quickly.

Test

Word List 12 Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

166. COY (A) weak (B) airy (C) brazen (D) old (E) tiresome
167. COZEN (A) amuse (B) treat honestly (C) pique (D) shackle (E) vilify
168. CRAVEN (A) desirous (B) direct (C) bold (D) civilized (E) controlled
169. CRUX (A) affliction (B) spark (C) events (D) trivial point (E) belief
170. CRYPTIC (A) tomiike (B) futile (C) famous (D) caddish (E) indifferent
171. CUPIDITY (A) anxiety (B) tragedy (C) generosity (D) entertainment (E) love

172. CURTAIL (A) mutter (B) lengthen (C) express (D) burden (E) shore up
173. CYNICAL (A) trusting (B) effortless (C) conclusive (D) gallant (E) vertical
174. DANK (A) dry (B) guiltless (C) warm (D) babbling (E) reserved
175. DAPPER (A) unintelligent (B) untidy (C) uncertain (D) ungrateful (E) unhealthy
176. DAUNTLESS (A) stolid (B) cowardly (C) irrelevant (D) peculiar (E) particular
177. DEARTH (A) a fortune (B) abundance (C) brightness (D) terror (E) width
178. DEBACLE (A) progress (B) refusal (C) mask (D) cowardice (E) traffic
179. DEBILITATE (A) bedevil (B) repress (C) strengthen (D) animate (E) deaden
180. DEBONAIR (A) awkward (B) windy (C) balmy (D) strong (E) stormy

Word List 13 deciduous-dermatologist

decluous adj. falling off, as of leaves. The oak is a deciduous tree.

decimate v. kill, usually one out of ten. We do more to decimate our population in automobile accidents than we do in war.

decipher v. decode. I could not decipher the doctor’s handwriting.

dedrivity n. downward slope. The children loved to ski down the dedrivity.

découleté adj. having a low-cut neckline. Fashion decrees that evening gowns be découleté this season; bare shoulders are again the vogue.

decomposition n. decay. Despite the body’s advanced state of decomposition, the police were able to identify the murdered man.

n decorum n. propriety; orderliness and good taste in manners. Even the best-mannered students have trouble behaving with decorum on the last day of school. decorous adj.

decoy n. lure or bait. The wild ducks were not fooled by the decoy; also v.

decrepitude n. state of collapse caused by illness or old age. I was unprepared for the state of decrepitude in which I had found my old friend; he seemed to have aged twenty years in six months.

decry v. express strong disapproval of; disparage. The founder of the Children’s Defense Fund, Marian Wright Edelman, strongly decry the lack of financial and moral support for children in America today.

deductive adj. derived by reasoning. If we accept your premise, your conclusions are easily deductive.

deface v. mar; disfigure. If you deface a library book you will have to pay a hefty fine.

defame v. harm someone’s reputation; malign; slander. If you try to defame my good name, my lawyers will see you in court. If rival candidates persist in defaming one another, the voters may conclude that all politicians are crooks. defamatory n.

n default n. failure to act. When the visiting team failed to show up for the big game, they lost the game by default. When Jack failed to make the payments on his Jaguar, the dealership took back the car because he had defaulted on his debt.
defeatsist  adj. resigned to defeat; accepting defeat as a
natural outcome. If you maintain your defeatist attitude,
you will never succeed. Also n.
defection  n. desertion. The children, who had made him
an idol, were hurt most by his defection from our cause.
defer  v. delay till later; exempt temporarily. In wartime,
some young men immediately volunteer to serve; others
defer making plans until they hear from their draft
boards. During the Vietnam War, many young men, hop-
ing to be deferred, requested student deferments.
defer  v. give in respectfully; submit. When it comes to
making decisions about purchasing software, we must
defer to Michael, our computer guru; he has the final
word. Michael, however, can defer these questions to no
one; only he can decide.
deference  n. courteous regard for another's wish. In
deference to the minister's request, please do not take
photographs during the wedding service.
defiance  n. refusal to yield; resistance. When John reached
the "terrible two's," he responded to every parental request
with howls of defiance. defy, v. defiant, adj.
defile  v. pollute, profane. The hoodlums defiled the
church with their scurrilous writing.
definitive  adj. most reliable or complete. Carl
Sandburg's Abraham Lincoln may be regarded as the
definitive work on the life of the Great Emancipator.
deflect  v. turn aside. His life was saved when his
cigarette case deflect the bullet.
defoliate  v. destroy leaves. In Vietnam the army made
extensive use of chemical agents to defoliate the
woodlands.
defray  v. provide for the payment of. Her employer offered
to defray the costs of her postgraduate education.
defrock  v. to strip a priest or minister of church authority.
We knew the minister had violated church regulations,
but we had not realized his offense was serious enough
to cause him to be defrocked.
deft  adj. neat, skillful. The deft waiter uncorked the
champagne without spilling a drop.
defunct  adj. dead; no longer in use or existence. The
lawyers sought to examine the books of the defunct
corporation.
degenerate  v. become worse; deteriorate. As the fight
dragged on, the champion's style degenerated until he
could barely keep on his feet.
degradation  n. humiliation; debasement; degeneration.
Some secretaries object to fetching the boss a cup of
coffee because they resent the degradation of being
made to perform such lowly tasks. degrade, v.
dehydrate  v. remove water from; dry out. Running under
a hot sun quickly dehydrates the body; joggers avoid
dehydration by carrying water bottles and drinking from
them frequently.
defy  v. turn into a god; idolize. Admire the rock star all
you want; just don't defy him.
degn  v. condescend; snoop. The celebrated fashion
designer would not deign to speak to a mere seamstress;
his overburdened assistant had to convey the master's
wishes to the lowly workers assembling his great designs.
delete  v. erase; strike out. If you delete this paragraph,
the composition will have more appeal.
deleterious  adj. harmful. If you believe that smoking is
deleterious to your health (and the Surgeon General
surely does), then quit!
deliberate  v. consider; ponder. Offered the new job, she
asked for time to deliberate before she made her decision.
delineate  v. portray; depict; sketch. Using only a few
descriptive phrases, Austen delineates the character of
Mr. Collins so well that we can predict his every move.
delineation, n.
delirium  n. mental disorder marked by confusion. In his
delirium, the drunkard saw pink panthers and talking
pigs. Perhaps he wasn't delirious; he might just have
wandered into a movie house.
delude  v. deceive. The mistress deludes herself into
believing that her lover will leave his wife and marry her.
deluge  n. flood; rush. When we advertised the position
we received a deluge of applications. Also v.
delusion  n. false belief; hallucination. Don suffers from
delusions of grandeur; he thinks he's a world-famous
author when he's published just one paperback book.
delusive  adj. deceptive; raising vain hopes. Do not raise
your hopes on the basis of his delusive promises.
delve  v. dig; investigate. Delving into old books and
manuscripts is part of a researcher's job.
demagogue  n. person who appeals to people's preju-
dices; false leader. He was accused of being a
demagogue because he made promises that aroused
futile hopes in his listeners.
demean  v. degrade; humiliate. Standing on his dignity,
he refused to demean himself by replying to the offensive
letter. If you truly believed in the dignity of labor, you
would not think it would demean you to work as a janitor.
demeanor  n. behavior; bearing. His sober demeanor
quieted the noisy revelers.
demented  adj. insane. Doctor Demento was a radio
personality who liked to act as if he were truly demented.
If you're demented, your mental state is out of whack; in
other words, you're wacky.
demise  n. death. Upon the demise of the dictator, a
bitter dispute about succession to power developed.
demographic  adj. related to population balance. In con-
ducting a survey, one should take into account demo-
graphic trends in the region: demography, n.
demolition  n. destruction. One of the major aims of
the air force was the complete demolition of all means
of transportation by the bombing of rail lines and terminals,
demolish, v.
demoniac  adj. fiendish. The Spanish Inquisition devised
many demoniac means of torture. demon, n.
demotic adj. pertaining to the people. He lamented the passing of aristocratic society and maintained that a demotic society would lower the nation's standards.

demur n. objection; protest. Michelangelo regularly denied that Leonardo Da Vinci had influenced him, and critics have usually accepted his statements without demur.

demur v. object (because of doubts, scruples); hesitate. When offered a post on the board of directors, David demurred: he had scruples about taking on the job because he was unsure he could handle it in addition to his other responsibilities.

demure adj. grave; serious; coy. She was demure and reserved, a nice modest girl whom any young man would be proud to take home to his mother.

■ denigrate v. blacken. All attempts to denigrate the character of our late president have failed; the people still love him and cherish his memory.

denizen n. inhabitant or resident; regular visitor. In *The Untouchables*, Eliot Ness fights Al Capone and the other denizens of Chicago's underworld. Ness's fight against corruption was the tale of all the denizens of the local bars.

denotation n. meaning; distinguishing by name. A dictionary will always give us the denotation of a word; frequently, it will also give us its connotation.

denouement n. outcome; final development of the plot of a play or other literary work. The play was childishly written; the denouement was obvious to sophisticated theatergoers as early as the middle of the first act.

denounce v. condemn; criticize. The reform candidate denounced the corrupt city officers for having betrayed the public's trust. denunciation n.

depict v. portray. In this sensational exposé, the author depicts Beatle John Lennon as a drug-crazed neurotic. Do you question the accuracy of this depiction of Lennon?

deplete v. reduce; exhaust. We must wait until we deplete our present inventory before we order replacements.

deplore v. regret. Although I deplore the vulgarity of your language, I defend your right to express yourself freely.

deploy v. spread out [troops] in an extended though shallow battle line. The general ordered the battalion to deploy in order to meet the enemy offensive.

depose v. dethrone; remove from office. The army attempted to depose the king and set up a military government.

deposition n. testimony under oath. She made her deposition in the judge's chamber.

depri v. extreme corruption; wickedness. The depravity of Caligua's behavior eventually sickened even those who had willingly participated in his earlier, comparatively innocent orgies. deprave, v.

deprecate v. express disapproval of; protest against; belittle. A firm believer in old-fashioned courtesy, Miss Post deprecated the modern tendency to address new acquaintances by their first names. deprecatory, adj.

depreciate v. lessen in value. If you neglect this property, it will depreciate.

depredation n. plundering. After the depredations of the invaders, the people were penniless.

derange v. make insane; disarrange. Hamlet's cruel rejection deranged poor Ophelia; in her madness, she drowned herself.

derelict adj. abandoned; negligent. The derelict craft was a menace to navigation. Whoever abandoned it in the middle of the harbor was derelict in living up to his responsibilities as a boat owner. also n.

■ deride v. ridicule; make fun of. The critics derided his pretentious dialogue and refused to consider his play seriously. Despite the critics' derision, however, audiences were moved by the play, cheering its unabashedly sentimental conclusion. derisive, adj.

■ derivative adj. unoriginal; obtained from another source. Although her early poetry was clearly derivative in nature, the critics thought she had promise and eventually would find her own voice.

dermatologist n. one who studies the skin and its diseases. I advise you to consult a dermatologist about your acne.

Test

Word List 13 Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

181. DECIMATE (A) kill (B) disgrace (C) search (D) collide (E) deride

182. DECLIVITY (A) trap (B) quadrangle (C) quarter (D) activity (E) downward slope

183. DECOLLETÉ (A) flavored (B) demure (C) flowery (D) low-necked (E) sweet

184. DECOROUS (A) momentary (B) emotional (C) suppressed (D) proper (E) unexpected

185. DECREPITUDE (A) feebleness (B) disease (C) coolness (D) melee (E) crowd

186. DEFAULT (A) failure to act (B) tendency to err (C) desire to remedy (D) debt (E) misunderstanding

187. DEFLECTION (A) determination (B) desertion (C) invitation (D) affection (E) reservation

188. DEFILE (A) manicure (B) ride (C) polute (D) assemble (E) order

189. DEGRADED (A) surprised (B) lowered (C) ascended (D) learned (E) prejudged

190. DELETERIOUS (A) delaying (B) experimental (C) harmful (D) graduating (E) glorious
191. DELUGE (A) confusion (B) deception (C) flood (D) mountain (E) weapon
192. DENIGRATE (A) refuse (B) blacken (C) terrify (D) admit (E) review
193. DENOUEMENT (A) action (B) scenery (C) resort (D) character (E) solution
194. DEPRAVITY (A) wickedness (B) sadness (C) heaviness (D) tidiness (E) seriousness
195. DERANGED (A) insane (B) systematic (C) neighborly (D) alphabetical (E) surrounded

Word List 14  derogatory-disgruntle

derogatory  ADJ. expressing a low opinion. Because the word **Eskimo** has come under strong attack in recent years for its supposedly derogatory connotations, many Americans today either avoid the term or feel uneasy using it.
descrie  v. catch sight of. In the distance, we could barely **descrie** the enemy vessels.
desecrate  v. profane; violate the sanctity of. Shattering the altar and trampling the holy objects underfoot, the invaders desecrated the sanctuary.
desiccate  v. dry up. A tour of this smokehouse will give you an idea of how the pioneers used to **desiccate** food in order to preserve it.
desolate  ADJ. unpopulated; joyless. After six months in the crowded, bustling metropolis, David was so sick of people that he was ready to head for the most desolate patch of wilderness he could find.
desolate  v. rob of joy; lay waste to; forsake. The bandits desolated the countryside, burning farms and carrying off the harvest.
desperado  N. reckless outlaw. Butch Cassidy was a bold desperado with a price on his head.
despise  v. look on with scorn; regard as worthless or distasteful. Mr. Bond, I despise spies. I look down on them as mean, desppicable, honorless men, whom I would wipe from the face of the earth with as little concern as I would scrape dog droppings from the bottom of my shoe.
despoil  v. strip of valuables; rob. Seeking plunder, the raiders despoiled the village, carrying off any valuables they found.
despondent  ADJ. depressed; gloomy. To the distress of his parents, William became seriously despondent after he broke up with Jane despondency. N.
despot  N. tyrant; harsh; authoritarian ruler. How could a benevolent king turn overnight into a despot? despotism. N.
destitute  ADJ. extremely poor. Because they had no health insurance, the father's costly illness left the family destitute. destitution. N.
desuetude  N. state of disuse. Overshadowed by the newly popular waltzes and cotillions, the English country dances of Jane Austen's time fell into desuetude until they were rediscovered during the folk dance revival of the early twentieth century.
desultory  ADJ. aimless; haphazard; digressing at random. In prison Malcolm X set himself the task of reading straight through the dictionary: to him, reading was purposeful, not desultory.
detached  ADJ. emotionally removed; calm and objective; physically separate. A psychoanalyst must maintain a detached point of view and stay uninvolved with her patients' personal lives. To a child growing up in an apartment or a row house, to live in a detached house was an unattainable dream. (secondary meaning) detachment. N.
determinate  ADJ. having a fixed order of procedure; invariable. At the royal wedding, the procession of the nobles followed a determinate order of precedence.
determination  N. resolve; measurement or calculation; decision. Nothing could shake his determination that his children would get the best education that money could buy. Thanks to my pocket calculator, my determination of the answer to the problem took only seconds of my time.
deterrent  N. something that discourages; hindrance. Does the threat of capital punishment serve as a deterrent to potential killers? Also ADJ.
detonation  N. explosion. The detonation of the bomb could be heard miles away.
detract  v. slander; aspersion. Because Susan B. Anthony and Elizabeth Cady Stanton dared to fight for women's rights, their motives, manners, dress, personal appearance, and character were held up to ridicule and detraction.
detrimental  ADJ. harmful; damaging. The candidate's acceptance of major financial contributions from a well-known racist ultimately proved detrimental to his campaign, for he lost the backing of many of his early grassroots supporters. detriment. N.
deviate  v. turn away from (a principle, norm); depart; diverge. Richard never deviated from his daily routine: every day he set off for work at eight o'clock, had his sack lunch at noon, and headed home at the stroke of five.
devious  ADJ. roundabout; erratic; not straightforward. The Joker's plan was so devious that it was only with great difficulty we could follow its shifts and dodges.
devise  v. think up; invent; plan. How clever he must be to have devised such a devious plan! What ingenious inventions might he have devised if he had turned his mind to science rather than crime.
devour  ADJ. lacking. You may think Cher's mind is a total void, but she's actually not devoid of intelligence. She just sounds like an airhead.
devolve  v. be transferred to another; delegate to another; gradually worsen. Because Humpty Dumpty was too shattered by his fall to clean up his own mess, all the work of picking up the pieces devolved upon poor Alice.
devotee n. enthusiastic follower. A devotee of the opera, she bought season tickets every year.

devout adj. pious. The devout man prayed daily.

dexterous adj. skillful. The magician was so dexterous that we could not follow his movements as he performed his tricks.

diabolical adj. devilish. "What a fiend I am, to devise such a diabolical scheme to destroy Gotham City," chortled the Joker.

diadem n. crown. The king’s diadem was on display at the museum.

dialectical adj. relating to the art of debate; mutual or reciprocal. The debate coach’s students grew to develop great forensic and dialectical skill. Teaching, however, is inherently a dialectical situation: the coach learned at least as much from her students as they learned from her. dialectics, n.

diaphanous adj. sheer; transparent. Through the diaphanous curtains, the burglar could clearly see the large jewelry box on the dressing table. Sexy nightgowns are diaphanous; woolen long Johns, fortunately, are not.

■ diatribe n. bitter scolding; invective. During the lengthy diatribe delivered by his opponent he remained calm and self-controlled.

■ dichotomy n. split; branching into two parts (especially contradictory ones). Willie didn’t know how to resolve the dichotomy between his ambition to go to college and his childhood longing to run away and join the circus. Then he heard about Ringling Brothers Circus College, and he knew he’d found his school.

dictum n. authoritative and weighty statement; saying, maxim. University administrations still follow the old dictum "Publish or perish." They don’t care how good a teacher you are; if you don’t publish enough papers, you’re out of a job.

didactic adj. teaching; instructional. Pope’s lengthy poem An Essay on Man is too didactic for my taste: I dislike it when poets turn preachy and moralize, didacticism, n.

die n. device for stamping or impressing; mold. In coin- ing pennies, workers at the old mint squeezed sheets of softened copper between two dies.

■ diffidence n. shyness. You must overcome your diffidence if you intend to become a salesperson.

■ diffuse adj. wordy; rambling; spread out (like a gas). If you pay authors by the word, you tempt them to produce diffuse manuscripts rather than brief ones. Also v. diffusion, n.

■ digression n. wandering away from the subject. Nobody minded when Professor Renoir’s lectures wandered away from their official theme; his digressions were always more fascinating than the topic of the day.

dilapidated adj. ruined because of neglect. The dilapidated old building needed far more work than just a new coat of paint. dilapidation, n.

dilate v. expand. In the dark, the pupils of your eyes dilate.

dilatory adj. tending to delay; intentionally delaying. If you are dilatory in paying your bills, your credit rating may suffer.

dilemma n. problem; choice of two unsatisfactory alternatives. In this dilemma, he knew no one to whom he could turn for advice.

dilettante n. aimless follower of the arts; amateur; dabbler. According to Turgenev, without painstaking work, any writer or artist remains a dilettante. In an age of increasing professionalism, the terms amateur and dilettante have taken on negative connotations they did not originally possess.

diligence n. steadiness of effort; persistent hard work. Her employers were greatly impressed by her diligence and offered her a partnership in the firm.

■ dilute v. make less concentrated; reduce in strength. She preferred her coffee diluted with milk.

diminution n. lessening; reduction in size. Old Jack was as sharp at eighty as he had been at fifty; increasing age led to no diminution of his mental acuity.

din n. continued loud noise. The din of the jackhammers outside the classroom window drowned out the lecturer’s voice. Also v.

dingy adj. dull; not fresh; cheerless. Refusing to be depressed by her dingy studio apartment, Bea spent the weekend polishing the floors and windows and hanging bright posters on the walls.

dint n. means; effort. By dint of much hard work, the volunteers were able to control the raging forest fire.

diorama n. life-size, three-dimensional scene from nature or history. Because they dramatically pose actual stuffed animals against realistic painted landscapes, the dioramas at the Museum of Natural History particularly impress high school biology students.

dire adj. disastrous. People ignored her dire predictions of an approaching depression.

■ dirge n. lament with music. The funeral dirge stirred us to tears.

■ disabuse v. correct a false impression; undeceive. I will attempt to disabuse you of your impression of my client’s guilt; I know he is innocent.

disaffected adj. disloyal. Once the most loyal of Bradley’s supporters, Senator Moynihan found himself becoming increasingly disaffected.

disapprobation n. disapproval; condemnation. The conservative father viewed his daughter’s radical boyfriend with disapprobation.

disarray n. a disorderly or untidy state. After the New Year’s party, the once orderly house was in total disarray.

disavowal n. denial; disclaiming. The novelist André Gide was controversial both for his early support of communism and for his subsequent disavowal of it after a visit to the Soviet Union. disavow, v.
disband  v. dissolve; disperse. The chess club disbanded after its disastrous initial season.

disburse  v. pay out. When you disburse money on the company's behalf, be sure to get a receipt.

discernible  ADJ. distinguishable; perceivable. The ships in the harbor were not discernible in the fog.

discerning  ADJ. mentally quick and observant; having insight. Though no genius, the star was sufficiently discerning to distinguish her true friends from the countless phonies who flattered her. discern, v. discernment, N.

disclaim  v. disown; renounce claim to. If I grant you this privilege, will you disclaim all other rights?

disclose  v. reveal. Although competitors offered him bribes, he refused to disclose any information about his company's forthcoming product. disclosure, N.

discombobulated  ADJ. confused; discomposed. The novice square dancer became so discombobulated that he wandered into the wrong set.

discomfit  v. put to rout; defeat, disconcert. This ruse will discomfit the enemy. discomfiture, N. discomfited, ADJ.

disconcert  v. confuse; upset; embarrass. The lawyer was disconcerted by the evidence produced by her adversary.

disconsolate  ADJ. sad. The death of his wife left him disconsolate.

discord  N. conflict; lack of harmony. Watching Tweedledum battle Tweedledee, Alice wondered what had caused this pointless discord.

discordant  ADJ. not harmonious; conflicting. Nothing is quite so discordant as the sound of a junior high school orchestra tuning up.

discount  v. disregard. Be prepared to discount what he has to say about his ex-wife.

discourse  N. formal discussion; conversation. The young Plato was drawn to the Agora to hear the philosophical discourse of Socrates and his followers. also v.

discreditable  v. defame; destroy confidence in; disguise. The campaign was highly negative in tone; each candidate tried to discredit the other.

discrepancy  N. lack of consistency; difference. The police noticed some discrepancies in his description of the crime and did not believe him.

discrete  ADJ. separate; unconnected; consisting of distinct parts. In programmed instruction, the information to be learned is presented in discrete units; you must respond correctly to each unit before you may advance to the next. Because human populations have been migrating and intermingling for hundreds of centuries, it is hard to classify humans into discrete racial groups. Do not confuse discrete (separate) with discreet (prudent in speech and actions).

discretion  N. prudence in speech, actions; ability to decide responsibly; freedom to act on one's own. Charlotte was the soul of discretion: she never would repeat anything told to her in confidence. Because we trusted our architect's judgment, we left many decisions about the house renovation to his discretion.

discriminating  ADJ. able to see differences; prejudiced. A superb interpreter of Picasso was sufficiently discriminating to judge the most complex works of modern art. discrimination, N.

discursive  ADJ. digressing; rambling. As the lecturer wandered from topic to topic, we wondered what any point there was to his discursive remarks.

disdain  v. view with scorn or contempt. In the film Funny Face, the bookish heroine disdained fashion modelos for their lack of intellectual interests. also N.

disembark  v. go ashore; unload cargo from a ship. Before the passengers could disembark, they had to pick up their passports from the ship's purser.

disenfranchise  v. deprive of a civil right. The imposition of the poll tax effectively disenfranchised poor Southern blacks, who lost their right to vote.

disengage  v. uncouple; separate; disconnect. A standard movie routine involves the hero's desperate attempt to disengage a railroad car from a moving train.

disfigure  v. mar the appearance of: spoil. An ugly frown disfigured her normally pleasant face.

disgorge  v. surrender something; eject; vomit. Unwilling to disgorge the cash he had stolen from the pension fund, the embezzler tried to run away.

disgruntle  v. make discontented. The passengers were disgruntled by the numerous delays.
Word List 15  dishearten-duplicity

dishearten  v. discourage. His failure to pass the bar exam disheartened him.
disheveled  ADJ. untidy. Your disheveled appearance will hurt your chances in this interview.
disinclination  N. unwillingness. Some mornings I feel a great disinclination to get out of bed.
- disingenuous  ADJ. lacking genuine candor; insincere.
  Now that we know that the mayor and his wife are engaged in a bitter divorce fight, we find their earlier remarks regretting their lack of time together remarkably disingenuous.
disinter  v. dig up; unearth. They disinterred the body and held an autopsy.
- disinterested  ADJ. unprejudiced. Given the judge’s political ambitions and the lawyers’ financial interest in the case, the only disinterested person in the courtroom may have been the court reporter.
- disjointed  ADJ. lacking coherence; separated at the joints. Uable to think of anything to say about the assigned topic, the unprepared student scribbled a few disjointed sentences on his answer sheet.
disjunction  N. act or state of separation, disunity. Believing the mind could greatly affect the body’s health, the holistic doctor rejected the notion of a necessary disjunction of mind and body.
dislodge  v. remove (forcibly). Thrusting her fist up under the choking man’s lower ribs, Margaret used the Heimlich maneuver to dislodge the food caught in his throat.
dismantle  v. take apart. When the show closed, they dismantled the scenery before storing it.
dismember  v. cut into small parts. When the Austrian Empire was dismembered, several new countries were established.
- dismiss  v. eliminate from consideration; reject. Believing in John’s love for her, she dismissed the notion that he might be unfaithful. (secondary meaning)
- disparage  v. belittle. A doting mother, Emma was more likely to praise her son’s crude attempts at art than to disparage them.
- disparate  ADJ. basically different; unrelated. Unfortunately Tony and Tina have disparate notions of marriage: Tony sees it as a carefree extended love affair, while Tina sees it as a solemn commitment to build a family and a home.
disparity  N. difference; condition of inequality. Their disparity in rank made no difference at all to the prince and Cinderella.
dispassionate  ADJ. calm; impartial. Known in the company for his cool judgment, Bill could impartially examine the causes of a problem, giving a dispassionate analysis of what had gone wrong, and go on to suggest how to correct the mess.
dispatch  N. speediness; prompt execution; message sent with all due speed. Young Napoleon defeated the enemy with all possible dispatch; he then sent a dispatch to headquarters, informing his commander of the great victory. Also v.
dispel  v. scatter; drive away; cause to vanish. The bright sunlight eventually dispelled the morning mist.
disperse  v. scatter. The police fired tear gas into the crowd to dispel the protestors. Dispersion. N.
dispirited  ADJ. lacking in spirit. The coach used all the tricks at his command to buoy up the enthusiasm of his team, which had become dispirited at the loss of the star player.
disport  v. amuse. The popularity of Florida as a winter resort is constantly increasing; each year, thousands more disport themselves at Miami and Palm Beach.
disputatious  ADJ. argumentative; fond of arguing. Convinced he knew more than his lawyers, Tony was a disputatious client: ready to argue about the best way to conduct the case.
disquietude  N. uneasiness; anxiety. When Holmes had been gone for a day, Watson felt only a slight sense of disquietude, but after a week with no word, Watson’s uneasiness about his missing friend had grown into a deep fear for Holmes’s safety. Disquiet, v., N.
disquisition  N. a formal systematic inquiry; an explanation of the results of a formal inquiry. In his disquisition, he outlined the steps he had taken in reaching his conclusions.
dissection  N. analysis; cutting apart in order to examine. The dissection of frogs in the laboratory is particularly unpleasant to some students.
dissemble  v. disguise; pretend. Even though John tried to dissemble his motive for taking modern dance, we all knew he was there not to dance but to meet girls.
disseminate v. distribute; spread; scatter (like seeds). By their use of the Internet, propagandists have been able to disseminate their pet doctrines to new audiences around the globe.

dissent v. disagree. In the recent Supreme Court decision, Justice O'Connor dissented from the majority opinion. Also n.

dissertation n. formal essay. In order to earn a graduate degree from many of our universities, a candidate is frequently required to prepare a dissertation on some scholarly subject.

dissident adj. dissenting; rebellious. In the purge that followed the student demonstrations at Tianamen Square, the government hunted down the dissident students and their supporters. Also n.

dissimulate v. pretend; conceal by feigning. Although the governor tried to dissimulate his feelings about the opposing candidate, we all knew he despised his rival.

dissipate v. squander; waste; scatter. He is a fine artist, but I fear he may dissipate his gifts if he keeps wasting his time playing Trivial Pursuit.

■ dissolution n. disintegration; looseness in morals. The prolifegy and dissolution of life in Caligula's Rome appall some historians. Dissolute, adj.

■ dissonance n. discord; opposite of harmony. Composer Charles Ives often used dissonance—clashing or unresolved chords—for special effects in his musical works. Dissonant, adj.

dissuade v. persuade not to do; discourage. Since Tom could not dissuade Huck from running away from home, he decided to run away with his friend. Dissuasion, n.

distant adj. reserved or aloof; cold in manner. Her distant greeting made me feel unwelcome from the start.

(secondary meaning)

■ distend v. expand; swell out. I can tell when he is under stress by the way the veins distend on his forehead.

■ distill v. purify; refine; concentrate. A moonshiner distills mash into whiskey; an epigrammatist distills thoughts into quips.

■ distinction n. honor; contrast; discrimination. A holder of the Medal of Honor, George served with great distinction in World War II. He made a distinction, however, between World War II and Vietnam, which he considered an immoral conflict.

distort v. twist out of shape. It is difficult to believe the newspaper accounts of the riots because of the way some reporters distort and exaggerate the actual events. Distortion, n.

distrait adj. inattentive; distracted, often by anxiety. Jane was so caught up in her wedding plans that her family and friends considered her absent-minded. Distracted, aloof and generally useless.

distraught adj. upset; distracted by anxiety. The distraught parents frantically searched the ravine for their lost child.

diurnal adj. daily. A farmer cannot neglect his diurnal tasks at any time; cows, for example, must be milked regularly.

diva n. operatic singer; prima donna. Although world famous as a diva, she did not indulge in fits of temperamant.

■ diverge v. vary; go in different directions from the same point. The spokes of the wheel diverge from the hub.

divergent adj. differing; deviating. Since graduating from medical school, the two doctors have followed divergent paths, the one going on to become a nationally prominent surgeon, the other dedicating himself to a small family practice in his hometown. Divergence, n.

diverse adj. differing in some characteristics; various. The professor suggested diverse ways of approaching the assignment and recommended that we choose one of them.

diversion n. act of turning aside; pastime. After studying for several hours, he needed a diversion from work. Divert, v.

diversity n. variety; dissimilitude. When power narrows the area of man's concern, poetry reminds him of the richness and diversity of existence. (John Fitzgerald Kennedy)

■ divest v. strip; deprive. He was divested of his power to act and could no longer govern. Divestiture, n.

divine v. perceive intuitively; foresee the future. Nothing infuriated Tom more than Aunt Polly's ability to divine when he was not telling the truth.

divulge v. reveal. No lover of gossip, Charlotte would never divulge anything that a friend told her in confidence.

docile adj. obedient; easily managed. As docile as he seems today, that old lion was once a ferocious, snarling beast. Docility, n.

docket n. program as for trial; book where such entries are made. The case of Smith v. Jones was entered in the docket for July 15. Also v.

doctrinaire adj. unable to compromise about points of doctrine; dogmatic; unyielding. Deng had hoped that the student-led democracy movement might bring about change in China, but the repressive response of the doctrinaire hard-liners crushed his dreams of democracy.

doctrine n. teachings in general; particular principle (religious, legal, etc.) taught. He was so committed to the doctrines of his faith that he was unable to evaluate them impartially.

■ document v. provide written evidence. She kept all the receipts from her business trip in order to document her expenses for the firm, also n.

doddering adj. shaky; infirm from old age. Lear's cruel daughters treat him as a doddering old fool, too aged and infirm to be taken seriously.

doff v. take off. A gentleman used to doff his hat to a lady.

dagged adj. determined; stubborn. Les Misérables tells of Inspector Javert's long, dogged pursuit of the criminal Jean Valjean.
doggerel adj. poor verse. Although we find occasional
snatches of genuine poetry in her work, most of her
writing is more doggerel!

• dogmatic adj. opinionated; arbitrary; doctrinal. We tried
to discourage Doug from being so dogmatic, but never
could convince him that his opinions might be wrong.
doldrum n. blues; listlessness; slack period. Once the
expectation of meeting her deadline was over, she found
herself in the doldrums.
doleful adj. mournful; causing sadness. Eeyore, the
lugubrious donkey immortalized by A. A. Milne, looked at
his cheerful friend Tigger and sighed a doleful sigh.
dolorous adj. sorrowful. The conflict between Lancelot's
love for Guinevere and his loyalty to King Arthur led to
Arthur's "dolorous death and departing out of this world."
dolt n. stupid person; dunce. The heroes of Dumb and
Dumber are, as the title suggests, a classic pair of doltis.
domicile n. home. Although his legal domicile was
in New York City, his work kept him away from his
residence for many years. Also v.
domineer v. rule over tyrannically. Students prefer
teachers who guide, not ones who dominate.
don v. put on. When Clark Kent had to don his
Superman outfit, he changed clothes in a convenient
phone booth.

• dormant adj. sleeping; listless; latent. At fifty her
long-dormant ambition to write flared up once more;
within a year she had completed the first of her great
historical novels. dormancy, n.
dormer n. window projecting from roof. In remodeling
the attic into a bedroom, we decided that we needed
to put in dormers to provide sufficient ventilation for
the new room.
dorsal adj. relating to the back of an animal. A shark
may be identified by its dorsal fin, which projects above
the surface of the ocean.
dossier n. file of documents on a subject. Ordered by J. Edgar Hoover to investigate the senator, the FBI
compiled a complete dossier on him.
dotage n. senility. In his dotage, the old man bored us
with long tales of events in his childhood.
dote v. be excessively fond of; show signs of mental
decline. Not only grandparents bore you with stories
about their brilliant grandchildren; grandfathers dote on
the little rascals, too.
dour adj. sulky; stubborn. The man was dour and
tactless.
douse v. plunge into water; drench; extinguish. They
doused each other with hoses and water balloons.
dowdy adj. slovenly; untidy. She tried to change her
dowdy image by buying a fashionable new wardrobe.
downcast adj. disheartened; sad. Cheerful and optimistc by nature, Beth was never downcast despite
the difficulties she faced.
drab adj. dull; lacking color; cheerless. The Dutch
woman's drab winter coat contrasted with the distinctive,
colorful native costume she wore beneath it.
draconian adj. extremely severe. When the principal
canceled the senior prom because some seniors had
been late to school that week, we thought the draconian
punishment was far too harsh for such a minor violation
of the rules.
dregs n. sediment; worthless residue. David poured the
wine carefully to avoid stirring up the dregs.
drive v. nonsense; foolishness. Why do I have to spend
my days listening to such idiotic drive? Drive is related
to dribble; think of a dribbling, driveless idiot.
droll adj. queer and amusing. He was a popular guest
because his droll anecdotes were always entertaining.
drome n. idle person; male bee. Content to let his wife
support him, the beewould be writer was in reality nothing
but a drone.
drone v. talk dully; buzz or murmur like a bee. On a
gorgeous day, who wants to be stuck in a classroom
listening to the teacher drone?
dress n. waste matter; worthless impurities. Many
methods have been devised to separate the valuable
metal from the dress.
drudgery n. menial work. Cinderella's fairy godmother
rescued her from a life of drudgery.
dubious adj. questionable; filled with doubt. Some crit-
icians of the GRE contend the test is of dubious worth. Tony
called he could get a perfect score on the test, but Tina
was dubious: she knew he hadn't cracked a book in
three years. dubiously, adv.
ductile adj. malleable; flexible; pliable. Copper is an
extremely ductile material, you can stretch it into
the thinnest of wires, bend it, even wind it into loops.
ductility, n.
dulcet adj. sweet sounding. The dulcet sounds of
the birds at dawn were soon drowned out by the roar of
traffic passing our motel.
dumbfound v. astonish. Eggbert's perfect score on the
GRE dumbfounded his classmates, who had always
considered him to be utterly dumb.

• dupe n. someone easily fooled. While the gullible
Watson often was made a dupe by unscrupulous parties,
Sherlock Holmes was far more difficult to fool.
duplicity n. double-dealing; hypocrisy. When Tanya
learned that Mark had been two-timing her, she was
furious at his duplicity. dupliciously, adj.
Test

Word List 15  Synonyms and Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar or opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

211. DISINGENUOUS (A) uncomfortable (B) eventual (C) naive (D) complex (E) enthusiastic

212. DISINTERESTED (A) prejudiced (B) horrendous (C) affected (D) arbitrary (E) bored

213. DISJOINTED (A) satisfied (B) carved (C) understood (D) connected (E) evicted

214. DISPARITY (A) resonance (B) eloquence (C) relief (D) difference (E) symbolism

215. DISPASSIONATE (A) sensual (B) immoral (C) inhibited (D) impartial (E) scientific

216. DISPIRITED (A) current (B) dented (C) drooping (D) alcoholic (E) dallying

217. DISSIPATE (A) economize (B) clean (C) accept (D) anticipate (E) withdraw

218. DISTEND (A) inflate (B) adjust (C) exist (D) materialize (E) finish

219. DISTRAINT (A) clever (B) industrial (C) absentminded (D) narrow (E) crooked

220. DIVULGE (A) leak (B) refuse (C) deride (D) reveal (E) harm

221. DOFF (A) withdraw (B) take off (C) remain (D) control (E) start

222. DOGMATIC (A) benign (B) carine (C) impatient (D) petulant (E) arbitrary

223. DOTAGE (A) senility (B) silence (C) sensitivity (D) interest (E) generosity

224. DOUR (A) sullen (B) ornamental (C) grizzled (D) lacking speech (E) international

225. DROLL (A) rotund (B) amusing (C) fearsome (D) tiny (E) strange

Word List 16  duration-encroachment

duration  N.  length of time something lasts.  Because she wanted the children to make a good impression on the dinner guests, Mother promised them a treat if they'd behave well for the duration of the meal.
duress  N.  forcible restraint, especially unlawfully.  The hostages were held under duress until the prisoners' demands were met.
dutiful  ADJ.  respectful; obedient.  When Mother told Billy to kiss Great-Aunt Hattie, the boy obediently gave the old woman a dutiful peck on her cheek.
dwindle  v.  shrink; reduce.  The food in the lifeboat gradually dwindled away to nothing; in the end, they ate the ship's cook.
dynamic  ADJ.  energetic; vigorously active.  The dynamic aerobics instructor kept her students on the run; she was a little dynamo.
dyspeptic  ADJ.  suffering from indigestion.  All the talk about rich food made him feel dyspeptic.  dyspepsia, N.
dirty  ADJ.  unrefined; coarse.  His earthy remarks often embarrassed the women in his audience.

ebb  v.  recede; lessen.  Sitting on the beach, Mrs. Sailhoway watched the tide ebb; the waters receded, drawing away from her as she sat there all alone.  also N.

ebullient  ADJ.  showing excitement; overflowing with enthusiasm.  Amy's ebullient nature could not be repressed; she was always bubbling over with excitement.  ebullience, N.
eccentric  ADJ.  irregular; odd; whimsical, bizarre.  The comet veered dangerously close to the earth in its eccentric orbit.  People came up with some eccentric ideas for dealing with the emergency; one kook suggested tying a knot in the comet's tail.
eccentricity  N.  oddity; idiosyncrasy.  Some of his friends tried to account for his rudeness to strangers as the eccentricity of genius.
ecclesiastic  ADJ.  pertaining to the church.  The minister donned his ecclesiastic garb and walked to the pulpit.  also N.

eclectic  ADJ.  selective; composed of elements drawn from disparate sources.  His style of interior decoration was eclectic: bits and pieces of furnishings from widely divergent periods, strikingly juxtaposed to create a unique decor.  eclecticism, N.
eclipse  v.  darken; extinguish; surpass.  The new stock market high eclipsed the previous record set in 1985.
ecologist  N.  person concerned with the interrelationship between living organisms and their environment.  The ecologist was concerned that the new dam would upset the natural balance of the creatures living in Glen Canyon.
economy  N.  efficiency or conciseness in using something.  Reading the epigrams of Pope, I admire the economy of his verse: in few words he conveys worlds of meaning.  (secondary meaning)
ekatastrophe  N.  rapture; joy; any overpowering emotion.  When Allison received her long-hoped-for letter of acceptance from Harvard, she was in katabasis.  ecstatic, ADJ.
eddy n. Swirling current of water, air, etc. The water in the tide pool was still, except for an occasional eddy. Also v.
edict n. Decree (especially one issued by a sovereign); official command. The emperor issued an edict decreeing that everyone should come see him model his magnificent new clothes.
edify v. Instruct; correct morally. Although his purpose was to edify and to not entertain his audience, many of his listeners were amused and not enlightened.
eerie adj. Weird. In that eerie setting, it was easy to believe in ghosts and other supernatural beings.
efface v. Rub out. The coin had been handled so many times that its date had been effaced.
effectual adj. Able to produce a desired effect; valid. Medical researchers are concerned because of the development of drug-resistant strains of bacteria; many once-useful antibiotics are no longer effectual in curing bacterial infections.
effeminize adj. Having womanly traits. "Effeminize men intrigue me more than anything in the world. I see them as my alter egos. I feel very drawn to them. I think like a guy, but I'm feminine. So I relate to feminine men." (Madonna)
effervescence n. Inner excitement or exuberance; bubbling from fermentation or carbonation. Nothing depressed Sue for long; her natural effervescence soon reasserted itself. Soda that loses its effervescence goes flat. effervescent adj. Effervescent; v.
effete adj. Lacking vigor; worn out; sterile. Is the Democratic Party still a vital political force, or is it an effete, powerless faction, wedded to outdated liberal policies?
efficacy n. Power to produce desired effect. The efficacy of this drug depends on the regularity of the dosage, efficacious, adj.
effigy n. Dummy. The mob showed its irritation by hanging the judge in effigy.
efluviun n. Noxious smell. Air pollution has become a serious problem in our major cities. The effluviun and the poisons in the air are hazards to life. effluvial pl.
effrontery n. Impudence; shameless boldness; sheer nerve; presumptuousness. When the boss told Frank she was firing him for laziness and insubordination, he had the effrontery to ask her for a letter of recommendation.
effusion n. Pouring forth. The critics objected to her literary effusion because it was too flowery.
effusive adj. Pouring forth; gushing. Unmoved by Martha's many compliments on his performance, George dismissed her effusive words of praise as the sentimental outpourings of emotional fool.
egoism n. Excessive interest in one's self; belief that one should be interested in one's self rather than in others. His egoism prevented him from seeing the needs of his colleagues.
egotistical adj. Excessively self-centered; self-important; conceited. Typicalegotistical remark: "But enough of this chitchat about you and your little problems. Let's talk about what's really important: me!"egotistic, adj.
egotism n.
embed v. enclose; place in something. Tales of actual historical figures like King Alfred have become embedded in legends.

embellish v. adorn; ornament; enhance, as a story. The costume designer embellished the leading lady's ball gown with yards and yards of ribbon and lace.

embezzlement n. stealing. The bank teller confessed his embezzlement of the funds.

emboss v. produce a design in raised relief. The secretary of the corporation uses a special stamp to emboss the corporate seal on all official documents.

embrace v. hug; adopt or espouse; accept readily; encircle; include. Clasping Maid Marian in his arms, Robin Hood embraced her lovingly. In joining the outlaws in Sherwood Forest, she had openly embraced their cause, also n.

embroider v. decorate with needlework; ornament with fancy or fictitious details. For her mother's birthday, Beth embroidered a lovely design on a handkerchief. When asked what made her late getting home, Jo embroidered her account with tales of runaway horses and rescuing people from a ditch. embroidery, n.

embroil v. throw into confusion; involve in strife; entangle. He became embroiled in the heated discussion when he tried to arbitrate the dispute.

embryonic adj. undeveloped; rudimentary. The CEO reminisced about the good old days when the computer industry was still in its embryonic stage and start-up companies were being founded in the family garage.

emend v. correct, usually a text. In editing Beowulf for his scholarly edition, Professor Oliver freely emended the manuscript's text whenever it seemed to make no sense.

emendation n. correction of errors; improvement. Please initial all the emendations you have made in this contract.

emetic n. substance causing vomiting. Ingesting an emetic like mustard is useful in some cases of poisoning.

eminent adj. high; lofty. After her appointment to this eminent position, she seldom had time for her former friends.

emissary n. agent; messenger. The Secretary of State was sent as the president's special emissary to the conference on disarmament.

emollient n. soothing or softening remedy. Emollients soften the skin by slowing evaporation of water.

Beeswax, spermaceti, almond oil, and rosewater were used in ancient Greece, while lanolin or sheep fat was commonly used in medieval Europe. Also adj.

emolument n. salary; compensation. In addition to the emolument this, position offers, you must consider the social prestige it carries with it.

empathy n. ability to identify with another's feelings, ideas, etc. What made Ann such a fine counselor was her empathy, her ability to put herself in her client's place and feel his emotions as if they were her own. empathize, v.

empirical adj. based on experience. He distrusted hunches and intuitive flashes; he placed his reliance entirely on empirical data.

emulate v. imitate; rival. In a brief essay, describe a person you admire, someone whose virtues you would like to emulate.

enamored adj. in love. Narassus became enamored of his own beauty.

encipher v. encode; convert a message into code. In one of Bond's first lessons he learned how to encipher the messages he sent to Miss Moneypenny so that none of his other lady friends could read them.

enclave n. territory enclosed within an alien land. The Vatican is an independent enclave in Italy.

encomiastic adj. praising; eulogistic. Some critics believe that his encomiastic statements about Napoleon were inspired by his desire for material advancement rather than by an honest belief in the Emperor's genius.

encomium n. high praise; eulogy. Uneasy with the encomiums expressed by his supporters, Tolkien felt unworthy of such high praise.

encumber v. surround or encircle; enclose; include. A moat, or deep water-filled trench, encompassed the castle, protecting it from attack. The term alternative medicine can encompass a wide range of therapies, including chiropractic, homeopathy, acupuncture, herbal medicine, meditation, biofeedback, massage therapy, and various "new age" therapies such as guided imagery and naturopathy.

encroachment n. gradual intrusion. The encroachment of the factories upon the neighborhood lowered the value of the real estate.

Test

Word List 16 Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

226. DWINDLE (A) blow (B) inhabit (C) spin (D) lessen (E) combine

227. ECSTASY (A) joy (B) speed (C) treasure (D) warmth (E) lack

228. EDIFY (A) mystify (B) suffice (C) improve (D) erect (E) entertain
### Word List 17  encumber-eulogistic

<table>
<thead>
<tr>
<th>Encumber</th>
<th>v. burden. Some people encumber themselves with too much luggage when they take short trips.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enamor</td>
<td>n. fond word or act. Your gifts and enamoraments cannot make me forget your earlier insolence.</td>
</tr>
<tr>
<td>Enemic</td>
<td>adj. prevailing among a specific group of people or in a specific area or country. This disease is endemic in this part of the world; more than 80 percent of the population are at one time or another affected by it.</td>
</tr>
<tr>
<td>Endorse</td>
<td>v. approve; support. Everyone waited to see which one of the rival candidates for the city council the mayor would endorse. (secondary meaning) endorsement, n.</td>
</tr>
<tr>
<td>Enude</td>
<td>v. provide with some quality; endow. He was enuced with a lion's courage.</td>
</tr>
<tr>
<td>Enduring</td>
<td>adj. lasting; surviving. Keats believed in the enduring power of great art, which would outlast its creators' brief lives.</td>
</tr>
<tr>
<td>Energize</td>
<td>v. invigorate; make forceful and active. Rather than exhausting Maggie, dancing energized her.</td>
</tr>
<tr>
<td>Enervate</td>
<td>v. weaken. She was slow to recover from her illness; even a short walk to the window enervated her. enervation, n.</td>
</tr>
<tr>
<td>Enfranchise</td>
<td>v. admit to the rights of citizenship (especially the right to vote). Although blacks were enfranchised shortly after the Civil War, women did not receive the right to vote until 1920.</td>
</tr>
<tr>
<td>Engage</td>
<td>v. attract; hire; pledge oneself; confront. &quot;Your case has engaged my interest, my lord,&quot; said Holmes. &quot;You may engage my services.&quot;</td>
</tr>
<tr>
<td>Engaging</td>
<td>adj. charming; attractive. Everyone liked Nancy's pleasant manners and engaging personality.</td>
</tr>
<tr>
<td>Engender</td>
<td>v. cause; produce. To receive praise for real accomplishments engenders self-confidence in a child.</td>
</tr>
<tr>
<td>Engross</td>
<td>v. occupy fully. John was so engrossed in his studies that he did not hear his mother call.</td>
</tr>
<tr>
<td>Enhance</td>
<td>v. increase; improve. You can enhance your chances of being admitted to the college of your choice by learning to write well; an excellent essay will enhance any application.</td>
</tr>
<tr>
<td>Enigma</td>
<td>n. puzzle; mystery. &quot;What do women want?&quot; asked Dr. Sigmund Freud. Their behavior was an enigma to him.</td>
</tr>
<tr>
<td>Enigmatic</td>
<td>adj. obscure; puzzling. Many have sought to fathom the enigmatic smile of the Mona Lisa.</td>
</tr>
<tr>
<td>Enjoin</td>
<td>v. command; order; forbid. The owners of the company asked the court to enjoin the union from picketing the plant.</td>
</tr>
<tr>
<td>Enmity</td>
<td>n. ill will; hatred. At Camp David President Carter labored to bring an end to the enmity that prevented Egypt and Israel from living in peace.</td>
</tr>
<tr>
<td>Ennui</td>
<td>n. boredom. The monotonous routine of hospital life induced a feeling of ennui that made her moody and irritable. &quot;This vacation is bor-ing!&quot; complained Heather, tired of being stuck riding in the car with no way to relieve her growing ennui.</td>
</tr>
<tr>
<td>Enormity</td>
<td>n. hugeness (in a bad sense). He did not realize the enormity of his crime until he saw what suffering he had caused.</td>
</tr>
<tr>
<td>Enrapture</td>
<td>v. please intensely. The audience was enraptured by the freshness of the voices and the excellent orchestration.</td>
</tr>
<tr>
<td>Ensnore</td>
<td>v. settle comfortably. Now that their children were ensnored safely in the private school, the jet-setting parents decided to leave for Europe.</td>
</tr>
<tr>
<td>Ensue</td>
<td>v. follow as a consequence; result. What a holler would ensue if people had to pay the minister as much to marry them as they have to pay a lawyer to get them a divorce. (Claire Trevor)</td>
</tr>
<tr>
<td>Entail</td>
<td>v. require; necessitate; involve. Building a college-level vocabulary will entail some work on your part.</td>
</tr>
<tr>
<td>Enterprising</td>
<td>adj. full of initiative. By coming up with fresh ways to market the company's products, Mike proved himself to be an enterprising businessman.</td>
</tr>
</tbody>
</table>
enthall  v. capture, enslave. From the moment he saw her picture, he was entranced by her beauty.
entic e  v. lure; attract; tempt. Will Mayor Bloomberg's attempts to entice the members of the International Olympic Committee to select New York as the site of the 2012 Olympic Games succeed? Only time will tell.
entity  n. real being. As soon as the charter was adopted, the United Nations became an entity and had to be considered as a factor in world diplomacy.
entomology  n. study of insects. Kent found entomology the most annoying part of his biology course; studying insects bugged him.
entanglement  v. put under a spell; carry away with emotion. Schafts of sunlight on a wall could entangle her and leave her spellbound.
entrain  v. plead; ask earnestly. She entreated her father to let her stay out till midnight.
entree  n. entrance; a way in. Because of his wealth and social position, he had entree into the most exclusive circles.
entrepreneur  n. businessperson; contractor. Opponents of our present tax program argue that it discourages entrepreneurs from trying new fields of business activity.
enumerate  v. list; mention one by one. Huck hung his head in shame as Miss Watson enumerated his many flaws.
enunciate  v. utter or speak, especially distinctly. Stop mumbling! How will people understand you if you do not enunciate clearly?
environ  v. enclose; surround. In medieval days, Paris was environed by a wall, environs, n.
eon  n. long period of time; an age. It has taken eons for our civilization to develop.
epaulet  n. ornament worn on the shoulder (of a uniform, etc.). The shoulder loops on Sam Spade's trench coat are the nonmilitary counterparts of the fringed epauletts on George Washington's uniform.
ephemeral  adj. short-lived; fleeting. The mayfly is an ephemeral creature: its adult life lasts little more than a day.
epic  n. long heroic poem, novel, or similar work of art. Kurosawa's film Seven Samurai is an epic portraying the struggle of seven warriors to destroy a band of robbers. Also adj.
epicure  n. connoisseur of food and drink. Epitcures frequent this restaurant because it features exotic wines and dishes, epicurean, adj.
epigram  n. witty thought or saying, usually short. Poor Richard's epigrams made Benjamin Franklin famous.
epilogue  n. short speech at conclusion of dramatic work. The audience was so disappointed in the play that many did not remain to hear the epilogue.
episodic  adj. loosely connected. Though he tried to follow the plot of Gravity's Rainbow, John found the novel too episodic.
epistemologist  n. philosopher who studies the nature of knowledge. "What is more important, a knowledge of nature or the nature of knowledge?" the epistemologist asked the naturalist.
epitaph  n. inscription in memory of a dead person. In his will, he dictated the epitaph he wanted placed on his tombstone.
epitaph  n. word or phrase characteristically used to describe a person or thing. So many kings of France were named Charles that modern students need epithets to tell them apart; Charles the Wise, for example, was someone far different from Charles the Fat.
epitome  n. perfect example or embodiment. Singing "I am the very model of a modern Major-General" in The Pirates of Penzance, Major-General Stanley proclaimed himself the epitome of an officer and a gentleman.
epitomize  v.
epoch  n. period of time. The glacial epoch lasted for thousands of years.
equable  adj. tranquil; steady; uniform. After the hot summers and cold winters of New England, she found the climate of the West Indies equable and pleasant.
equitability  n. calmness of temperament; composure. Even the inevitable strains of caring for an ailing mother did not disturb Bea's equanimitiy.
equestrian  n. rider on horseback. These paths in the park are reserved for equestrians and their steeds. Also adj.
equilibrium  n. balance. After the divorce, he needed some time to regain his equilibrium.
equine  adj. resembling a horse. Her long, bony face had an equine look to it.
equinox  n. period of equal days and nights: the beginning of spring and autumn. The vernal equinox is usually marked by heavy rainstorms.
equipage  n. balance; balancing force; equilibrium. The high-wire acrobat used his pole as an equipage to overcome the swaying caused by the wind.
equal  adj. fair; impartial. I am seeking an equitable solution to this dispute, one that will be fair and acceptable to both sides.
equity  n. fairness; justice. Our courts guarantee equity to all.
equivocal  adj. ambiguous; intentionally misleading. Rejecting the candidate's equivocal comments on tax reform, the reporters pressed him to state clearly where he stood on the issue. equivocate, v. equivocation, n.
equivocate  v. lie; mislead; attempt to conceal the truth. No matter how bad the news is, give it to us straight. Above all, don't equivocate.
erode  v. eat away. The limestone was eroded by the dripping water until only a thin shell remained. erosion, n.
erotic  adj. Films with significant erotic content are rated R; pornographic films are rated X.
errant  adj. wandering. Many a charming tale has been written about the knights-errant who helped the weak and punished the guilty during the Age of Chivalry.
erratic  adj. odd; unpredictable. Investors become anxious when the stock market appears erratic.
review 

177 Reviewing Vocabulary

erroneous adj. mistaken; wrong. I thought my answer was correct, but it was erroneous.

erudite adj. learned; scholarly. Unlike much scholarly writing, Huizinga’s prose was entertaining as well as erudite, lively as well as learned. erudition, n.

escapade n. prank; flighty conduct. The headmaster could not regard this latest escapade as a boyish joke and expelled the young man.

eschew v. avoid. Hoping to present himself to his girlfriend as a totally reformed character, he tried to eschew all the vices, especially chewing tobacco and drinking bathtub gin.

esoteric adj. hard to understand; known only to the chosen few. New Yorker short stories often include esoteric allusions to obscure people and events. The implication is, if you are in the in-crowd, you’ll get the reference; if you come from Cleveland, you won’t. esoterica, n.

espionage n. spying. In order to maintain its power, the government developed a system of espionage that penetrated every household.

espouse v. adopt; support. She was always ready to espouse a worthy cause.

essay v. make an attempt at; test. In an effort to enrich the contemporary operatic repertoire, the Santa Fe Opera commissioned three new operas by American composers who had not previously essayed the form. Although Lydgate essayed courtly verse in Chaucer’s manner, his imitations of the master’s style rarely succeeded. In 1961 the actor Paul Newman essayed the role that perhaps best defined his screen persona, that of pool shark “Fast” Eddie Felson in The Hustler.

esteem v. respect; value. Jill esteemed Jack’s taste in music, but she deplored his taste in clothes. also n.
estimable adj. worthy of esteem; admirable. Tennis star Andre Agassi survived a near loss in the semifinals to win the seventh Grand Slam tournament title of his uneven yet estimable career.
estrange adj. separated; alienated. The estranged wife sought a divorce. estrangement, n.

ethereal adj. light; heavenly; unusually refined. In Shakespeare’s The Tempest, the spirit Ariel is an ethereal creature, too airy and unearthly for our mortal world.
etnic adj. relating to races. Intolerance between ethnic groups is deplorable and usually is based on lack of information.
etnology n. study of humankind. Sociology is one aspect of the science of ethnology.
ethos n. underlying character of a culture, group, etc. Seeing how tenderly Spaniards treated her small daughter made author Barbara Kingsolver aware of how greatly children were valued in the Spanish ethos.
etymology n. study of word parts. A knowledge of etymology can help you on many English tests: if you know what the roots and prefixes mean, you can determine the meanings of unfamiliar words.
eugenic adj. pertaining to the improvement of race. It is easier to apply eugenic principles to the raising of racehorses or prize cattle than to the development of human beings.
eulogistic adj. praising. To everyone’s surprise, the speech was eulogistic rather than critical in tone.

Test

Word List 17 Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

241. ENERVATE (A) strengthen (B) sputter (C) arrange (D) scrutinize (E) agree

242. ENHANCE (A) degrade (B) doubt (C) scuff (D) gasp (E) avoid

243. ENNUI (A) hate (B) excitement (C) seriousness (D) humility (E) kindness

244. ENUNCIATE (A) pray (B) request (C) deliver (D) wait (E) mumble

245. EPHEMERAL (A) sensuous (B) passing (C) popular (D) distasteful (E) eternal

246. EQUIABLE (A) flat (B) decisive (C) stormy (D) dishonest (E) scanty

247. EQUANIMITY (A) agitation (B) stirring (C) volume (D) identity (E) luster

248. EQUILIBRIUM (A) imbalance (B) peace (C) inequity (D) directness (E) urgency

249. EQUITABLE (A) able to leave (B) able to learn (C) unfair (D) preferable (E) rough

250. EQUIVOCAI (A) mistaken (B) quaint (C) azure (D) clear (E) universal

251. ERRATIC (A) unromantic (B) free (C) popular (D) steady (E) unknown

252. ERRONEOUS (A) accurate (B) dignified (C) curious (D) abrupt (E) round

253. ERUDITE (A) profligate (B) stately (C) short (D) unknown (E) ignorant

254. ETHEREAL (A) long-lasting (B) earthy (C) ill (D) critical (E) false

255. EULOGISTIC (A) pretty (B) critical (C) brief (D) stern (E) free
Word List 18  eulogy-faculty

■ eulogy N. expression of praise, often on the occasion of someone’s death. Instead of delivering a spoken eulogy at Genny’s memorial service, Jeff sang a song he had written in her honor, eulogize, v.

■ euphemism N. mild expression in place of an unpleasant one. The expression "he passed away" is a euphemism for "he died."

euphony N. sweet sound. Noted for its euphony even when it is spoken, the Italian language is particularly pleasing to the ear when sung, euphonious, ADJ.

euphoria N. feeling of exaggerated (or unfounded) well-being. "Jill's been on cloud nine ever since Jack asked her out," said Betty, dismissing her friend's euphoria.

euthanasia N. mercy killing. Many people support euthanasia for terminally ill patients who wish to die.

evanescence ADJ. fleeting; vanishing. For a brief moment, the entire skyline was bathed in an orange-red hue in the evanescent rays of the sunset.

evasive ADJ. not frank; evading. Your evasive answers convinced the judge that you were withholding important evidence, evade, v.

evince v. show clearly. When he tried to answer the questions, he evinced his ignorance of the subject matter.

evenhanded ADJ. impartial; fair. Do men and women receive evenhanded treatment from their teachers, or, as recent studies suggest, do teachers pay more attention to male students than to females?

evocative ADJ. tending to call up (emotions, memories). Scent can be remarkably evocative. The aroma of pipe tobacco evokes the memory of my father; a whiff of talcum powder calls up images of my daughter as a child.

evoke v. call forth. He evoked much criticism by his hostile manner. evocation, N.

ewe N. female sheep. The flock of sheep was made up of dozens of ewes, together with only a handful of rams.

■ exacerbate v. worsen; embitter. The latest bombing exacerbated England’s already existing bitterness against the IRA, causing the Prime Minister to break off the peace talks abruptly, exacerbation, N.

exact v. require or demand, often forcibly; take. In feudal times, landowners exacted heavy payments from their peasants in both goods and labor. Asa Philip Randolph proclaimed, “Freedom is never granted; it is won. Justice is never given; it is exacted.” The war in Algeria exacted a heavy toll in casualties.

exacting ADJ. extremely demanding. Cleaning the ceiling of the Sistine Chapel was an exacting task, one that demanded extremely meticulous care on the part of the restorers, exactation, N.

exalt v. raise in rank or dignity; praise. The actor Sean Connery was exalted to the rank of knighthood by the Queen; he now is known as Sir Sean Connery.

exasperate v. vex. Johnny often exasperates his mother with his pranks.

exceptional ADJ. objectionable. Do you find the punk rock band Green Day a highly exceptional, thoroughly disadvisable group, or do you think they are exceptionally talented performers?

excerpt N. selected passage (written or musical). The cinematic equivalent of an excerpt from a novel is a clip from a film, also v.

excise v. cut away; cut out. When you excise the dead and dying limbs of a tree, you not only improve its appearance but also enhance its chances of bearing fruit, excision, N.

exclaim v. cry out suddenly. “Watson! Behind you!” Holmes exclaimed, seeing the assassin hurl himself on his friend, exclamation, N. exclamatory, ADJ.

excoriate v. scold with biting harshness; strip the skin off. Seeing the rips in Bill’s new pants, his mother furiously excoriated him for ruining his good clothes. The tight, starched collar chafed and excoriated his neck, rubbing it raw.

■ exculpate v. clear from blame. She was exculpated of the crime when the real criminal confessed.

excusable ADJ. very bad. The anecdote was in such excusable taste that the audience was revolted.

execute v. curse; express abhorrence for. The world execrates the memory of Hitler and hopes that genocide will never again be the policy of any nation.

execute v. put into effect; carry out. The choreographer wanted to see how well he could execute a pirouette, (secondary meaning) execution, N.

exegesis N. explanation, especially of biblical passages. The minister based her sermon on her exegesis of a difficult passage from the book of Job.

exemplary ADJ. serving as a model; outstanding. At commencement the dean praised Ellen for her exemplary behavior as class president.

exemplify v. show by example; furnish an example. Three-time winner of the Super Bowl, Joe Montana exemplifies the ideal quarterback.

exempt ADJ. not subject to a duty or obligation. Because of his flat feet, Foster was exempt from serving in the armed forces, aec v.

exertion N. effort; expenditure of much physical work. The exertion involved in unscrewing the rusty bolt left her exhausted.

exhilarating ADJ. invigorating and refreshing; cheering. Though some of the hikers found tramping through the snow tiring, Jeffrey found the walk on the cold, crisp day exhilarating. His exhilaration was so great that, at the hike’s end, he wanted to walk another five miles.

exhort v. urge. The evangelist exhorted all the sinners in the audience to repent, exhortation, N.
exhume v. dig out of the ground; remove from the grave. Could evidence that might identify the serial killer have been buried with his victim? To answer this question, the police asked the authorities for permission to exhume the victim's body.

exigency n. urgent situation; pressing needs or demands; state of requiring immediate attention. The exigencies of war gave impetus and funding to computer research in general and in particular to the development of code-breaking machines. Denmark's Gustav I proved to be a harsh master and an exiguous lord, known for his heavy taxes and capricious demands.

exiguous adj. small; minute. Grass grew here and there, an exiguous outcropping among the rocks.

existential adj. pertaining to existence; pertaining to the philosophy of existentialism. To the existential philosopher, human reason is inadequate to explain an irrational, meaningless universe.

exodus n. departure. The exodus from the hot and stuffy city was particularly noticeable on Friday evenings.

exonerate v. acquit; exculpate. The defense team feverishly sought fresh evidence that might exonerate their client.

exorbitant adj. excessive. The people grumbled at his exorbitant prices but paid them because he had a monopoly.

exorcise v. drive out evil spirits. By incantation and prayer, the medicine man sought to exorcise the evil spirits that had taken possession of the young warrior.

exotic adj. not native; strange. Because of his exotic headdress, he was followed in the streets by small children who laughed at his strange appearance.

expansive adj. outgoing and sociable; broad and extensible; able to increase in size. Mr. Fezziwig was in an expansive humor, cheerfully urging his guests to join in the Christmas feast. Looking down on his expansive paunch, he sighed: if his belly expanded any further, he'd need an expansive waistline for his pants.

expatiate v. talk at length. At this time, please give us a brief résumé of your work; we shall permit you to expatiate later.

expatriate n. exile; someone who has withdrawn from his native land. Henry James was an American expatriate who settled in England.

expedient adj. suitable; practical; politic. A pragmatic politician, she was guided by what was expedient rather than by what was ethical, expediency.

expedite v. hasten. Because we are on a tight schedule, we hope you will be able to expedite the delivery of our order. The more expeditious your response is, the happier we'll be.

expenditure n. payment or expense; output. When you are operating on an expense account, you must keep receipts for all your expenditures. If you don't save your receipts, you won't get repaid without the expenditure of a lot of energy arguing with the firm's accountants.

expertise n. specialized knowledge; expert skill. Although she was knowledgeable in a number of fields, she was hired for her particular expertise in computer programming.

expire v. make amends for (a sin). Jean Valjean tried to expire his crimes by performing acts of charity.

expletive n. interjection; profane oath. The sergeant's remarks were filled with expletives that offended the new recruits.

explicate v. explain; interpret; clarify. Harry Levin explicated James Joyce's novels with such clarity that even Finnegans Wake seemed comprehensible to his students.

explicit adj. totally clear; definite; outspoken. Don't just hint around that you're dissatisfied; be explicit about what's bugging you.

exploit n. deed or action, particularly a brave deed. Raoul Wallenberg was noted for his exploits in rescuing Jews from Hitler's forces.

exploit v. make use of, sometimes unjustly. Cesar Chavez fought attempts to exploit migrant farmworkers in California. Exploitation.

expository adj. explanatory, serving to explain. The manual that came with my VCR was no masterpiece of expository prose. Its explanations were so garbled that I couldn't even figure out how to rewind a tape.

expostulation n. protest; remonstrance. Despite the teacher's scolding and expostulations, the class remained unruly.

exposure n. risk, particularly of being exposed to disease or to the elements; unmasking; act of laying something open. Exposure to sun and wind had dried out her hair and weathered her face. She looked so changed that she no longer feared exposure as the notorious Irene Adler, one-time antagonist of Sherlock Holmes.

expropriate v. take possession of. He questioned the government's right to expropriate his land to create a wildlife preserve.

expunge v. cancel; remove. If you behave, I will expunge this notation from your record.

expurgate v. clean; remove offensive parts of a book. The editors felt that certain passages in the book had to be expurgated before it could be used in the classroom.

extant adj. still in existence. Although the book is out of print, some copies are still extant. Unfortunately, all of them are in libraries or private collections; none is for sale.

extemporaneous adj. not planned; impromptu. Because her extemporaneous remarks were misinterpreted, she decided to write all her speeches in advance.

extenuate v. weaken; mitigate. It is easier for us to extenuate our own shortcomings than those of others.

extirpate v. root up. The Salem witch trials were a misguided attempt to extirpate superstition and heresy.

extol v. praise; glorify. The president extolled the astronauts, calling them the pioneers of the Space Age.
exert v. wring from; get money by threats, etc. The blackmailer exerted money from his victim.

extradition n. surrender of prisoner by one state to another. The lawyers opposed the extradition of their client on the grounds that for more than five years he had been a model citizen.

extravagant adj. not essential; superfluous. No wonder Ted can't think straight! His mind is so cluttered up with extravagant trivia, he can't concentrate on the essentials.

extrapolation n. projection; conjecture. Based on their extrapolation from the results of the primaries on Super Tuesday, the networks predicted that George W. Bush would be the Republican candidate for the presidency.

extricate v. free; disentangle. Icebreakers were needed to extricate the trapped whales from the icy fices that closed them in.

extrinsic adj. external; not essential; extravagant. A critically acclaimed intrinsic feature of the Chrysler Building is its ornate spire. The judge would not admit the testimony, ruling that it was extrinsic to the matter at hand.

extravert n. person interested mostly in external objects and actions. A good salesperson is usually an extravert who likes to mingle with people.

extrude v. force or push out. Much pressure is required to extrude these plastics.

exuberance n. overflowing abundance; joyful enthusiasm; flamboyance; liveliness. I was bowled over by the exuberance of Amy's welcome. Cheeks glowing, she was the picture of exuberant good health.

exude v. discharge; give forth. We get maple syrup from the sap that the trees exude in early spring. Exudation n.

exult v. rejoice. We exulted when our team won the victory.

fabricate v. build; lie. If we fabricate the buildings in this project out of standardized sections, we can reduce construction costs considerably. Because of Jack's tendency to fabricate, Jill had trouble believing a word he said.

facade n. front (of building); superficial or false appearance. The ornate facade of the church was often photographed by tourists, who never bothered to walk around the building to view its other sides. Cher's outward show of confidence was just a facade she assumed to hide her insecurity.

facet n. small plane surface (of a gem); a side. The stonecutter decided to improve the rough diamond by providing it with several facets.

facetic adj. joking (often inappropriately); humorous. I'm serious about this project; I don't need any facetious, smart-alecky cracks about do-good little rich girls.

facile adj. easily accomplished; ready or fluent; superficial. Words came easily to Jonathan; he was a facile speaker and prided himself on being ready to make a speech at a moment's notice. Facility n.

facilitate v. help bring about; make less difficult. Rest and proper nourishment should facilitate the patient's recovery.

facsimile n. copy. Many museums sell facsimiles of the works of art on display.

faction n. party; clique; dissension. The quarrelling and bickering of the two small factions within the club disturbed the majority of the members.

factual adj. inclined to form factions; causing dissension. The pollsters' practice of dividing up the map of America into Red and Blue states reinforces factual feelings among Americans, who increasingly define themselves as members of one of the two major political parties. Do not confuse factual with fractious (unruly; unmanageable) or with factitious (not natural; not genuine; bogus).

factitious adj. artificial; sham. Hollywood actresses often create factitious tears by using glycerine.

factotum n. handyman; person who does all kinds of work. Although we had hired him as a messenger, we soon began to use him as a general factotum around the office.

faculty n. mental or bodily powers; teaching staff. As he grew old, Professor Twiggly feared he might lose his faculties and become unfit to teach. However, while he was in full possession of his faculties, the school couldn't kick him off the faculty.

Test

Word List 18  Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

256. EUPHONIOUS (A) strident (B) lethargic (C) literary (D) significant (E) mertry

257. EVASIVE (A) frank (B) correct (C) empty (D) fertile (E) watchful

258. EXasperate (A) confide (B) formalize (C) placate (D) betray (E) bargain

259. EXCORIATE (A) scandalize (B) encourage (C) avoid (D) praise (E) vanquish

260. EXCULPATE (A) blame (B) prevail (C) acquire (D) ravish (E) accumulate
261. EXCRABLE (A) innumerable (B) philosophic (C) physical (D) excellent (E) meditative

262. EXCRATE (A) disobey (B) enact (C) perform (D) acclaim (E) fidget

263. EXHUME (A) decipher (B) sadden (C) integrate (D) admit (E) inter

264. EXODUS (A) neglect (B) consent (C) entry (D) gain (E) rebuke

265. EXONERATE (A) forge (B) accuse (C) record (D) doctor (E) reimburse

266. EXORBITANT (A) moderate (B) partisan (C) military (D) barbaric (E) counterfeit

267. EXTTEMPORANEOUS (A) rehearsed (B) hybrid (C) humiliating (D) statesmanlike (E) picturesque

268. EXTRANEOUS (A) modern (B) decisive (C) essential (D) effective (E) expressive

269. EXTRINSIC (A) reputable (B) inherent (C) swift (D) ambitious (E) cursory

270. EXTROVERT (A) clown (B) hero (C) ectomorph (D) neurotic (E) introvert

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**Word List 19  fallacious-flinch**

- **fallacious** adj. false; misleading. Paradoxically, *fallacious* reasoning does not always yield erroneous results: even though your logic may be faulty, the answer you get may be correct.

- **fallacy** n. mistaken idea based on flawed reasoning; invalid argument. The challenge that today's social scientists face is to use computers in ways that are most suited to them without falling into the *fallacy* that, by themselves, computers can guide and organize the study of human society.

- **fallible** adj. liable to err. Although I am *fallible*, I feel confident that I am right this time.

- **fallow** adj. plowed but not sowed; uncultivated. Farmers have learned that it is advisable to permit land to lie fallow every few years.

- **falter** v. hesitate. When told to dive off the high board, she did not *falter*, but proceeded at once.

- **fanaticism** n. excessive zeal; extreme devotion to a belief or cause. When Islamic fundamentalists demanded the death of Saiman Rushdie because his novel questioned their faith, world opinion condemned them for their *fanaticism*.

- **fancied** adj. imagined; unreal. One of the carpal (wrist) bones, the *naviclar* bone was given its name because of its *fancied* resemblance to a boat.

- **fancier** n. breeder or dealer of animals. The dog *fancier* exhibited her prize collie at the annual Kennel Club show.

- **fancy** n. notion; whim; inclination. Martin took a fancy to paint his toenails purple. Assuming he would outgrow such a *fanciful* notion, his parents ignored his *fancy* feet. Also adj.

- **fanfare** n. call by bugles or trumpets; showy display. The exposition was opened with a *fanfare* of trumpets and the firing of cannon.

- **farcical** adj. humorous in a rare and meaningful way. The interview degenerated into a *farce*. Also adj.

- **fastidious** adj. difficult to please; squeamish. Bobby was such a *fastidious* eater that he would eat a sandwich only if his mother first cut off every scrap of crust.

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**fatalism** n. belief that events are determined by forces beyond one's control. With *fatalism*, he accepted the hardships that beset him. *Fatalistic*, adj.

- **fathom** v. comprehend; investigate. I find his motives impossible to *fathom*; in fact, I'm totally clueless about what goes on in his mind.

- **fatuos** adj. brainless; inane; foolish. Yet smug. Attacking the notion that women should defer to men's supposedly superior intelligence, Germaine Greer wrote that she was sick of pretending that some *fatuos* male's self-important pronouncements were the objects of her undivided attention. Fatheads are by definition *fatuos*.

- **fauna** n. animals of a period or region. The scientist could visualize the *fauna* of the period by examining the skeletal remains and the fossils.

- **fawning** adj. trying to please by behaving obsequiously, flattering, or cringing. In *Pride and Prejudice*, Mr. Collins is the archetypal *fawning* clergyman, wholly dependent for his living on the goodwill of his patron, Lady Catherine, whom he flatters shamelessly. Courtiers *fawn* upon princes; groupies *fawn* upon rock stars.

- **faze** v. disconcert; dismay. No crisis could *faze* the resourceful hotel manager.

- **feasible** adj. practical. Is it *feasible* to build a new stadium for the Yankees on New York's West Side? Without additional funding, the project is clearly unrealistic.

- **febrile** adj. feverish. In his *febrile* condition, he was subject to nightmares and hallucinations.

- **feckless** adj. feeble and ineffective; careless and irresponsible. Richard II proved such a *feckless* ruler that Bolingbroke easily convinced Parliament to elect him king in Richard's place. The film *The Perfect Circle* tells the tale of a *feckless* poet who, unwillingly saddled with two war orphans, discovers a sense of responsibility and community that had eluded him in his own previous family life.

- **fecundity** n. fertility; fruitfulness. The *fecundity* of her mind is illustrated by the many vivid images in her poems. Rabbits are noted for their *fecundity*: in the absence of natural predators, they multiply, well, like rabbits, as the Australians learned to their dismay.
feign  v. pretend. Lady Macbeth feigned illness in the courtyard although she was actually healthy.

feint  N. trick; shift; sham blow. The boxer was fooled by his opponent's feint and dropped his guard. also v.

felicitous  adj. apt; suitably expressed; well chosen. He was famous for his felicitous remarks and was called upon to serve as master-of- ceremonies at many a banquet.

felicity  N. happiness; appropriateness (of a remark, choice, etc.). She wrote a note to the newlyweds wishing them great felicity in their wedded life.

fell  adj. cruel; deadly. The newspapers told of the tragic spread of the felled disease.

fell  v. cut or knock down; bring down (with a missile). Crying "Timber!" Paul Bunyan felled the mighty redwood tree. Robin Hood loosed his arrow and felled the king's deer.

felon  N. person convicted of a grave crime. A convicted felon loses the right to vote.

feral  adj. not domestic; wild. Abandoned by their owners, dogs may revert to their feral state, roaming the woods in packs.

ferment  N. agitation; commotion. With the breakup of the Soviet Union, much of Eastern Europe was in a state of ferment, also v.

ferrat  v. drive or hunt out of hiding. She ferrated out their secret.

fervent  adj. ardent; hot. She felt that the fervent praise was excessive and somewhat undeserved.

fervid  adj. ardent. Her fervid enthusiasm inspired all of us to undertake the dangerous mission.

favor  N. glowing ardor; intensity of feeling. At the protest rally, the students cheered the strikers and(boosted the dean with equal favor.

fester  v. rankle; produce irritation or resentment. Joe's insult festered in Anne's mind for days, and made her too angry to speak to him.

festive  adj. joyous; celebratory. Their wedding in the park was a festive occasion.

fete  v. honor at a festival. The returning hero was feted at a community supper and dance. also n.

fetid  adj. malodorous; foul-smelling. When a polecat is alarmed, the scent gland under its tail emits a fetid secretion used for territorial marking. Stinky! Does feta cheese smell fetid to you?

fetter  v. shackles. The prisoner was fettered to the wall.

fiasco  N. total failure. Our ambitious venture ended in a fiasco and we were forced to flee.

fiant  N. command; authorization. Although the bill abolishing the allowances and privileges of the former princes was rejected by the upper house, it was put into effect by presidential fiat.

fickle  adj. changeable; faithless. As soon as Romeo saw Juliet, he forgot all about his crush on Rosaline. Was Romeo fickle?

fictitious  adj. imaginary. Although this book purports to be a biography of George Washington, many of the incidents are fictitious.

fidelity  N. loyalty. Iago wickedly manipulates Othello, arousing his jealousy and causing him to question his wife's fidelity.

figment  N. invention; imaginary thing. Was he hearing real voices in the night, or were they just a figment of his imagination?

figurative  adj. not literal, but metaphorical; using a figure of speech. "To lose one's marbles" is a figurative expression; if you're told Jack has lost his marbles, no one expects you to rush out to buy him a replacement set.

figurine  N. small ornamental statuette. In The Maltese Falcon, Sam Spade was hired to trace the missing figurine of a black bird.

figh  v. steal. The boys fitched apples from the fruit stand.

filial  adj. pertaining to a son or daughter. Many children forget their filial obligations and disregard the wishes of their parents.

filibuster  v. block legislation by making long speeches. Even though we disapproved of Senator Foghorn's political goals, we were impressed by his ability to filibuster endlessly to keep an issue from coming to a vote.

filigree  N. delicate, lacylike metalwork. The pendant with gold filigree that she wore moved her neck trembled with each breath she took.

filing  N. particle removed by a file. As the prisoner filed away at the iron bar on the cell window, a small heap of filings accumulated on the window sill.

final  N. conclusion. It is not until we reach the final of this play that we can understand the author's message.

finesse  N. delicate skill. The finesse andadroitness with which the surgeon wielded her scalpel impressed the observers in the operating theater.

finicky  adj. too particular; fussy. The little girl was finicky about her food, leaving anything that wasn't to her taste.

finite  adj. limited. It is difficult for humanity with its finite existence to grasp the infinite.

firebrand  N. hothead; troublemaker. The police tried to keep track of all the local firebrands when the president came to town.

fissure  N. crevice. The mountain climbers secured footholds in tiny fissures in the rock.

fitful  adj. spasmodic; intermittent. After several fitful attempts, he decided to postpone the start of the project until he felt more energetic.

flaccid  adj. flabby. His sedentary life had left him with flaccid muscles.

flag  v. droop; grow feeble. When the opposing hockey team scored its third goal only minutes into the first period, the home team's spirits flagged, flagging, adj.

flagrant  adj. conspicuously wicked; blatant; outrageous. The governor's appointment of his brother-in-law to the
state Supreme Court was a flagrant violation of the state 
laws against nepotism (favoritism based on kinship).

flail v. thresh grain by hand; strike or slap; toss about. In 
medieval times, warriors flailed their foe with a metal ball 
attached to a handle.

flair n. talent. She has an uncanny flair for discovering 
new artists before the public has become aware of their 
existence.

flamboyant adj. ornate. Modern architecture has dis-
carded the flamboyant trimming on buildings and 
emphasizes simplicity of line.

flaunt v. display ostentatiously. Mae West saw nothing 
wrong with showing off her considerable physical 
charms. "Honey, if you've got it, flaunt it!"

flay v. strip off skin; plunder; whip; attack with harsh 
criticism. The reviewer's stinging comments flayed the 
actress's sensitive spirit. How could she go on, after such

a vicious attack?

fleck v. spot. Pollack's coveralls, flecked with paint, bore 
witness to the sloppiness of the spatter school of art.

fledgling adj. inexperienced. The folk dance club set 
up an apprentice program to allow fledgling dance 
callers a chance to polish their skills, also n.

fleece n. wool coat of a sheep. They shear sheep of their 
fleece, which they then comb into separate strands of 
wool.

fleece v. rob; plunder. The tricksters fleeced him of his 
inheritance.

flick n. light stroke as with a whip. The horse needed no 
encouragement; only one flick of the whip was all the 
jockey had to apply to get the animal to run at top speed.

flinch v. hesitate; shrink. She did not flinch in the face of 
danger but fought back bravely.

Test

Word List 19 Synonyms and Antonyms

Each of the following questions consists of a word in 
capital letters, followed by five lettered words or 
phrases. Choose the lettered word or phrase that is 
most nearly similar or opposite in meaning to the word 
in capital letters and write the letter of your choice on 
your answer paper.

271. FANCIFUL (A) imaginative (B) knowing 
(C) elaborate (D) quick (E) lusty

272. FATUOUS (A) fatal (B) natal (C) terrible 
(D) sensible (E) tolerable

273. FEASIBLE (A) theoretical (B) impatient 
(C) constant (D) present (E) impractical

274. FECUNDITY (A) prophecy (B) futility 
(C) fruitfulness (D) need (E) dormancy

275. FEIGN (A) deserve (B) condemn (C) condone 
(D) attend (E) pretend

276. FELL (A) propitious (B) illiterate (C) uppermost 
(D) futile (E) inherent

277. FERMENT (A) stir up (B) fill (C) ferret (D) mutilate 
(E) banish

278. FIASCO (A) cameo (B) mansion (C) pollution 
(D) success (E) gamble

279. FICKLE (A) fallacious (B) tolerant (C) loyal 
(D) hungry (E) stupid

280. FILCH (A) milk (B) purloin (C) itch (D) cancel 
(E) resent

281. FINITE (A) bounded (B) established (C) affirmative 
(D) massive (E) finicky

282. FLAIL (A) succeed (B) harvest (C) mend (D) strike 
(E) resent

283. FLAIR (A) conflagration (B) inspiration (C) bent 
(D) egregiousness (E) magnitude

284. FLAMBOYANT (A) old-fashioned (B) restrained 
(C) impulsive (D) cognizant (E) eloquent

285. FLEDGLING (A) weaving (B) bobbing 
(C) beginning (D) studying (E) flaying

Word List 20 flippant-gaffe

flippant adj. lacking proper seriousness. When Mark 
told Mona he loved her, she dismissed his earnest dec-
laration with a flippant "Oh, you say that to all the girls!"

flit v. fly; dart lightly; pass swiftly by. Like a bee flitting 
from flower to flower. Rose flitted from one boyfriend to 
the next.

floe n. mass of floating ice. The ship made slow 
progress as it battered its way through the ice floes.

flora n. plants of a region or era. Because she was a 
botanist, she spent most of her time studying the flora 
of the desert.

florid adj. ruddy; reddish; flowery. If you go to Florida 
and get a sunburn, your complexion will look florid. If
your postcards about your trip praise it in flowery words, your prose will be florid, too.

flotsam N. drifting wreckage. Beachcombers eke out a living by salvaging the flotsam and jetsam of the sea.

flounder v. struggle and thrash about: proceed clumsily or falter. Up to his knees in the bog, Floyd floundered about, trying to regain his footing. Bewildered by the new software, Fio floundered until Jan showed her how to get started.

flourish v. grow well; prosper; make sweeping gestures. The orange trees flourished in the sun.

flout v. reject; mock; show contempt for. The painter Julian Schnabel is known for works that flout the conventions of high art, such as paintings on velvet or linoleum. Do not confuse flout with flaunt: to flaunt something is to show it off; to flout something is to show your scorn for it. Perhaps by flouting the conventions of high art, Schnabel was flaunting his inability to get away with breaking the rules.

fluctuate v. waver; shift. The water pressure in our shower fluctuates wildly; you start rinsing yourself off with a trickle, and two minutes later a blast of water nearly knocks you off your feet. I'll never get used to these fluctuations.

fluency N. smoothness of speech. She spoke French with fluency and ease.

fluke N. unlikely occurrence; stroke of fortune. When Douglas defeated Tyson for the heavyweight championship, some sportscasters dismissed his victory as a fluke.

fluster v. confuse. The teacher's sudden question flustered him and he stammered his reply.

fluted ADJ. having vertical parallel grooves (as in a pillar). All that remained of the ancient building were the fluted columns.

flux N. flowing; series of changes. While conditions are in such a state of flux, I do not wish to commit myself too deeply in this affair.

fodder N. coarse food for cattle, horses, etc. One of Nancy's chores at the ranch was to put fresh supplies of fodder in the horses' stalls.

folible N. weakness; slight fault. We can overlook the folibles of our friends; no one is perfect.

foil N. contrast. In Star Wars, dark, evil Darth Vader is a perfect foil for fair-haired, naive Luke Skywalker.

foil v. defeat; frustrate. In the end, Skywalker is able to foil Vader's diabolical schemes.

foist v. insert improperly; palm off. I will not permit you to foist such ridiculous ideas upon the membership of this group.

foliage N. masses of leaves. Every autumn before the leaves fell he promised himself he would drive through New England to admire the colorful fall foliage.

foment v. stir up; instigate. Cher's archenemy Heather spread some nasty rumors that fomented trouble in the club. Do you think Cher's foe meant to foment such discord?

foolhardy ADJ. rash. Don't be foolhardy. Get the advice of experienced people before undertaking this venture.

fop N. dandy; man excessively preoccupied with his clothes. People who dismissed young Mizrahi as a fop for his exaggerated garments felt chagrined when he turned into one of the top fashion designers of his day.

foppish ADJ.

foray N. raid. The company staged a midnight foray against the enemy outpost.

forbearance N. patience. Be patient with John. Treat him with forbearance; he is still weak from his illness.

ford N. place where a river can be crossed on foot. Rather than risk using the shaky rope bridge, David walked a half-mile downhill until he came to the nearest ford also v.

forebears N. ancestors. Reverence for one's forebears (sometimes referred to as ancestor worship) plays an important part in many Oriental cultures.

foreboding N. premonition of evil. Suspecting no conspiracies against him, Caesar gently ridiculed his wife's forebodings about the Ides of March.

forensic ADJ. suitable to debate or courts of law. In her best forensic manner, the lawyer addressed the jury.

foreshadow v. give an indication beforehand; forebode. In retrospect, political analysts realized that Yeltsin's defiance of the attempted coup foreshadowed his emergence as the dominant figure of the new Russian republic.

foresight N. ability to foresee future happenings; prudence. A wise investor, she had the foresight to buy land just before the current real estate boom.

forestall v. prevent by taking action in advance. By setting up a prenuptial agreement, the prospective bride and groom hoped to forestall any potential arguments about money in the event of a divorce.

forge v. give up; do without. Determined to lose weight for the summer, Ida decided to forgo dessert until she could fit into a size eight again.

forlorn ADJ. sad and lonely; wretched. Deserted by her big sisters and her friends, the forlorn child sat sadly on the steps awaiting their return.

formality N. ceremonious quality; something done just for form's sake. The president received the visiting heads of state with due formality: flags waving, honor guards standing at attention, bands playing anthems at full blast. Signing this petition is a mere formality; it does not obligate you in any way.

formidable ADJ. inspiring fear or apprehension; difficult; awe-inspiring. In the film Meet the Parents, the hero is understandably nervous around his fiancée's father, a formidable CIA agent.

forsake v. desert; abandon; renounce. No one expected Foster to forsake his wife and children and run off with another woman.

forswear v. renounce; abandon. The captured knight could escape death only if he agreed to forswear Christianity and embrace Islam as the one true faith.
forte N. strong point or special talent. I am not eager to play this rather serious role, for my forte is comedy.

forthright ADJ. straightforward; direct; frank. I prefer Jill’s forthright approach to Jack’s tendency to beat around the bush. Never afraid to call a spade a spade, she was perhaps too forthright to be a successful party politician.

fortitude N. bravery; courage. He was awarded the medal for his fortitude in the battle.

fortuitous ADJ. accidental; by chance. Though he pretended their encounter was fortuitous, he’d actually been hanging around her usual haunts for the past two weeks, hoping she’d turn up.

foster v. rear; encourage. According to the legend, Romulus and Remus were fostered by a she-wolf that raised the abandoned infants as her own. Also ADJ.

founder v. fall completely; sink. After hitting the submerged iceberg, the Titanic started taking in water rapidly and soon foundered.

founder N. person who establishes (an organization, business). Among those drowned when the Titanic sank was the founder of the Abraham & Straus department store chain.

fracas N. brawl, melee. The military police stopped the fracas in the bar and arrested the belligerents.

fractious ADJ. unruly; disobedient; irritable. Bucking and kicking, the fractious horse unseated its rider.

frail ADJ. weak. The delicate child seemed too frail to lift the heavy caron. Fraility, N.

franchise N. right granted by authority; right to vote; license to sell a product in a particular territory. The city issued a franchise to the company to operate surface transit lines on the streets for 99 years. For most of American history women lacked the right to vote: not until the early twentieth century was the franchise granted to women. Stan owns a Carvel’s ice cream franchise in Chinatown.

frantic ADJ. wild. At the time of the collision, many people became frantic with fear.

fraudulent ADJ. cheating; deceitful. The government seeks to prevent fraudulent and misleading advertising.

fraught ADJ. filled or charged with; causing emotional distress. “Parenting, like brain surgery, is now all-consuming, fraught with anxiety, worry, and self-doubt. We have allowed what used to be simple and natural to become bewildering and intimidating.” (Fred Gosman)

fray N. brawl. The three musketeers were in the thick of the fray.

frenetic ADJ. frenzied; frantic. The novels of the beat generation reflect a frenetic, restless pursuit of new sensation and experience, and a disdain for the conventional measures of economic and social success.

frenzied ADJ. madly excited. As soon as they smelled smoke, the frenzied animals milled about in their cages.

fresco N. painting on plaster (usually fresh). The cathedral is visited by many tourists who wish to admire the frescoes by Giotto.

fret v. be annoyed or vexed. To fret over your poor grades is foolish; instead, decide to work harder in the future.

friction N. clash in opinion; rubbing against. The activist Saul Alinsky wrote, “Change means movement. Movement means friction. Only in the frictionless vacuum of a nonexistent abstract world can movement or change occur without that abrasive friction of conflict.”

frieze N. ornamental band on a wall. The frieze of the church was adorned with sculpture.

frigid ADJ. intensely cold. Alaska is in the frigid zone.

fritter v. waste. He could not apply himself to any task and frittered away his time in idle conversation.

frivolous ADJ. lacking in seriousness; self-indulgently care-free; relatively unimportant. Though Nancy enjoyed Bill’s frivolous, lighthearted companionship, she sometimes wondered whether he could ever be serious. Frivolity, N.

frisky ADJ. pranks; gay. The frisky puppy tried to lick the face of its master.

frond N. fern leaf; palm or banana leaf. After the storm the beach was littered with the fronds of palm trees.

froward ADJ. stubbornly contrary; obstinately disobedient. Miss Watson declared that Huck was a froward child, stubborn in his wickedness, and that no good would come of condoning his disobedience.

fructify v. bear fruit. This peach tree should fructify in three years.

frugality N. thrift; economy. In economically hard times, anyone who doesn’t learn to practice frugality risks bankruptcy. Frugal, ADJ.

fruition N. bearing of fruit; fulfillment; realization. After years of scrupling and saving, her dream of owning her own home finally came to fruition.

frustrate v. thwart; defeat. Constant partisan bickering frustrated the governor’s efforts to persuade the legislature to approve his proposed budget.

fugitive ADJ. fleeting or transient; roving. The film brought a few fugitive images to her mind, but on the whole it made no lasting impression upon her.

fulcrum N. support on which a lever rests. If we use this stone as a fulcrum and the crowbar as a lever, we may be able to move this boulder.

fulminate v. denounce thunderously; explode. Known for his “fire and brimstone” sermons, the preacher fulminated against sinners and backsliders, consigning them to the flames of hell.

fulsome ADJ. disgustingly excessive. Disgusted by her fans’ fulsome admiration, the movie star retreated from the public, crying, “I want to be alone!”

functionary N. official. As his case was transferred from one functionary to another, he began to despair of ever reaching a settlement.

fundamental v. basic; primary; essential. The committee discussed all sorts of side issues without ever getting down to addressing the fundamental problem.
funereal adj. sad; solemn. I fail to understand why there is such a funereal atmosphere; we have lost a battle, not a war.

furore n. frenzy; great excitement. The story of her embezzlement of the funds created a furore on the stock exchange.

furtive adj. stealthy; sneaky. Noticing the furtive glance the customer gave the diamond bracelet on the counter, the jeweler wondered whether he had a potential shoplifter on his hands.

fusillade n. simultaneous firing or outburst (of missiles, questions, etc.). Tchaikovsky’s 1812 Overture concludes with a thunderous fusillade of cannon fire.

fusion n. union; blending; synthesis. So-called rockabilly music represents a fusion of country music and blues that became rock and roll.

futile adj. useless; hopeless; ineffectual. It is futile for me to try to get any work done around here while the telephone is ringing every 30 seconds. Futility, n.

gadfly n. animal-biting fly; an irritating person. Like a gadfly, he irritated all the guests at the hotel; within forty-eight hours, everyone regarded him as an annoying busybody.

gaffe n. social blunder. According to Miss Manners, to call your husband by your lover’s name is worse than a mere gaffe; it is a tactical mistake.

Test

Word List 20 Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

286. FLORID (A) ruddy (B) rusty (C) ruined (D) patient (E) poetic

287. FOIL (A) bury (B) frustrate (C) shield (D) desire (E) gain

288. FMENT (A) spoil (B) instigate (C) interrogate (D) spray (E) maintain

289. FOOLHARDY (A) strong (B) unwise (C) brave (D) futile (E) erudite

290. FOSSIPH (A) scanty (B) radical (C) orthodox (D) dandyish (E) magnificent

291. FORAY (A) excursion (B) contest (C) ranger (D) intuition (E) fish

292. FORMIDABLE (A) dangerous (B) outlandish (C) grandiloquent (D) impenetrable (E) venerable

293. FOSTER (A) accelerate (B) fondle (C) become infected (D) raise (E) roll

294. FRANCHISE (A) subway (B) discount (C) license (D) reason (E) fashion

295. FRITTER (A) sour (B) chafe (C) dissipate (D) cancel (E) abuse

296. FRUGALITY (A) foolishness (B) extremity (C) indifference (D) enthusiasm (E) economy

297. FULMINATE (A) fulfill (B) contemplate (C) talk nonsense (D) protest loudly (E) meander

298. FURORE (A) excitement (B) worry (C) flux (D) anteroom (E) lover

299. FURTIVE (A) underhanded (B) coy (C) brilliant (D) quick (E) abortive

300. GADFLY (A) humorist (B) nuisance (C) scholar (D) burn (E) thief

Word List 21 gainsay-gossamer

- gainsay v. deny. She was too honest to gainsay the truth of the report.

gait n. manner of walking or running; speed. The lame man walked with an uneven gait.

galaxy n. large, isolated system of stars, such as the Milky Way; a collection of brilliant personalities. Science fiction speculates about the possible existence of life in other galaxies. The deaths of such famous actors as Bob Hope and Marlon Brando tells us that the galaxy of Hollywood superstardom is rapidly disappearing.

gale n. windstorm; gust of wind; emotional outburst (laughter, tears). The Weather Channel warned viewers about a rising gale, with winds of up to 60 miles per hour.

GALL n. bitterness; nerve. The knowledge of his failure filled him with gall.

gall v. annoy; chafe. Their taunts galled him.

galleon n. large sailing ship. The Spaniards pinned their hopes on the galleon, the large warship; the British, on the smaller and faster pinnacle.

galvanize v. stimulate by shock; stir up; revitalize. News that the prince was almost at their door galvanized the ugly step-sisters into a frenzy of combing and priming.

gambit n. opening in chess in which a piece is sacrificed. The player was afraid to accept his opponent’s gambit because he feared a trap that as yet he could not see.
gambol v. romp, skip about; leap playfully. Watching the children gambol in the park, Betty marveled at their youthful energy and zest. Also n.
gamely adv. in a spirited manner; with courage. Because he had fought gamely against a much superior boxer, the crowd gave him a standing ovation when he left the arena.
gamut n. entire range. In a classic put-down of actress Katharine Hepburn, the critic Dorothy Parker wrote that the actress ran the gamut of emotions from A to B.
gape v. open widely. The huge pit gaped before him; if he stumbled, he would fall in. Slack-jawed in wonder, Huck gaped at the huge stalactites hanging from the ceiling of the limestone cavern.
garbled adj. mixed up; jumbled; distorted. A favorite party game involves passing a whispered message from one person to another; by the time it reaches the last player, the message has become totally garbled, garble, v.
gargantuan adj. huge; enormous. The gargantuan wrestler was terrified of mice.
gargoyle n. waterspout carved in grotesque figures on a building. The gargoyles adorning the Cathedral of Notre Dame in Paris are amusing in their grotesqueness.
garnish adj. overbright in color; gaudy. She wore a rhinestone necklace with a garnish red and gold dress trimmed with sequins.
garnet n. gather; store up. In her long career as an actress, Katharine Hepburn garnered many awards, including the coveted Oscar.
garnish v. decorate. Parsley was used to garnish the boiled potato. Also n.
garrulous adj. loquacious; wordy; talkative. My Uncle Henry can out-talk any other three people I know. He is the most garrulous person in Cayuga County.
gastronomy n. science of preparing and serving good food. One of the by-products of his trip to Europe was his interest in gastronomy; he enjoyed preparing and serving foreign dishes to his friends.
gause adj. clumsy; coarse and uncouth. Compared to the sophisticated young ladies in their elegant gowns, tomboyish Jo felt gauche and out of place.
gaudy adj. flashy; showy. The newest Trump skyscraper is typically gaudy, covered in gilded panels that gleam in the sun.
gaut adj. lean and angular; barren. His round face looked surprisingly gaunt after he had lost weight.
gavel n. hammerlike tool; mallet. "Sold!" cried the auctioneer, banging his gavel on the table to indicate she'd accepted the final bid. Also v.
gawk v. stare foolishly; look in open-mouthed awe. The country boy gawked at the skyscrapers and neon lights of the big city.
gazette n. official periodical publication. He read the gazettes regularly for the announcement of his promotion.
genealogy n. record of descent; lineage. He was proud of his genealogy and constantly referred to the achievements of his ancestors.
generality n. vague statement. This report is filled with generalities; you must be more specific in your statements.
generate v. cause; produce; create. In his first days in office, President Clinton managed to generate a new mood of optimism; we hoped he could also generate a few new jobs.
genetic adj. characteristic of an entire class or species. Sue knew so many computer programmers who spent their spare time playing fantasy games that she began to think that playing Dungeone & Dragons was a genetic trait.
genesis n. beginning; origin. Tracing the genesis of a family is the theme of "Roots."
geniality n. cheerfulness; kindliness; sympathy. This restaurant is famous and popular because of the geniality of the proprietor, who tries to make everyone happy.
genial adj.
genre n. particular variety of art or literature. Both a short story writer and a poet, Langston Hughes proved himself equally skilled in either genre.
genettel adj. well-bred; elegant. We are looking for a man with a genteel appearance who can inspire confidence by his cultivated manner.
gentility n. those of gentle birth; refinement. Her family was proud of its gentility and elegance.
gentry n. people of standing; class of people just below nobility. The local gentry did not welcome the visits of the summer tourists and tried to ignore their presence in the community.
genuflect v. bend the knee as in worship. A proud democrat, he refused to genuflect to any man.
germane adj. pertinent; bearing upon the case at hand. The lawyer objected that the testimony being offered was not germane to the case at hand.
geminal adj. pertaining to a germ; creative. Such an idea is geminat. I am certain that it will influence thinkers and philosophers for many generations.
germinate v. cause to spout; sprout. After the seeds germinate and develop their permanent leaves, the plants may be removed from the cold frames and transplanted to the garden.
gerontocracy n. government ruled by old people. Gulliver visited a gerontocracy in which the young people acted as servants to their elders, all the while dreaming of the day they would be old enough to have servants of their own.
gerrymander v. change voting district lines in order to favor a political party. The illogical pattern of the map of this congressional district is proof that the state legislature gerrymandered this area in order to favor the majority party. Also n.
gestate v. evolve, as in prenatal growth. While this scheme was being gestated by the conspirators, they maintained complete silence about their intentions.
gesticulation  n. motion; gesture. Operatic performers are trained to make exaggerated gesticulations because of the large auditoriums in which they appear.
ghastly  adj. horrible. The murdered man was a ghastly sight.
gibberish  n. nonsense; babbling. Did you hear that foolish boy spouting gibberish about monsters from outer space?
gibe  v. mock. As you gibe at their superstitious beliefs, do you realize that you, too, are guilty of similarly foolish thoughts?
giddy  adj. light-hearted; dizzy. He felt his giddy youth was past.
gingerly  adv. very carefully. To separate egg whites, first crack the egg gingerly. Also adj.
girth  n. distance around something; circumference. It took an extra-large cummerbund to fit around Andrew Carnegie’s considerable girth.
gist  n. essence. She was asked to give the gist of the essay in two sentences.
glacial  adj. like a glacier; extremely cold. Never a warm person, when offended Hugo could seem positively glacial.
glaring  adj. highly conspicuous; harshly bright. Glaring spelling or grammatical errors in your résumé will unfavorably impress potential employers.
glaze  v. cover with a thin and shiny surface. The freezing rain glazed the streets and made driving hazardous. Also n.
glean  v. gather leavings. After the crops had been harvested by the machines, the peasants were permitted to glean the wheat left in the fields.
glib  adj. fluent; facile; slick. Keeping up a steady patter to entertain his customers, the kitchen gadget salesman was a glib speaker, never at a loss for a word.
glimmer  v. shine erratically; twinkle. In the darkines of the cavern, the glowworms hanging from the cavern roof glimmered like distant stars.
gloat  v. express evil satisfaction; view malevolently. As you gloat over your ill-gotten wealth, do you think of the many victims you have defrauded?
gloss  v. explain away. No matter how hard he tried to talk around the issue, President Bush could not gloss over the fact that he had raised taxes after all.
glossary  n. brief explanation of words used in the text. I have found the glossary in this book very useful; it has eliminated many trips to the dictionary.
glossy  adj. smooth and shining. I want this photograph printed on glossy paper, not matte.
glower  v. scowl. The angry boy glowered at his father.
glut  v. overstock; fill to excess. The many manufacturers glutted the market and could not find purchasers for the many articles they had produced. Also n.
glutinous  adj. sticky; viscous. Molasses is a glutinous substance.
glutton  n. someone who eats too much. When Mother saw that Bobby had eaten all the cookies, she called him a little glutton. gluttonous, adj.
gnarled  adj. twisted. The gnarled oak tree had been a landmark for years and was mentioned in several deeds.
gnome  n. dwarf; underground spirit. In medieval mythology, gnomes were the special guardians and inhabitants of subterranean mines.
goad  v. urge on. She was goaded by her friends until she yielded to their wishes. Also n.
gorge  n. narrow canyon; steep, rocky cleft. Terrified of heights, George could not bring himself to peer down into the gorge to see the rapids below.
gorge  v. stuff oneself. The gluttonous guest gorged himself with food as though he had not eaten for days.
gory  adj. bloody. The audience shuddered as they listened to the details of the gory massacre. gore, n.
gossamer  adj. sheer; like cobwebs. Nylon can be woven into gossamer or thick fabrics. Also n.

Test

Word List 21  Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

301. GALLEON (A) liquid measure (B) ship (C) armada
       (D) company (E) printer’s proof

302. GARISH (A) sordid (B) flashy (C) prominent
       (D) lusty (E) thoughtful

303. GARNER (A) prevent (B) assist (C) collect
       (D) compute (E) consult

304. GARNISH (A) paint (B) garner (C) adorn
       (D) abuse (E) banish

305. GARRULITY (A) credibility (B) senility
       (C) insubstantiality (D) speciousness (E) artistry

306. GARRULOUS (A) erudite (B) hasty (C) sociable
       (D) quaint (E) talkative

307. GAUCHE (A) rigid (B) swift (C) awkward
       (D) taciturn (E) needy

308. GAUDY (A) holy (B) showy (C) sentimental
       (D) mild (E) whimsical
309. GAUNT (A) victorious (B) tiny (C) stylish (D) haggard (E) nervous
310. GENUFLECT (A) falsify (B) trick (C) project (D) bend the knee (E) pronounce correctly
311. GERMANE (A) bacteriological (B) Middle European (C) prominent (D) warlike (E) relevant
312. GEMINAL (A) creative (B) excused (C) sterilized (D) primitive (E) strategic

Word List 22  gode-hiatus

gouge  v. tear out. In that fight, all the rules were forgotten; the adversaries bit, kicked, and tried to gouge each other's eyes out.

gouge  v. overcharge. During the World Series, ticket scalpers tried to gouge the public, asking astronomical prices even for bleacher seats.
gourmand  n. epicure; person who takes excessive pleasure in food and drink. Gourmets lack self-restraint; if they enjoy a particular cuisine, they eat far too much of it.
gourmet  n. connoisseur of food and drink. The gourmet stated that this was the best onion soup she had ever tasted.

graduated  adj. arranged by degrees (of height, difficulty, etc.); Margaret loved her graduated set of Russian hollow wooden dolls; she spent hours happily putting the smaller dolls into their larger counterparts.
granary  n. storehouse for grain. We have reason to be thankful, for our crops were good and our granaries are full.
grande  n. impressiveness; statefulness; majesty. No matter how often he hiked through the mountains, David never failed to be struck by the grandeur of the Sierra Nevada range.
grandiloquent  adj. pompous; bombastic; using high-sounding language. The politician could never speak simply; she was always grandiloquent.
grandioso  adj. pretentious; high-flown; ridiculously exaggerated; impressive. The aged matinee idol still had grandiose notions of his supposed importance in the theatrical world.
granulate  v. form into grains. Sugar that has been granulated dissolves more readily than lump sugar. granule, n.

graphic  adj. pertaining to the art of delineating; vividly described. I was particularly impressed by the graphic presentation of the storm.
grappie  v. wrestle; come to grips with. He grappled with the burglar and overpowered him.
grate  v. make a harsh noise; have an unpleasant effect; shred. The screams of the quarreling children grated on her nerves.
gratify  v. please. Lori's parents were gratified by her successful performance on the GRE.

gratis  adv. free. The company offered to give one package gratis to every purchaser of one of their products. also adj.
gratuitous  adj. given freely; unwarranted, uncalled for. Quit making gratuitous comments about my driving; no one asked you for your opinion.
gratitude  n. tip. Many service employees rely more on gratuities than on salaries for their livelihood.
gravity  n. seriousness. We could tell we were in serious trouble from the gravity of her expression. grave, adj.
gracious  adj. sociable. Typically, party throwers are gracious; hermits are not.
grievance  n. cause of complaint. When her supervisor ignored her complaint, she took her grievance to the union.
grill  v. question severely. In violation of the Miranda law, the police grilled the suspect for several hours before reading him his rights. (secondary meaning)
grime  n. a facial distortion to show feeling such as pain, disgust, etc. Even though he remained silent, his grime indicated his displeasure. also v.
grisly  adj. ghastly. She shuddered at the grisly sight.
grotro  adj. fantastic; comically hideous. On Halloween people enjoy wearing grotesque costumes.
grout  n. small cavern. The Blue Grotto in Capri can be entered only by small boats rowed by natives through a natural opening in the rocks.
grouse  v. complain; fuss. Students traditionally grouse about the abysmal quality of "mystery meat" and similar dormitory food.
gruel  v. crawl or creep on ground; remain prostrate. Even though we have been defeated, we do not have to grovel before our conquerors.
grudging  adj. unwilling; reluctant; stingy. We received only grudging support from the mayor despite his earlier promises of aid.
gruel  n. thin, liquid porridge. Our daily allotment of gruel made the meal not only monotonous but also unpalatable.
grueling  adj. exhausting. The marathon is a grueling race.
gruesome adj. grisly; horrible. His face was the stuff of nightmares: all the children in the audience screamed when Freddy Krueger’s gruesome countenance was flashed on the screen.
gruff adj. rough-mannered. Although he was blunt and gruff with most people, he was always gentle with children.
guffaw n. boisterous laughter. The loud guffaws that came from the closed room indicated that the members of the committee had not yet settled down to serious business, also v.
guile n. deceit; duplicity; wiles; cunning. Iago uses considerable guile to trick Othello into believing that Desdemona has been unfaithful.
■ guileless adj. without deceit. He is naive, simple, and guileless; he cannot be guilty of fraud.
guise n. appearance; costume. In the guise of a plumber, the detective investigated the murder case.
gull v. trick; hoodwink. Confident no one could gull him, Paul prided himself on his skeptical disposition.
■ gullible adj. easily deceived. Gullible people have only themselves to blame if they fall for con artists repeated-edly. As the saying goes, “Fool me once, shame on you. Fool me twice, shame on me.”
gustatory adj. affecting the sense of taste. The Thai restaurant offered an unusual gustatory experience for those used to a bland cuisine.
gusto n. enjoyment; enthusiasm. He accepted the assignment with such gusto that I feel he would have been satisfied with a smaller salary.
gusty adj. windy. The gusty weather made sailing precarious.
guy n. cable or chain attached to something that needs to be braced or steadied. If the guys holding up the mast on that derrick snap, the mast will topple.
gyroscope n. apparatus used to maintain balance, ascertain direction, etc. By using a rotating gyroscope, they were able to stabilize the vessel, counteracting the rolling movements of the sea.
habituate v. accustom or familiarize; addict. Macbeth gradually habituated himself to murder, shedding his scruples as he grew accustomed to his bloody deeds.
hackles n. hairs on back and neck, especially of a dog. The dog’s hackles rose and he began to growl as the sound of footsteps grew louder.
hackneyed adj. commonplace; trite. When the reviewer criticized the movie for its hackneyed plot, we agreed; we had seen similar stories hundreds of times before.
haggard adj. wasted away; gaunt. After his long illness, he was pale and haggard.
haggle v. argue about prices. I prefer to shop in a store that has a one-price policy because, whenever I haggle with a shopkeeper, I am never certain that I paid a fair price for the articles I purchased.
halcyon adj. calm; peaceful. In those halcyon days, people were not worried about sneak attacks and bombings.
hale adj. healthy. After a brief illness, he was soon hale.
hallowed adj. blessed; consecrated. Although the dead girl’s parents had never been active churchgoers, they insisted that their daughter be buried in hallowed ground.
hallucination n. delusion. I think you were frightened by a hallucination that you created in your own mind.
halt adj. hesitant; faltering. Novice extemporaneous speakers often talk in a halting fashion as they groove for the right words.
hamp v. obstruct; The new mother hadn’t realized how much the effort of caring for an infant would hamper her ability to keep an immaculate house.
hap n. chance; luck. In his poem Hap, Thomas Hardy objects to the part chance plays in our lives. also v.
haphazard adj. random; by chance. His haphazard reading left him unacquainted with many classic books.
hapless adj. unfortunate. This hapless creature had never known a moment’s pleasure.
■ harangue n. long, passionate, and vehement speech. In her lengthy harangue, the principal berated the offenders. also v.
harass v. annoy by repeated attacks. When we could not pay his bills as quickly as he had promised, he was harassed by his creditors.
harbinger n. forerunner. The crocus is an early harbinger of spring.
harbor v. provide a refuge for; hide. The church harbored illegal aliens who were political refugees. also n.
hardy adj. sturdy; robust; able to stand inclement weather. We asked the gardening expert to recommend particularly hardy plants that could withstand our harsh New England winters.
harping n. tiresome dwelling on a subject. After he had reminded me several times about what he had done for me I told him to stop his harping on my indebtedness to him. harp, v.
harrowing adj. agonizing; distressing; traumatic. At first Terry Anderson did not wish to discuss his harrowing months of captivity as a political hostage. harrow, v.
harry v. harass, annoy; torment; raid. The guerrilla band harried the enemy nightly.
hatch n. deck opening; lid covering a deck opening. The latch on the hatch failed to catch, so the hatch remained unlatched.
ahughtiness n. pride; arrogance. When she realized that Darcy believed himself too good to dance with his inferiors, Elizabeth took great offense at his haughtiness.
haven n. place of safety; refuge. For Ricardo, the school library became his haven, a place to which he could retreat during chaotic times.
hazardous adj. dangerous. Your occupation is too hazardous for insurance companies to consider your application.
hazy adj. slightly obscure. In hazy weather, you cannot see the top of this mountain.
headlong adj. hasty; rash. The slave seized the unexpected chance to make a headlong dash across the border to freedom.

headstrong adj. stubborn; willful; unyielding. Because she refused to marry the man her parents had chosen for her, everyone scolded Minna and called her a foolish, headstrong girl.

heckler n. person who verbally harasses others. The heckler kept interrupting the speaker with rude remarks.

hedonist n. one who believes that pleasure is the sole aim in life. A thoroughgoing hedonist, he considered only his own pleasure and ignored any claims others had on his money or time. hedonism, n.

headless adj. not noticing; disregarding. She drove on, heedless of the warnings that the road was dangerous. heed, v.

hegemony n. dominance, especially of one nation over others. As one Eastern European nation after another declared its independence, commentators marveled at the sudden breakdown of the once monolithic Soviet hegemony.

heinous adj. atrocious; hatefully bad. Hitler’s heinous crimes will never be forgotten.

herbivorous adj. grain-eating. Some herbivorous animals have two stomachs for digesting their food.

heterodoxy n. opinion contrary to popular belief; opinion contrary to accepted religion. Galileo’s assertion that the earth moved around the sun directly contradicted the religious teachings of his day; as a result, he was tried for heresy. heretic, n. heretical, adj.

hermetic adj. sealed by fusion so as to be airtight. After you sterilize the bandages, place them in a container and seal it with a hermetic seal to protect them from contamination by airborne bacteria.

hermetical adj. obscure and mysterious; occult. It is strange to consider that modern chemistry originated in the hermetic teachings of the ancient alchemists. (secondary meaning)

hermitage n. home of a hermit. Even in his remote hermitage he could not escape completely from the world.

herpetologist n. one who studies reptiles. As a boy, Indiana Jones had a traumatic experience involving snakes; sensibly enough, he studied to be an archaeologist, not a herpetologist.

heterodox adj. unorthodox; unconventional. To those who upheld the belief that the earth did not move, Galileo’s theory that the earth circled the sun was disturbingly heterodox.

heterogeneous adj. dissimilar; mixed. This year’s entering class is remarkably heterogeneous: it includes students from 40 different states and 26 foreign countries, some the children of billionaires, others the offspring of welfare families. heterogeneity, n.

hew v. cut to pieces with ax or sword. The cavalry rushed into the melee and hewed the enemy with their swords.

heyday n. time of greatest success; prime. In their heyday, the San Francisco Forty-Niners won the Super Bowl two years running.

hiatus n. gap; pause. Except for a brief two-year hiatus, during which she enrolled in the Peace Corps, Ms. Clements has devoted herself to her medical career.

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Test

Word List 22 Antonyms

Each of the following questions consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

316. GRANDIOSE (A) false (B) ideal (C) proud (D) simple (E) functional

317. GRATUITOUS (A) warranted (B) frank (C) ingenuous (D) frugal (E) pithy

318. GREGARIOUS (A) antisocial (B) anticipatory (C) glorious (D) horrendous (E) similar

319. GRISLY (A) suggestive (B) doubtful (C) untidy (D) pleasant (E) bearish

320. GULLIBLE (A) incredulous (B) fickle (C) tantamount (D) easy (E) stylish

321. GUSTO (A) noise (B) panic (C) atmosphere (D) gloom (E) distaste

322. GUSTY (A) calm (B) noisy (C) fragrant (D) routine (E) gloomy

323. HACKNEYED (A) carried (B) original (C) banned (D) timely (E) oratorical

324. HAGGARD (A) shrewish (B) inspired (C) plump (D) maidenly (E) vast

325. HALCYON (A) wasteful (B) prior (C) subsequent (D) puelline (E) martial

326. HAPHAZARD (A) safe (B) indifferent (C) deliberate (D) tense (E) conspiring

327. HAPLESS (A) cheerful (B) consistent (C) fortunate (D) considerate (E) shapely

328. HEED (A) ignore (B) hope (C) overtake (D) nurture (E) depart

329. HERETIC (A) sophist (B) believer (C) interpreter (D) pacifist (E) owner

330. HETEROGENEOUS (A) orthodox (B) pagan (C) unlikely (D) similar (E) banished
hibernal adj. wintry. Bears prepare for their long hibernal sleep by overeating.

hibernate v. sleep throughout the winter. Bears are one of the many species of animals that hibernate. hibernation, n.

hierarchy n. arrangement by rank or standing; authoritarian body divided into ranks. To be low man on the totem pole is to have an inferior place in the hierarchy. hierarchical, adj.

hieroglyphic n. picture writing. The discovery of the Rosetta Stone enabled scholars to read the ancient Egyptian hieroglyphics.

hilarity n. boisterous mirth. This hilarity is improper on this solemn day of mourning. hilarious, adj.

hindmost adj. furthest behind. The coward could always be found in the hindmost lines whenever a battle was being waged.

hindrance n. block; obstacle. Stalled cars along the highway are a hindrance to traffic that tow trucks should remove without delay. hinder, v.

hinterlands n. back country. They seldom had visitors, living as they did way out in the hinterlands.

hiring n. one who serves for hire (usually used contemptuously). In a matter of such importance, I do not wish to deal with hiring; I must meet with the chief.

hirsute adj. hairy. He was a hirsute individual with a heavy black beard.

histrionic adj. theatrical. He was proud of his histrionic ability and wanted to play the role of Hamlet. histrionic, n.

hoard v. stockpile; accumulate for future use. Whenever there are rumors of a food shortage, people are tempted to hoard food. also n.

hoary adj. white with age. The man was hoary and wrinkled when he was 70.

hoax n. trick; practical joke. Embarrassed by the hoax, she reddened and left the room, also v.

holocaust n. destruction by fire. Citizens of San Francisco remember that the destruction of the city was caused not by the earthquake but by the holocaust that followed.

holster n. pistol case. Even when he was not in uniform, he carried a holster and pistol under his arm.

homage n. honor; tribute. In her speech she tried to pay homage to a great man.

homeostasis n. tendency of a system to maintain relative stability. A breakdown of the body’s immune system severely undermines the body’s ability to maintain homeostasis.

homespun adj. domestic; made at home. Homespun, like homespun cloth, was often coarse and plain.

homily n. sermon; serious warning. His speeches were always homilies, advising his listeners to repent and reform. homiletic, adj.

homogeneous adj. of the same kind. Because the student body at Elite Prep was so homogeneous, Sara and James decided to send their daughter to a school that offered greater cultural diversity. homogeneity, n.

honed v. sharpen. To make shaving easier, he honed his razor with great care.

hoodwink v. deceive; delude. Having been hoodwinked once by the fast-talking salesman, he was extremely cautious when he went to purchase a used car.

horde n. crowd. Just before Christmas the stores are filled with hordes of shoppers.

hortatory adj. encouraging; exhortive. The crowd listened to his hortatory statements with ever-growing excitement; finally they rushed from the hall to carry out his suggestions.

horticultural adj. pertaining to cultivation of gardens. When he bought his house, he began to look for flowers and decorative shrubs, and began to read books dealing with horticultural matters.

hostility n. unfriendliness; hatred. A child who has been the sole object of his parents’ affection often feels hostility toward a new baby in the family, resenting the newcomer who has taken his place. hostile, adj.

hovel n. shack; small, wretched house. She wondered how poor people could stand living in such a hovel.

hover v. hang about; wait nearby. The police helicopter hovered above the accident.

hubbub n. confused uproar. The marketplace was a scene of hubbub and excitement; in all the noise, we could not distinguish particular voices.

hubris n. arrogance; excessive self-conceit. Filled with hubris, Lear refused to heed his friends’ warnings.

hue n. color; aspect. The aviary contained birds of every possible hue.

hue and cry n. outcry. When her purse was snatched, she raised such a hue and cry that the thief was captured.

human adj. marked by kindness or consideration. It is ironic that the Humane Society sometimes must show its compassion toward mistreated animals by killing them to end their misery.

humdrum adj. dull; monotonous. After her years of adventure, she could not settle down to a humdrum existence.

humid adj. damp. She could not stand the humid climate and moved to a drier area.

humility n. humbleness of spirit. He spoke with a humility and lack of pride that impressed his listeners.

hummock n. small hill. The ascent of the hummock is not difficult and the view from the hilltop is ample reward for the effort.
humus N. substance formed by decaying vegetable matter. In order to improve his garden, he spread humus over his lawn and flower beds.

hurtle v. crash; rush. The runaway train hurtled toward disaster.

husband v. use sparingly; conserve; save. Marathon runners must husband their energy so that they can keep going for the entire distance.

husbandry N. frugality; thrift; agriculture. He accumulated his small fortune by diligence and husbandry.

hybrid N. mongrel; mixed breed. Mendel's formula explains the appearance of hybrids and pure species in breeding. also ADJ.

hydrophobia N. fear of water; afraid. A dog that bites a human being must be observed for symptoms of hydrophobia.

hyperbole N. exaggeration; overstatement. As far as I'm concerned, Apple's claims about the new computer are pure hyperbole: no machine is that good! hyperbole, ADJ.

hypocritical ADJ. excessively exacting. You are hypocritical in your demands for perfection; we all make mistakes.

hypochondriac N. person unduly worried about his health; worrier without cause about illness. The doctor prescribed chocolate pills for her patient who was a hypochondriac.

hypocritical ADJ. pretending to be virtuous; deceiving. Because he believed Eddie to be interested only in his own advancement, Greg resented Eddie's hypocritical protestations of friendship. hypocrisy, N.

hypothetical ADJ. based on assumptions or hypotheses; supposed. Suppose you are accepted by Harvard, Stanford, and Yale. Which graduate school will you choose to attend? Remember, this is only a hypothetical situation. hypocrisy, N.

ichthyology N. study of fish. Jacques Cousteau's programs about sea life have advanced the cause of ichthyology.

icon N. religious image; idol. The icons on the walls of the church were painted in the 13th century.

iconoclastic ADJ. attacking cherished traditions. Deeply iconoclastic, Jean Genet deliberately set out to shock conventional theatergoers with his radical plays. iconoclastic, N.

ideology N. system of ideas characteristic of a group or culture. For people who had grown up believing in the Communist ideology, it was hard to adjust to capitalism.

idiom N. expression whose meaning as a whole differs from the meanings of its individual words; distinctive style. The phrase "to lose one's marbles" is an idiom: if I say that Joe has lost his marbles, I'm not asking you to find them for him. I'm telling you idiomatically that he's crazy.

idiosyncrasy N. individual trait, usually odd in nature; eccentricity. One of Richard Nixon's little idiosyncrasies was his liking for ketchup on cottage cheese. One of Hannibal Lecter's little idiosyncrasies was his liking for human flesh. idiosyncratic, ADJ.

idolatry N. worship of idols; excessive admiration. Such idolatry of singers of country music is typical of the excessive enthusiasm of youth.

idyllic ADJ. charmingly carefree; simple. Far from the city, she led an idyllic existence in her rural retreat.

igneous ADJ. produced by fire; volcanic. Lava, pumice, and other igneous rocks are found in great abundance around Mount Vesuvius near Naples.

ignite v. kindle; light. When Desi crooned, "Baby, light my fire," literal-minded Lucy looked around for some paper to ignite.

ignoble ADJ. unworthy; not noble. A true knight, Sir Galahad never stooped to perform an ignoble deed.

ignominy N. deep disgrace; shame or dishonor. To lose the Ping-Pong match to a trained chinamanee! How could Rollo endure the ignominy of his defeat? ignominious, ADJ.

illicit ADJ. illegal. The defense attorney claimed that the police had entrapped his client; that is, they had elicited the illicit action of which they now accused him.

illimitable ADJ. infinite. Human beings, having explored the far corners of the earth, are now reaching out into illimitable space.

illuminate v. brighten; clear up or make understandable; enlighten. Just as a lamp can illuminate a dark room, a perceptive comment can illuminate a knotty problem.

illusion N. misleading vision. It is easy to create an optical illusion in which lines of equal length appear different. Illusive ADJ. deceiving. This is only a mirage; let us not be fooled by its illusive effect.

illusory ADJ. deceptive; not real. Unfortunately, the costs of running the lemonade stand were so high that Tom's profits proved illusory.

imbalance N. lack of balance or symmetry; disproportion. To correct racial imbalance in the schools, school boards have bused black children into white neighborhoods and white children into black ones.

imbecility N. weakness of mind. I am amazed at the imbecility of the readers of these trashy magazines.

imbibe v. drink in. The dry soil imbibed the rain quickly.

imbroglio N. complicated situation; painful or complex misunderstanding; entanglement; confused mass (as of papers). The humor of Shakespearean comedies often depends on cases of mistaken identity that involve the perplexed protagonists in one comic imbroglio after another. imbroglio, v.

imbue v. saturate, fill. His visits to the famous Gothic cathedrals imbued him with feelings of awe and reverence.
Test

Word List 23    Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

331. HIBERNAL (A) musical (B) summerlike (C) local (D) seasonal (E) discordant
332. HILARITY (A) gloom (B) heartiness (C) weakness (D) casualty (E) paucity
333. HIRSUTE (A) scaly (B) bald (C) erudite (D) quiet (E) long
334. HORTATORY (A) inquiring (B) denying (C) killing (D) frantic (E) dissuading
335. HOVER (A) commence (B) soothe (C) leave (D) transform (E) solidify
336. HUBBUB (A) calm (B) fury (C) capital (D) axle (E) wax

337. HUMMOCK (A) unmusical (B) scorn (C) wakefulness (D) vale (E) vestment
338. HUSBANDRY (A) sportsmanship (B) dishonesty (C) wastefulness (D) friction (E) cowardice
339. HYBRID (A) productive (B) special (C) purebred (D) oafish (E) genial
340. HYPERBOLE (A) velocity (B) climax (C) curve (D) understatement (E) expansion
341. HYPERCRITICAL (A) tolerant (B) false (C) extreme (D) inarticulate (E) cautious
342. HYPOCRITICAL (A) sincere (B) narrow-minded (C) shameful (D) amiable (E) modest
343. HYPOTHETICAL (A) rational (B) fantastic (C) wizened (D) opposed (E) axiomatic
344. IGNOBLE (A) produced by fire (B) worthy (C) given to questioning (D) huge (E) known
345. ILLUSIVE (A) not deceptive (B) not certain (C) not obvious (D) not coherent (E) not brilliant

Word List 24    immaculate-incestant

immaculate   adj. spotless; flawless; absolutely clean. Ken and Jessica were wonderful tenants who left the apartment in immaculate condition when they moved out.
imminent    adj. near; at hand; impending. Rosa was such a last-minute worker that she could never start writing a paper till the deadline was imminent.
immobility   n. state of being immovable. Modern armies cannot afford the luxury of immobility, as they are vulnerable to attack while standing still.
immolee    v. offer as a sacrifice. The tribal king offered to immolate his daughter to quiet the angry gods.
immune    adj. resistant to; free or exempt from. Fortunately, Florence had contracted chicken pox as a child and was immune to it when her baby came down with spots. immunity, n.
immure    v. imprison; shut up in confinement. For the two weeks before the examination, the student immured himself in his room and concentrated upon his studies.
■ immutable    adj. unchangeable. All things change over time; nothing is immutable.
■ impair    v. injure; hurt. Drinking alcohol can impair your ability to drive safely, if you’re going to drink, don’t drive.
impart    v. pierce. He was impaled by the spear hurled by his adversary.
impalpable   adj. imperceptible; intangible. The ash is so fine that it is impalpable to the touch but it can be seen as a fine layer covering the window ledge.
impartial   adj. not biased; fair. Knowing she could not be impartial about her own child, Jo refused to judge any match in which Billy was competing. impartiality, n.
impassable   adj. not able to be traveled or crossed. A giant redwood had fallen across the highway, blocking all four lanes; the road was impassable.
impasse    n. predicament from which there is no escape. In this impasse, all turned to prayer as their last hope.
■ impasive    adj. without feeling; unperturbable; stoical. Refusing to let the enemy see how deeply shaken he was by his capture, the prisoner kept his face impassive.
impeach    v. charge with crime in office; indict. The angry congressman wanted to impeach the president for his misdeeds.
impeccable    adj. faultless. The uncrowned queen of the fashion industry, Diana was acclaimed for her impeccable taste.
impecunious    adj. without money. Though Scrooge claimed he was too impecunious to give alms, he easily could have afforded to be charitable.
impede    v. hinder; block. The special prosecutor determined that the Attorney General, though inept, had not intentionally set out to impede the progress of the investigation.
impediment    n. hindrance; stumbling-block. She had a speech impediment that prevented her from speaking clearly.
impel v. drive or force onward. A strong feeling of urgency impelled her; if she failed to finish the project right then, she knew that she would never get it done.

impending adj. nearing; approaching. The entire country was saddened by the news of his impending death.

impenetrable adj. not able to be pierced or entered; beyond understanding. How could the murderer have gotten into the locked room? To Watson, the mystery, like the room, was impenetrable.

impotent adj. not repentant. We could see by his brazen attitude that he was impotent.

imperative adj. absolutely necessary; critically important. It is imperative that you be extremely agreeable to Great-Aunt Maud when she comes to tea; otherwise, she may not leave you that million dollars in her will, also.

imperceptible adj. unnoticeable; undetectable. Fortunately, the stain on the blouse was imperceptible after the garment had gone through the wash.

imperial adj. like an emperor; related to an empire. When hotel owner Leona Helmsley appeared in ads as Queen Leona, standing guard over the Palace Hotel, her critics mocked her imperial fancies.

imperious adj. domineering; haughty. Jane rather liked a man to be masterful, but Mr. Rochester seemed so bent on getting his own way that he was actually imperious! Impiosity, N.

impermeable adj. impervious; not permitting passage through its substance. This new material is impermeable to liquids.

impertinent adj. insolent; rude. His neighbors' impertinent curiosity about his lack of dates angered Ted. It was downright rude of them to ask him such personal questions. Impertinence, N.

imperious adj. calm, placid. Wellington remained imperious and in full command of the situation in spite of the hysteria and panic all around him. Imperturbability, N.

imperious adj. impervious, incapable of being damaged or distressed. The carpet salesman told Simone that his most expensive brand of floor covering was warranted to be imperious to ordinary wear and tear. Having read so many negative reviews of his acting, the movie star had learned to ignore them, and was now imperious to criticism.

impetuous adj. violent; hasty; rash. "Leap before you look" was the motto suggested by one particularly impetuous young man.

impetus n. moving force; incentive; stimulus. A new federal highway program would create jobs and give added impetus to our economic recovery.

impunity n. irreverence; lack of respect for God. When members of the youth group draped the church in toilet paper one Halloween, the minister reprimanded them for their impious, impious. adj.

impinge v. infringe; touch; collide with. How could they be married without impinging on another's freedom?

impious adj. irreverent. The congregation was offended by her impious remarks.

implacable adj. incapable of being pacified. Madame Defarge was the implacable enemy of the Evremond family.

implausible adj. unlikely; unbelievable. Though her alibi seemed implausible, it in fact turned out to be true.

implement v. put into effect; supply with tools. The mayor was unwilling to implement the plan until he was sure it had the governor's backing, also.

implicate v. incriminate, show to be involved. Here's the deal: if you agree to take the witness stand and implicate your partners in crime, the prosecution will recommend that the judge go easy in sentencing you.

imposition n. something hinted at or suggested. When Miss Watson said she hadn't seen her purse since the last time Jim was in the house, the implication was that she suspected Jim had taken it.

implicit adj. understood but not stated. Jack never told Jill he adored her; he believed his love was implicit in his deeds.

implode v. burst inward. If you break a vacuum tube, the glass tube implodes. Implosion, N.

implore v. beg. He implored her to give him a second chance.

imply v. suggest a meaning not expressed; signify. When Aunt Millie said, "My! That's a big piece of pie, young man!" was she implying that Bobby was being a glutton in helping himself to such a huge piece?

impolitic adj. not wise. I think it is impolitic to raise this issue at the present time because the public is too angry.

imponderable adj. weightless. I can evaluate the data gathered in this study; the imponderable items are not so easily analyzed.

import n. significance. I feel that you have not grasped the full import of the message sent to us by the enemy.

importunate adj. urging; demanding. He tried to hide from his importunate creditors until his allowance arrived.

impotune v. beg persistently. Democratic and Republican phone solicitors imported her for contributions so frequently that she decided to give nothing to either party.

imposture n. assuming a false identity; masquerade. She was imprisoned for her imposture of a doctor.

impotent adj. weak; ineffective. Although he wished to break the nicotine habit, he found himself impotent in resisting the craving for a cigarette.

imprecation n. curse. Roused from bed at what he considered an ungody hour, Roy muttered imprecations under his breath.

impregnable adj. invulnerable. Until the development of the airplane as a military weapon, the fort was considered impregnable.

impromptu adj. without previous preparation; off the cuff; on the spur of the moment. The judges were amazed that she could make such a thorough, well-supported presentation in an impromptu speech.

impropriety n. impropriety; unsuitableness. Because of the impropriety of the punk rocker's slashed T-shirt
and jeans, the management refused to admit him to the hotel's very formal dining room.

improvident adj. thriftless. He was constantly being warned to mend his improvident ways and begin to "save for a rainy day." Imprudence, n.

improvise v. compose on the spur of the moment. She would sit at the piano and improvise for hours on themes from Bach and Handel.

imprudent adj. lacking caution; injudicious. It is imprudent to exercise vigorously and become overheated when you are unwell.

impudence n. impertinence; insolence. Kissed on the cheek by a perfect stranger, Lady Catherine exclaimed, "Of all the nerve! Young man, I should have you horsewhipped for your impudence."

impugn v. dispute or contradict (often in an insulting way); challenge; gainsay. Our treasurer was furious when the financial committee's report impugned the accuracy of his financial records and recommended that he take bonehead math.

impulsiveness n. powerlessness; feebleness. The lame duck president was frustrated by his shift from enormous power to relative impulsiveness.

impunity n. freedom from punishment or harm. A 98-pound weasel can't attack a beachfront bully with impunity: the poor, puny guy is sure to get mashed.

impute v. attribute; ascribe. If I wished to impute blame to the officers in charge of this program, I would state my feelings definitely and immediately.

inadvertently adv. unintentionally; by oversight; carelessly. Judy's great fear was that she might inadvertently omit a question on the exam and mark her whole answer sheet.

inalienable adj. not to be taken away; nontransferable. The Declaration of Independence mentions the inalienable rights that all of us possess.

inane adj. silly; senseless. There's no point in what you're saying. Why are you bothering to make such inane remarks? Inanity, n.

inanimate adj. lifeless. She was asked to identify the still and inanimate body.

inarticulate adj. speechless; producing indistinct speech. She became inarticulate with rage and uttered sounds without meaning.

inaugurate v. begin formally; install in office. The candidate promised that he would inaugurate a new nationwide health care plan as soon as he was inaugurated as president, inauguration, n.

incandescent adj. strikingly bright; shining with intense heat. If you leave on an incandescent light bulb, it quickly grows too hot to touch.

incantation n. singing or chanting of magic spells; magical formula. Uttering incantations to make the brew more potent, the witch doctor stirred the liquid in the caldron.

incapacitate v. disable. During the winter, many people were incapacitated by respiratory ailments.

incarcerate v. imprison. The civil rights workers were willing to be arrested and even incarcerated if by their imprisonment they could serve the cause.

incarnate adj. endowed with flesh; personified. Your attitude is so fiendish that you must be a devil incarnate.

incarnation n. act of assuming a human body and human nature. The incarnation of Jesus Christ is a basic tenet of Christian theology.

incendiary n. arsonist. The fire spread in such an unusual manner that the fire department chiefs were certain that it had been set by an incendiary. Also adj.

incense v. enrage; infuriate. Cruelty to defenseless animals incensed Kit; the very idea brought tears of anger to her eyes.

incentive n. spur; motive. Mike's strong desire to outshine his big sister was all the incentive he needed to do well in school.

inception n. start; beginning. She was involved with the project from its inception.

incessant adj. uninterrupted; unceasing. In a famous TV commercial, the frogs' incessant croaking goes on and on until eventually it turns into a single word: "Bud-weis-er."

Test

Word List 24 Synonyms and Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar or opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

346. IMMOLATE (A) debate (B) scour (C) sacrifice (D) sanctify (E) ratify

347. IMMUTABLE (A) silent (B) changeable (C) articulate (D) loyal (E) varied
353. IMPERVIOUS (A) impenetrable (B) perplexing (C) chaotic (D) cool (E) perfect
354. IMPETUOUS (A) rash (B) inane (C) just (D) flagrant (E) redolent
355. IMPOLITIC (A) campaigning (B) advisable (C) aggressive (D) legal (E) fortunate
356. IMPORTUNE (A) export (B) plead (C) exhibit (D) account (E) visit
357. IMPROMPTU (A) prompted (B) appropriate (C) rehearsed (D) foolish (E) vast
358. INALIENABLE (A) inherent (B) repugnant (C) closed to immigration (D) full (E) accountable
359. INANE (A) passive (B) wise (C) intoxicated (D) mellow (E) silent
360. INCARCERATE (A) inhibit (B) acquit (C) account (D) imprison (E) force

Word List 25  inchoate-infrac tion

inchoate  Adj. recently begun, rudimentary; elementary. Before the Creation, the world was an inchoate mass.
incedence  N. rate of occurrence; particular occurrence. Health professionals expressed great concern over the high incidence of infant mortality in major urban areas.
icidental  Adj. not essential; minor. The scholarship covered his major expenses at college and some of his incidental expenses as well.
inceptive  Adj. beginning; in an early stage. I will go to sleep early for I want to break up an inceptive cold.
icisive  Adj. cutting; sharp. Her incisive remarks made us see the fallacy in our plans. incision, n.
icite  v. arouse to action; goad; motivate; induce to exist. In a fiery speech, Mario incited his fellow students to go out on strike to protest the university’s anti-affirmative-action stand.
iclement  Adj. stormy; unkind. In inclement weather, I like to curl up on the sofa with a good book and listen to the storm blowing outside.
incline  n. slope; slant. The architect recommended that the nursing home’s ramp be rebuilt because its incline was too steep for wheelchairs.
inclined  Adj. tending or leaning toward; bent. Though I am inclined to be skeptical, the witness’s manner inclines me to believe his story. incline, v.
inclusive  Adj. tending to include all. The comedian turned down the invitation to join the Players’ Club, saying any club that would let him in was too inclusive for him.
incognito  Adj. with identity concealed; using an assumed name. The monarch enjoyed traveling through the town incognito and mingling with the populace. also Adv.
incogent  Adj. unintelligible; muddled; illogical. The excited fan blushed and stammered, her words becoming almost incoherent in the thrill of meeting her favorite rock star face to face. incoherence, n.
incommodious  Adj. not spacious; inconvenient. In their incommodious quarters, they had to improvise for closet space.
incompatible  Adj. inharmonious. The married couple argued incessantly and finally decided to separate because they were incompatible. incompatibility, n.
incongruity  N. lack of harmony; absurdity. The incongruity of his wearing sneakers with formal attire amused the observers. incongruous, Adj.

inconsistent  Adj. insignificant; unimportant. Brushing off Ali’s apologies for having broken the wine glass, Tamara said, “Don’t worry about it; it’s inconsistent.”

inconsistency  N. state of being self-contradictory; lack of uniformity or steadiness. How are lawyers different from agricultural inspectors? Where lawyers check inconsistencies in witnesses statements, agricultural inspectors check inconsistencies in Grade A eggs. inconsistent, adj.
incontenant  Adj. lacking self-restraint; licentious. His inconsequent behavior off stage so shocked many people that they refused to attend the plays and movies in which he appeared.
incontrovertible  Adj. indisputable; not open to question. Unless you find the evidence against my client absolutely incontrovertible, you must declare her not guilty of this charge.
incorporate  v. introduce something into a larger whole; combine; unite. Breaking with precedent, President Truman ordered the military to incorporate blacks into every branch of the armed services. also Adj.
incorporeal  Adj. lacking a material body; insubstantial. Although Casper the friendly ghost is an incorporeal being, he and his fellow ghosts make quite an impact on the physical world.
incurable  Adj. uncorrectable. Though Widow Douglass hoped to reform Huck, Miss Watson pronounced him incurable and said he would come to no good end.
incredulity  N. tendency to disbelief. Your incredulity in the face of all the evidence is hard to understand.
incredulous  Adj. witholding belief; skeptical. When Jack claimed he hadn’t eaten the jelly doughnut, Jill took an incredulous look at his smeared face and laughed.
increment  n. increase. The new contract calls for a ten percent increment in salary for each employee for the next two years.
incriminate  v. accuse; serve as evidence against. The witness’s testimony against the racketeers incriminates some high public officials as well.
incretion  N. hard coating or crust. In dry dock, we scraped off the incrustation of dirt and bariacles that covered the hull of the ship.
incurate  v. hatch. Inasmuch as our supply of electricity is cut off, we shall have to rely on the hens to incubate these eggs.
incubus n. burden; mental care; nightmare. The incubus of financial worry helped bring on her nervous breakdown.

inculate v. teach. In an effort to incultate religious devotion, the officials ordered that the school day begin with the singing of a hymn.

incumbent adj. obligatory; currently holding an office. It is incumbent upon all incumbent elected officials to keep accurate records of expenses incurred in office. Also n. incur v. bring upon oneself. His parents refused to pay any future debts he might incur.

incursion n. temporary invasion. The nightly incursions and hit-and-run raids of our neighbors across the border tried the patience of the country to the point where we decided to retaliate in force.

indelatigable adj. tireless. Although the effort of taking out the garbage exhausted Wayne for the entire morning, when he came to partying, he was indelatigable.

indelible adj. not able to be erased. The indelible ink left a permanent mark on my shirt. Young Bill Clinton’s meeting with President Kennedy made an indelible impression on the youth.

indemnify v. make secure against loss; compensate for loss. The city will indemnify all home owners whose property is spoiled by this project.

indentation n. notch; deep recess. You can tell one tree from another by noting the differences in the indentations along the edges of the leaves.

indenture v. bind as servant or apprentice to master. Many immigrants could come to America only after they had indentured themselves for several years.

indeterminate adj. uncertain; not clearly fixed; indefinite. That interest rates shall rise appears certain; when they will do so, however, remains indeterminate.

indicative adj. suggestive; implying. A lack of appetite may be indicative of a major mental or physical disorder.

indices n. pl. signs; indications. Many college admissions officers believe that SAT scores and high school grades are the best indices of a student’s potential to succeed in college.

indict v. charge. The district attorney didn’t want to indict the suspect until she was sure she had a strong enough case to convince a jury.

indifferent adj. unmoved or unconcerned by; mediacre. Because Ann felt no desire to marry, she was indifferent to Carl’s constant proposals. Not only was she indifferent to him personally, but she felt that, given his general insularity, he would make an indifferent husband.

indigence n. poverty. Neither the economists nor the political scientists have found a way to wipe out the inequities of wealth and eliminate indigence from our society.

indigent adj. poor; destitute. Someone who is truly indigent can’t even afford to buy a pack of cigarettes. [Don’t mix up indigent and indigenous. See preceding entry.]

indignation n. anger at an injustice. She felt indignation at the ill-treatment of the helpless animals.

indignity n. offensive or insulting treatment. Although he seemed to accept cheerfully the indignities heaped upon him, he was inwardly very angry.

indiscriminate adj. choosing at random; confused. She disapproved of her son’s indiscriminate television viewing and decided to restrict him to educational programs.

indisputable adj. too certain to be disputed. In the face of these indisputable statements, I withdraw my complaint.

indissoluble adj. permanent. The indissoluble bonds of marriage are all too often being dissolved.

indite v. write; compose. Cyrano indited many letters for Christian.

indolent adj. lazy. Couch potatoes lead an indolent life lying back in their Lazyboy recliners watching TV.

indomitable adj. unconquerable; unyielding. Focusing on her game despite all her personal problems, tennis champion Steffi Graf displayed an indomitable will to win.

indubitable adj. unable to be doubted; unquestionable. Auditioning for the chorus line, Molly was an indubitable hit: the director fired the leading lady and hired Molly in her place.

induce v. persuade; bring about. After the quarrel, Tina said nothing could induce her to talk to Tony again.

inducement n.

inductive adj. pertaining to induction or proceeding from the specific to the general. The discovery of the planet Pluto is an excellent example of the results that can be obtained from inductive reasoning.

indulgent adj. humoring; yielding; lenient. Jay’s mom was excessively indulgent: she bought him every computer game on the market. In fact, she indulged Jay so much, she spoiled him rotten.

industrious adj. diligent; hard-working. Look busy when the boss walks by your desk; it never hurts to appear industrious.

inebriated adj. habitually intoxicated; drunk. Abe was inebriated more often than he was sober. Because of his inebriety, he was discharged from his job as a bus driver.

inexorable adj. unutterable; cannot be expressed in speech. Such inexorable joy must be experienced; it cannot be described.

ineffectual adj. not effective; weak. Because the candidate failed to get across her message to the public, her campaign was ineffectual.

ineffable adj. irresistible; not to be escaped. He felt that his fate was ineffable and refused to make any attempt to improve his lot.

inept adj. lacking skill; unsuited; incompetent. The inept grovemaker was all thumbs. Ineptness, n.
inequity n. unfairness. In demanding equal pay for equal work, women protest the basic inequity of a system that allots greater financial rewards to men. inequitable, adj.

inerrancy n. infallibility. Jane refused to believe in the pope's inerrancy, reasoning: "All human beings are capable of error. The pope is a human being. Therefore, the pope is capable of error."

inert adj. inactive; lacking power to move. "Get up, you lazybones," Tina cried to Tony, who lay in bed inert.

inertia n.

inevitable adj. unavoidable. Though death and taxes are both supposedly inevitable, some people avoid paying taxes for years.

inexorable adj. relentless; unyielding; implacable. After listening to the pleas for clemency, the judge was inexorable and gave the convicted man the maximum punishment allowed by law.

infallible adj. unerring. We must remember that none of us is infallible; we all make mistakes.

infamous adj. notoriously bad. Charles Manson and Jeffrey Dahmer are two examples of infamous killers.

infantile adj. childish; infantlike. When will he outgrow such infantile behavior?

infer v. deduce; conclude. From the students' glazed looks, it was easy for me to infer that they were bored out of their minds. Inference n.

infern al adj. pertaining to hell; devilish. Batman was baffled: he could think of no way to hinder the Joker's infernal scheme to destroy the city.

infidel n. unbeliever. The Saracens made war against the infidels.

infiltrate v. pass into or through; penetrate (an organization) sneakily. In order to infiltrate enemy lines at night without being seen, the scouts darkened their faces and wore black coveralls. Infiltrator n.

infinitesimal adj. very small. In the twentieth century, physicists have made their greatest discoveries about the characteristics of infinitesimal objects like the atom and its parts.

infirmit y n. weakness. Her greatest infirmity was lack of willpower.

inflated adj. exaggerated; pompous; enlarged (with air or gas). His claims about the new product were inflated; it did not work as well as he had promised.

influx n. flowing into. The influx of refugees into the country has taxed the relief agencies severely.

infraction n. violation (of a rule or regulation); breach. When basketball star Dennis Rodman buttled heads with the referee, he committed a clear infraction of NBA rules.

Test

Word List 25 Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

361. INCLEMENT (A) unfavorable (B) abandoned (C) kindly (D) selfish (E) active

362. INCOMPATIBLE (A) capable (B) reasonable (C) faulty (D) indifferent (E) alienated

363. INCONSEQUENTIAL (A) disorderly (B) insignificant (C) subsequent (D) insufficient (E) preceding

364. INCONTINENT (A) insular (B) complaisant (C) crass (D) wanton (E) false

365. INCORRIGIBLE (A) narrow (B) straight (C) inconceivable (D) unreliable (E) unreformable

366. INCriminate (A) exacerbate (B) involve (C) intimidate (D) laerate (E) prevaricate

367. INCULCATE (A) exculpate (B) educate (C) exonerate (D) prepare (E) embarrass

368. INDIGENT (A) lazy (B) pusillanimous (C) penurious (D) affluent (E) contrary

369. INDIGNITY (A) pomposity (B) bombast (C) obeisance (D) insult (E) message

370. INDOLENCE (A) sloth (B) poverty (C) latitude (D) aptitude (E) anger

371. INDEBITABLY (A) flagrantly (B) doubtfully (C) carefully (D) carelessly (E) certainly

372. INEBRIETY (A) revelation (B) drunkenness (C) felony (D) starvation (E) gluttony

373. INEPT (A) outward (B) spiritual (C) foolish (D) clumsy (E) abundant

374. INFALLIBLE (A) final (B) unbelievable (C) perfect (D) inaccurate (E) insidious

375. INFIRMITY (A) disability (B) age (C) inoculation (D) hospital (E) unity
Word List 26 infringe-invert

infringe v. violate; encroach. I think your machine infringes on my patent and I intend to sue.

ingenious adj. clever, resourceful. Kit admired the ingenious way that her computer keyboard opened up to reveal the built-in CD-ROM below. Ingenuity, n.

ingenious adj. naive and trusting; young; unsophisticated. The woodsman did not realize how ingenious Little Red Riding Hood was until he heard that she had gone off for a walk in the woods with the Big Bad Wolf.

ingenuenue n. N. questioner (especially harsh); investigator. Fearing being grilled ruthlessly by the secret police, Marsha faced her inquisitors with trepidation.

insalubrious adj. unwholesome; not healthful. The mosquito-ridden swamp was an insalubrious place, a breeding ground for malarial contagion.

insatiable adj. not easily satisfied; unquenchable; greedy. The young writer's thirst for knowledge was insatiable; she was always in the library.

inscrutable adj. impenetrable; not readily understood; mysterious. Experienced poker players try to keep their expressions inscrutable, hiding their reactions to the cards behind a so-called poker face.

insensate adj. without feeling. She lay there as insensate as a log.

insensible adj. unconscious; unresponsive. Sherry and I are very different; at times when I would be covered with embarrassment, she seems insensible to shame.

insidious adj. treacherous, stealthy; sly. The fifth column is insidious because it works secretly within our territory for our defeat.

insightful adj. discerning; perceptive. Sol thought he was very insightful about human behavior, but actually he was clueless as to why people acted the way they did.

insinuate v. hint; imply; creep in. When you said I looked robust, did you mean to insinuate that I'm getting fat?

insipid adj. lacking in flavor; dull. Flat prose and flat ginger ale are equally insipid; both lack sparkle.

insolence n. impudent disrespect; haughtiness. How dare you treat me so rudely! The manager will hear of your insolence, insolent, adj.

insolvent adj. bankrupt; lacking money to pay. When rumors that he was insolvent reached his creditors, they began to press him for payment of the money due them.

insomnia n. wakefulness; inability to sleep. She refused to join us in a midnight cup of coffee because she claimed it gave her insomnia.

insouciant adj. indifferent; without concern or care. Your insouciant attitude at such a critical moment indicates that you do not understand the gravity of the situation.

instigate v. urge; start; provoke. Delighting in making mischief, Sir Toby sets out to instigate a quarrel between Sir Andrew and Cesario.

insubordination n. disobedience; rebelliousness. At the slightest hint of insubordination from the sailors on the Bounty, Captain Bligh had them flogged; finally, they mutinied. insubordinate, adj.

inopportune adj. untimely; poorly chosen. A rock concert is an inopportune setting for a quiet conversation.

ioradj. unrestrained; excessive. She had an inordinate fondness for candy, eating two or three boxes in a single day.
insubstantial ADJ. lacking substance; insignificant; frail. His hopes for a career in acting proved insubstantial; no one would cast him, even in an insubstantial role.

insularity N. narrow-mindedness; isolation. The insularity of the islanders manifested itself in their suspicion of anything foreign. Insular, ADJ.

insuperable ADJ. insuperable; unbeat- able. Though the odds against their survival seemed insuperable, the Apollo 13 astronauts reached earth safely.

insurgent ADJ. rebellious. Because the insurgent forces had occupied the capital and had gained control of the railway lines, several of the war correspondents covering the uprising predicted a rebel victory. Also N. insurgency, N.

insurmountable ADJ. overwhelming; unbeat- able; insuperable. Facing almost insurmountable obstacles, the members of the underground maintained their courage and will to resist.

insurrection N. rebellion; uprising. In retrospect, given how badly the British treated the American colonists, the eventual insurrection seems inevitable.

intangible ADJ. not able to be perceived by touch; vague. Though the financial benefits of his Oxford post were meager, Lewis was drawn to it by its intangible rewards: prestige, intellectual freedom, the fellowship of his peers.

integral ADJ. complete; necessary for completeness. Physical education is an integral part of our curriculum; a sound mind and a sound body are complementary.

integrate v. make whole; combine; make into one unit. She tried to integrate all their activities into one program.

integrity N. uprightness; wholeness. Lincoln, whose personal integrity has inspired millions, fought a civil war to maintain the integrity of the republic, that these United States might remain undivided for all time.

intellect N. higher mental powers. He thought college would develop his intellect.

intelligentsia N. intellectuals; members of the educated elite [often used derogatorily]. She preferred discussions about sports and politics to the literary conversations of the intelligentsia.

inter v. bury. They are going to inter the body tomorrow at Broadlawn Cemetery, interment, N.

interdict v. prohibit; forbid. Civilized nations must interdict the use of nuclear weapons if we expect our society to live.

interim N. meantime. The company will not consider our proposal until next week; in the interim, let us proceed as we have in the past.

interloper N. intruder. The merchant thought of his competitors as interlopers who were stealing away his trade.

interminable ADJ. endless. Although his speech lasted for only twenty minutes, it seemed interminable to his bored audience.

intermittent ADJ. periodic; on and off. The outdoor wedding reception had to be moved indoors to avoid the intermittent showers that fell on and off all afternoon.

internece ADJ. mutually destructive. The rising death toll on both sides indicates the internece nature of this conflict.

interpolate v. insert between. She talked so much that I could not interpolate a single remark.

interregnum N. period between two reigns. Henry VIII desperately sought a male heir because he feared the civil strife that might occur if any prolonged interregnum succeeded his death.

interrogate v. question closely; cross-examine. Knowing that the Nazis would interrogate him about his background, the secret agent invented a cover story that would help him meet their questions.

intervene v. come between. When two close friends get into a fight, be careful if you try to intervene; they may join forces and gang up on you. Intervention, N.

intimate v. hint. She intimated rather than stated her preferences.

intimidate v. frighten. I'll learn karate and then those big bullies won't be able to intimidate me anymore. Intimidation, N.

intractable ADJ. unruly; stubborn; unyielding. Charlie Brown's friend Pigpen was intractable; he absolutely refused to take a bath.

intransigence N. refusal of any compromise; stubbornness. The negotiating team had not expected such intransigence from the striking workers, who rejected any hint of a compromise. Intransigent, ADJ.

intrepid ADJ. fearless. For her intrepid conduct nursing the wounded during the war, Florence Nightingale was honored by Queen Victoria.

intrinsic ADJ. essential; inherent; built-in. Although my grandmother's china has little intrinsic value, I shall always cherish it for the memories it evokes.

introspective ADJ. looking within oneself. Though young Francis of Assisi led a wild and worldly life, even he had introspective moments during which he examined his soul. Introspection, N.

introvert N. one who is introspective; inclined to think more about oneself. In his poetry, he reveals that he is an introvert by his intense interest in his own problems.

intrude v. trespass; enter as an uninvited person. She hesitated to intrude on their conversation.

intuition N. immediate insight; power of knowing without reasoning. Even though Tony denied that anything was wrong, Tina trusted her intuition that something was bothering him. Intuitive, ADJ. Intuition, V.

inundate v. overwhelm; flood; submerge. This semester I am inundated with work; you should see the piles of paperwork flooding my desk. Until the great dam was built, the waters of the Nile used to inundate the river valley every year.

inured ADJ. accustomed; hardened. She became inured to the Alaskan cold.

invalidate v. weaken; destroy. The relatives who received little or nothing sought to invalidate the will by claiming
that the deceased had not been in his right mind when he signed the document.

■ invective n. abuse. He had expected criticism but not the invective that greeted his proposal.

invect  v. denounce; utter censure or invective. He inveighed against the demagoguery of the previous speaker and urged that the audience reject his philosophy as dangerous.

Test

Word List 26  Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

376. INGENIOUS (A) clever (B) stimulating (C) naive (D) worried (E) cautious

377. INIMICAL (A) antagonistic (B) anonymous (C) fanciful (D) accurate (E) atypical

378. INNOCUOUS (A) not capable (B) not dangerous (C) not eager (D) not frank (E) not peaceful

379. INSINUATE (A) resist (B) suggest (C) report (D) rectify (E) lecture

380. INSIPID (A) witty (B) flat (C) witty (D) talkative (E) lucid

381. INTEGRATE (A) tolerate (B) unite (C) flow (D) copy (E) assume

382. INTER (A) bury (B) amuse (C) relate (D) frequent (E) abandon

383. INTERDICT (A) acclaim (B) disapprove (C) prohibit (D) decide (E) fret

384. INTERMITTENT (A) heavy (B) fleet (C) occasional (D) fearless (E) responding

385. INTRACTABLE (A) culpable (B) flexible (C) unruly (D) efficient (E) base

386. INTRANSGENIC (A) lack of training (B) stubbornness (C) novelty (D) timidity (E) cupidity

387. INTREPID (A) cool (B) hot (C) understood (D) callow (E) courageous

388. INTRINSIC (A) extrinsic (B) abnormal (C) above (D) abandoned (E) basic

389. INUNDATE (A) abuse (B) deny (C) swallow (D) treat (E) flood

390. INVEIGH (A) speak violently (B) orate (C) disturb (D) apply (E) whisper

Word List 27  inveterate-laggard

inveterate  adj. deep-rooted; habitual. She is an inveterate smoker and cannot break the habit.

invidious  adj. designed to create ill will or envy. We disregarded her invidious remarks because we realized how jealous she was.

invincible  adj. unconquerable. Superman is invincible.

inviolable  adj. secure from corruption, attack, or violation; unassailable. Batman considered his oath to keep the people of Gotham City safe inviolable; nothing on earth could make him break this promise. inviolability, n.

invocation  n. prayer for help; calling upon as a reference or support. The service of Morning Prayer opens with an invocation during which we ask God to hear our prayers.

invoke  v. call upon; ask for. She invoked her advisor’s aid in filling out her financial aid forms.

invulnerable  adj. incapable of injury. Achilles was invulnerable except in his heel.

iota  n. very small quantity. She hadn’t an iota of common sense.

■ irascible  adj. irritable; easily angered. Mrs. Minchin’s irascible temper intimidated the younger schoolgirls, who feared she’d burst into a rage at any moment.

irate  adj. angry. When John’s mother found out that he had overdrawn his checking account for the third month in a row, she was so irate that she could scarcely speak to him.

iridescent  adj. exhibiting rainbowlike colors. She admired the iridescent hues of the oil that floated on the surface of the water. iridescence, n.

irksome  adj. annoying; tedious. He found working on the assembly line irksome because of the monotony of the operation he had to perform. irk, v.

ironic  adj. occurring in an unexpected and contrary manner. It is ironic that his success came when he least wanted it.
irony n. hidden sarcasm or satire; use of words that seem to mean the opposite of what they actually mean. Gradually his listeners began to realize that the excessive praise he was lavishing on his opponent was actually irony; he was, in fact, ridiculing the poor fool.

irreconcilable adj. incompatible; not able to be resolved. Because the separated couple were irreconcilable, the marriage counselor recommended a divorce.

irrefutable adj. indisputable; incontrovertible; undeniable. No matter how hard I tried to find a good comeback for her argument, I couldn’t think of one: her logic was irrefutable.

irrelevant adj. not applicable; unrelated. No matter how irrelevant the patient’s mumblings may seem, they give us some indications of what is on his mind. Irrelevancy, n.

irremediable adj. incurable; uncorrectable. The error she made was irremediable; she could see no way to rectify it.

irreparable adj. not able to be corrected or repaired. Your apology cannot atone for the irreparable damage you have done to her reputation.

irrepressible adj. unable to be restrained or held back. My friend Kitty’s curiosity was irrepressible. She poked her nose into everybody’s business and just laughed when I warned her that curiosity killed the cat.

irreproachable adj. blameless; impeccable. Homer’s conduct at the office party was irreproachable; even Marge hadn’t nothing bad to say about how he behaved.

irresolute adj. uncertain how to act; weak. Once you have made your decision, don’t waver; a leader should never appear irresolute.

irretrievable adj. impossible to recover or regain; irreparable. The left fielder tried to retrieve the ball, but it flew over the fence, bounced off a wall, and fell into the sewer; it was irretrievable.

irreverence n. lack of proper respect. Some people in the audience were amused by the irreverence of the comedian’s jokes about the pope; others felt offended by his lack of respect for their faith. Irreverent, adj.

irrevocable adj. unalterable; irreversible. As Sue dropped the “Dear John” letter into the mailbox, she suddenly had second thoughts and wanted to take it back, but she could not: her action was irrevocable.

isotope n. varying form of an element. The study of the isotopes of uranium led to the development of the nuclear bomb.

isthmus n. narrow neck of land connecting two larger bodies of land. In a magnificent feat of engineering, Goethals and his men cut through the isthmus of Panama in constructing the Panama Canal.

itinerant adj. wandering; traveling. He was an itinerant peddler and traveled through Pennsylvania and Virginia selling his wares. Also, n.

itinerary n. plan of a trip. Disliking sudden changes in plans when she traveled abroad, Ethel refused to make any alterations in her itinerary.

jabber v. chatter rapidly or unintelligibly. Why does the fellow insist on jabbering away in French when I can’t understand a word he says?

jaded adj. fatigued; surfeited. He looked for exotic foods to stimulate his jaded appetite.

jargon n. language used by a special group; technical terminology; gibberish. The computer salesmen at the store used a jargon of their own that we simply couldn’t follow; we had no idea what they were jabbering about.

jaundiced adj. prejudiced (envious, hostile, or resentful); yellowed. Because Sue disliked Carolyn, she looked at Carolyn’s paintings with a jaundiced eye, calling them formless smears. Newborn infants afflicted with jaundice look slightly yellow: they have jaundiced skin.

jaunt n. trip; short journey. He took a quick jaunt to Atlantic City.

jaunty adj. lighthearted; animated; easy and carefree. In Singing in the Rain, Gene Kelly sang and danced his way through the lighthearted title number in a properly jaunty style.

jeopardize v. endanger; imperil; put at risk. You can’t give me a D in chemistry; you’ll jeopardize my chances of being admitted to M.I.T. Jeopardy, n.

jettison v. throw overboard. In order to enable the ship to ride safely through the storm, the captain had to jettison much of his cargo.

jibe v. agree; be in harmony with. Moe says Curly started the fight; Curly insists it was Moe. Their stories just don’t jibe.

jingoist n. extremely aggressive and militant patriot; warlike chauvinist. Always bellowing “America first!” the congressman was such a jingoist you could almost hear the sabers rattling as he marched down the hall. Jingoism, n.

jocose adj. given to joking. The salesman was so jocose that many of his customers suggested that he become a stand-up comic.

jocular adj. said or done in jest. Although Bill knew the boss hated jokes, he couldn’t resist making one jocular remark; his jocularity cost him the job.

jocund adj. merry. Santa Claus is always cheerful and jocund.

jollity n. gaiety, cheerfulness. The festive Christmas dinner was a merry one, and old and young alike joined in the general jollity.

jostle v. shove; bump. In the subway he was jostled by the crowds.

jovial adj. good-natured; merry. A frown seemed out of place on his invariably jovial face.

jubilation n. rejoicing. There was great jubilation when the armistice was announced.

judicious adj. sound in judgment; wise. At a key moment in his life, he made a judicious investment that was the foundation of his later wealth.

juggernaut n. irresistible crushing force. Nothing could survive in the path of the juggernaut.
juncture n. crisis; joining point. At this critical juncture, let us think carefully before determining the course we shall follow.

junket n. trip, especially taken for pleasure by an official at public expense. Though she maintained she had gone abroad to collect firsthand data on the Common Market, the opposition claimed that her trip was merely a political junket.

junta n. group of persons joined in political intrigue; cabal. As soon as he learned of its existence, the dictator ordered the execution of all of the members of the junta.

jurisprudence n. science of law. She was a more student of jurisprudence than a practitioner of the law.

justification n. good or just reason; defense, excuse. The jury found him guilty of the more serious charge because they could see no possible justification for his actions.

juxtapose v. place side by side. Comparison will be easier if you juxtapose the two objects.

kaleidoscope n. tube in which patterns made by the reflection in mirrors of colored pieces of glass, etc., produce interesting symmetrical effects. People found a new source of entertainment while peering through the kaleidoscope; they found the ever-changing patterns fascinating.

ken n. range of knowledge. I cannot answer your question since this matter is beyond my ken.

kernel n. central or vital part; whole seed (as of corn). “Watson, buried within this tissue of lies there is a kernel of truth; when I find it, the mystery will be solved.”

killejoy n. grouch; spoilsport. At breakfast we had all been enjoying our bacon and eggs until that killjoy John started talking about how bad animal fats and cholesterol were for our health.

kindle v. start a fire; inspire. One of the first things Ben learned in the Boy Scouts was how to kindle a fire by rubbing two dry sticks together. Her teacher's praise for her poetry kindled a spark of hope inside Maya.

kindred adj. related; similar in nature or character. Tom Sawyer and Huck Finn were two kindred spirits. Also n.

kinetic adj. producing motion. Designers of the electric automobile find that their greatest obstacle lies in the development of light and efficient storage batteries, the source of the kinetic energy needed to propel the vehicle.

kismet n. fate. Kismet is the Arabic word for "fate."

kleptomaniac n. person who has a compulsive desire to steal. They discovered that the wealthy customer was a kleptomaniac when they caught her stealing some cheap trinkets.

knave n. untrustworthy person; rogue; scoundrel. Any politician nicknamed Tricky Dick clearly has the reputation of a knave. Knavery, n.

knead v. mix; work dough. Her hands grew strong from kneading bread.

knell n. tolling of a bell, especially to indicate a funeral, disaster, etc.; sound of the funeral bell. "The curfew tolls the knell of parting day." Also v.

knit v. contract into wrinkles; grow together. Whenever David worries, his brow knits in a frown. When he broke his leg, he sat around the house all day waiting for the bones to knit.

knot n. little, round hill. Robert Louis Stevenson's grave is on a knoll in Samoa; to reach the grave site, you must climb uphill and walk a short distance along a marked path.

knotty adj. intricate; difficult; tangled. What to Watson had been a knotty problem to Sherlock Holmes was simplicity itself.

kudos n. honor; glory; praise. The singer complacently received kudos on his performance from his entourage.

labile adj. likely to change; unstable. Because the hormonal changes they undergo affect their spirits, adolescents may become emotionally labile and experience sudden shifts of mood. Lability, n.

laborious adj. demanding much work or care; tedious. In putting together his dictionary of the English language, Doctor Johnson undertook a laborious task.

labyrinth n. maze. Hiding from Indian Joe, Tom and Becky soon lost themselves in the labyrinth of secret underground caves.

laceration n. torn, ragged wound. The stock-car driver needed stitches to close the lacerations he received in the car crash. Lacerate, v.

lachrymose adj. producing tears. His voice has a lachrymose quality that is more appropriate at a funeral than at a class reunion.

lackadaisical adj. lacking purpose or zest; halfhearted; languid. Because Gatsby had his mind more on his love life than on his finances, he did a very lackadaisical job of managing his money.

lackluster adj. dull. We were disappointed by the lackluster performance.

laconic adj. brief and to the point. Many of the characters portrayed by Clint Eastwood are laconic types: strong men of few words.

laggard adj. slow; sluggish. The sailor had been taught not to be laggard in carrying out orders. Laggard, n., v.
Test

Word List 27  Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

391. IRKSOME (A) interesting (B) lazy (C) tireless (D) devious (E) excessive
392. IRRELEVANT (A) lacking piety (B) fragile (C) congruent (D) pertinent (E) varied
393. IRREPARABLE (A) legible (B) correctable (C) proverbial (D) concise (E) legal
394. IRREVERENT (A) related (B) mischievous (C) respective (D) pious (E) violent
395. JADED (A) upright (B) stimulated (C) aspiring (D) applied (E) void
396. JAUNDICED (A) whitened (B) inflamed (C) quickened (D) aged (E) unbiased

397. JAUNTY (A) youthful (B) ruddy (C) strong (D) untraveled (E) sedate
398. JEOPARDY (A) patience (B) courage (C) safety (D) willingness (E) liberty
399. JETTISON (A) salvage (B) submerge (C) descend (D) decelerate (E) repent
400. JOCULAR (A) arterial (B) bloodless (C) verbose (D) serious (E) blind
401. JUDICIOUS (A) punitive (B) unwise (C) criminal (D) licit (E) temporary
402. KINDLE (A) dislike (B) quench (C) gather (D) sparkle (E) strange
403. LACHRYMOSE (A) cheering (B) smooth (C) passionate (D) curt (E) tense
404. LACKADAISICAL (A) monthly (B) possessing time (C) ambitious (D) pusillananimous (E) intelligent
405. LACONIC (A) milky (B) verbose (C) wicked (D) flagrant (E) derelict

Word List 28  lagoon-loquacious

lagoon  N. shallow body of water near a sea; lake. They enjoyed their swim in the calm lagoon.
lauty  N. laypersons; persons not connected with the clergy. The laity does not always understand the clergy's problems.
lambaste  v. beat; thrash verbally or physically. It was painful to watch the champion lambaste his opponent, tearing into him mercilessly.
lament  v. grieve; express sorrow. Even advocates of the war lamented the loss of so many lives in combat; lamentation, n.
lampoon  v. ridicule. This article lampoons the pretensions of some movie moguls. also n.
lancet  N. small surgical tool for making incisions. With the sharp tip of her lancet, Doctor Wheeler cut into the abscess, opening it to let it drain.
languid  ADJ. weary; sluggish; listless. Her siege of illness left her languid and pallid.
languish  v. lose animation or strength. Left at Miss Minchin's school for girls while her father went off to war, Sarah Crewe refused to languish; instead, she hid her grief and actively befriended her less fortunate classmates.
languor  N. lassitude; depression. His friends tried to overcome the languor into which he had fallen by taking him to parties and to the theater.
lank  ADJ. long and thin. Lank, gaunt, Abraham Lincoln was a striking figure.
lap  v. take in food or drink with one's tongue; splash gently. The kitten neatly lapped up her milk. The waves softly lapped against the pier.
larceny  N. theft. Because of the prisoner's record, the district attorney refused to reduce the charge from grand larceny to petty larceny.
larder  N. pantry, place where food is kept. The first thing Bill did on returning home from school was to check what snacks his mother had in the larder.
largess  N. generous gift. Lady Bountiful distributed largess to the poor.
lascivious  ADJ. lustful. Because they might arouse lascivious impulses in their readers, the lewd books were banned by the clergy.
• lassitude  N. languor; weariness. After a massage and a long soak in the hot tub, I surrendered to my growing lassitude and lay down for a nap.
• latent  ADJ. potential but undeveloped; dormant; hidden. Polaroid pictures are popular at parties because you can see the latent photographic image gradually appear before your eyes. latency, n.
lateral  ADJ. coming from the side. In order to get good plant growth, the gardener must pinch off all lateral shoots.
latitude  N. freedom from narrow limitations. I think you have permitted your son too much latitude in this matter.
laud v. praise. The NFL lauded Boomer Esiason’s efforts to raise money to combat cystic fibrosis. Also N. laudable, laudatory, ADJ.

lavish ADJ. liberal; wasteful. The actor’s lavish gifts pleased her. Also V.

lax ADJ. careless. We dislike restaurants where the service is lax and inattentive.

leaven v. cause to rise or grow lighter; enliven. As bread dough is leavened, it puffs up, expanding in volume.

lechery N. gross lewdness; lustfulness. In his youth he led a life of lechery and debauchery; he did not mend his ways until middle age. Lecherous, ADJ.

lecitern N. reading desk. The chaplain delivered his sermon from a hastily improvised lectern.

leery ADJ. suspicious; cautious. Don’t eat the sushi at this restaurant. I’m a bit leery about how fresh it is.

leeway N. room to move; margin. When you set a deadline, allow a little leeway.

legacy N. a gift made by a will. Part of my legacy from my parents is an album of family photographs.

legend N. explanatory list of symbols on a map. The legend at the bottom of the map made it clear which symbols stood for rest areas along the highway and which stood for public camp sites. (secondary meaning)

ligerdemain N. slight of hand. The magician demonstrated his renowned ligerdemain.

leniency N. mildness; permissiveness. Considering the gravity of the offense, we were surprised by the leniency of the sentence. Lienent, ADJ.

leonine ADJ. like a lion. He was leonine in his rage.

lethal ADJ. deadly. It is unsafe to leave lethal weapons where children may find them.

lethargic ADJ. drowsy; dull. In class, she tried to stay alert and listen to the professor, but the stuffy room made her lethargic; she felt as if she was about to nod off.

levee N. earthen or stone embankment to prevent flooding. As the river rose and threatened to overflow the levee, emergency workers rushed to reinforce the walls with sandbags.

levitate v. float in the air (especially by magical means). As the magician passed his hands over the recumbent body of his assistant, he appeared to rise and levitate about three feet above the table.

levity N. lack of seriousness or steadiness; frivolity. Stop giggling and wriggling around in the pew: such levity is improper in church.

 levy v. impose (a fine); collect (a payment). Crying “No taxation without representation!” the colonists demonstrated against England’s power to levy taxes. Also N.

livelier ADJ. lustful. They found his livelier stories objectionable.

lexicographer N. compiler of a dictionary. The new dictionary is the work of many lexicographers who spent years compiling and editing the work.

lexicon N. dictionary. I cannot find this word in any lexicon in the library.

liability N. drawback; debts. Her lack of an extensive vocabulary was a liability that she was able to overcome.

liaison N. contact that keeps parties in communication; go-between; secret love affair. As the liaison between the American and British forces during World War II, the colonel had to ease tensions between the leaders of the two armies. Romeo’s romantic liaison with Juliet ended in tragedy, also ADJ.

libel N. defamatory statement; act of writing something that smears a person’s character. If Batman wrote that the Joker was a dirty, rotten, mass-murdering criminal, could the Joker sue Batman for libel? Libelous, ADJ.

libertine N. debauched person, roué. Although she was aware of his reputation as a libertin, she felt she could reform him and help him abandon his dissolute way of life. Libidinous ADJ. lustful. They objected to his libidinous behavior.

libido N. emotional urges behind human activity. The psychiatrist maintained that suppression of the libido often resulted in maladjustment and neuroses.

libretto N. text of an opera. The composer of an opera’s music is remembered more frequently than the author of its libretto.

licentious ADJ. amoral; lewd and lascivious; unrestrained. Unscrupulously seducing the daughter of his host, Don Juan felt no qualms about the immorality of his licentious behavior.

lien N. legal claim on a property. There was a delay before Ralph could take possession of his late uncle’s home; apparently, another claimant had a lien upon the estate.

ligneous ADJ. like wood. Petrified wood may be ligneous in appearance, but it is stone-like in composition.

litilliputian ADJ. extremely small. Tiny and delicate, the model was built on a litilliputian scale. Also N.

limber ADJ. flexible. Hours of ballet classes kept him limber.

limbo N. region near heaven or hell where certain souls are kept: a prison (slang). Among the divisions of Hell are Purgatory and Limbo.

limn v. draw; outline; describe. Paradoxically, the more realistic the details this artist chooses, the better able she is to limn her fantastic, other-worldly landscapes.

limpid ADJ. clear. A limpid stream ran through his property.

lineage N. descent; ancestry. He traced his lineage back to Mayflower days.

lineaments N. features, especially of the face. She quickly sketched the lineaments of his face.

linger v. loiter or dawdle; continue or persist. Hoping to see Juliet pass by, Romeo lingered outside the Capulet house for hours. Though Mother made stuffed cabbage on Monday, the smell lingered around the house for days.

linguistic ADJ. pertaining to language. The modern tourist will encounter very little linguistic difficulty as English has become an almost universal language.

lionize v. treat as a celebrity. She enjoyed being lionized and adored by the public.
liquidate  v. settle accounts; clear up. He was able to liquidate all his debts in a short period of time.

list  v. tilt; lean over. That flagpole should be absolutely vertical; instead, it lists to one side. (secondary meaning) also N.

listless  ADJ. lacking in spirit or energy. We had expected her to be full of enthusiasm and were surprised by her listless attitude.

litany  N. supplicatory prayer. On this solemn day, the congregation responded to the prayers of the priest during the litany with fervor and intensity.

lithe  ADJ. flexible; supple. Her figure was lithe and willowy.

litigation  N. lawsuit. Try to settle this amicably; I do not want to start litigation. Litigant, N.

litotes  N. understatement for emphasis. To say, “He little realizes,” when we mean that he does not realize at all, is an example of the kind of understatement we call litotes.

lived  ADJ. lead-colored; black and blue; ashen; enaged. His face was so livid with rage that we were afraid that he might have an attack of apoplexy.

loath  ADJ. reluctant; disinclined. Romeo and Juliet were both loath for him to go.

loathe  v. detest. Boiling and hissing, the audience showed how much they loathed the villain. Loathsome, ADJ.

lode  N. metal-bearing vein. If this lode that we have discovered extends for any distance, we have found a fortune.

lofty  ADJ. very high. Though Barbara Jordan’s fellow students used to tease her about her lofty ambitions, she rose to hold one of the highest positions in the land.

log  N. record of a voyage or flight; record of day-to-day activities. “Flogged two seamen today for insubordination,” wrote Captain Bligh in the Bounty’s log. To see how much work I’ve accomplished recently, just take a look at the number of new files listed on my computer log, also V.

loiter  v. hang around; linger. The policeman told him not to loiter in the alley.

loll  v. lounge about; lounge. She loll’d around in their chair watching television.

longevity  N. long life. When he reached ninety, the old man was proud of his longevity.

loom  v. appear or take shape (usually in an enlarged or distorted form). The shadow of the gallows loomed threateningly above the small boy.

lope  v. gallop slowly. As the horses loped along, we had an opportunity to admire the ever-changing scenery.

loquacious  ADJ. talkative. Though our daughter barely says a word to us these days, put a phone in her hand and see how loquacious she can be: our phone bills are out of sight! Loquacity, N.

Test

Word List 28  Antonyms

Each of the following questions consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

406. LAMPOON (A) darken (B) praise (C) abandon (D) sail (E) fly

407. LANGUOR (A) vitality (B) length (C) embarrassment (D) wine (E) avarice

408. LATENT (A) trim (B) forbidding (C) execrable (D) early (E) obvious

409. LAVISH (A) hostie (B) unwashed (C) timely (D) decent (E) frugal

410. LAUDATORY (A) dirtying (B) disclaiming (C) defamatory (D) inflammatory (E) debased

411. LAX (A) salty (B) strict (C) shrill (D) boring (E) cowardly

412. LECHERY (A) trust (B) compulsion (C) zeal (D) addiction (E) purity

413. LETHARGIC (A) convalescent (B) beautiful (C) enervating (D) invigorating (E) interrogating

414. LEVITY (A) bridge (B) dam (C) praise (D) blame (E) solemnity

415. LILLIPUTIAN (A) destructive (B) proper (C) gigantic (D) elegant (E) barren

416. LIMPID (A) erect (B) turbid (C) tangential (D) timid (E) weary

417. LITHE (A) stiff (B) limpid (C) facetious (D) insipid (E) vast

418. LIVID (A) alive (B) mundane (C) positive (D) undiscolored (E) vast

419. LOATH (A) loose (B) evident (C) deliberate (D) eager (E) tiny

420. LOQUACIOUS (A) taciturn (B) sentimental (C) soporific (D) soothing (E) sedate
lout  N. clumsy person. The delivery boy is an awkward lout. loutish, ADJ.

low  v. mack. From the hilltop, they could see the herd like ants in the distance; they couldn't hear the cattle low.

- lucid  ADJ. easily understood; clear; intelligible. Lexy makes an excellent teacher; her explanations of technical points are lucid enough for a child to grasp. lucidity, N.

- lucrative  ADJ. profitable. He turned his hobby into a lucrative profession.

- lucre  N. money. Preferring lucre to undying fame, he wrote stories of popular appeal.

- ludicrous  ADJ. laughable; trifling. Let us be serious; this is not a ludicrous issue.

- lugubrious  ADJ. mournful. The lugubrious howling of the dogs added to our sadness.

- lull  N. moment of calm. Not wanting to get wet, they waited under the awning for a lull in the rain.

- lumbago  v. move heavily or clumsily. Still somewhat torpid after its long hibernation, the bear lumbered through the woods.

- lumen  N. unit of light energy (one candle's worth). In buying light bulbs, she checked not only their power, as measured in watts, but their brightness, as measured in lumens.

- luminous  ADJ. shining; issuing light. The sun is a luminous body.

- lunatic  ADJ. pertaining to the moon. Lunar craters can be plainly seen with the aid of a small telescope.

- lunge  v. make a quick forward dive or reach; thrust. The wide receiver lunged forward to grab the football. With his sword, Dargalan lunged at his adversary, also N.

- lurid  ADJ. wild; sensational; graphic; gruesome. Do the lurid cover stories in the Enquirer actually influence people to buy that trashy tabloid?

- lurk  v. stealthily lie in waiting; siest; exist unperceived. "Who knows what evils lurk in the hearts of men? The Shadow knows."

- luscious  ADJ. pleasing to taste or smell. The ripe peach was luscious.

- lustre  N. shine; gloss. The soft lustre of the silk is; the dim light was pleasing.

- lustrous  ADJ. shining. Her large and lustrous eyes gave a touch of beauty to an otherwise drab face.

- luxuriant  ADJ. abundant; rich and splendid; fertile. Lady Godiva was completely covered by her luxuriant hair.

- macabre  ADJ. gruesome; grisly. The city morgue is a macabre spot for the uninitialized.

- mace  N. ceremonial staff; clublike medieval weapon. The Grand Marshal of the parade raised his mace to signal that it was time for the procession to begin.

- macerate  v. soften by soaking in liquid; waste away. The strawberries had been soaking in the champagne for so long that they had begun to macerate; they literally fell apart at the touch of a spoon.

- Machiavellian  ADJ. crafty; double-dealing. I do not think he will be a good ambassador because he is not accustomed to the Machiavellian maneuverings of foreign diplomats.

- machinations  N. evil schemes or plots. Fortunately, Batman saw through the wily machinations of the Riddler and saved Gotham City from destruction by the forces of evil.

- mace  ADJ. spotted; stained. Instead of writing that Gorbachev had a birthmark on his forehead, the pompous young poet sang of the former premier's mace-colored brow.

- madrigal  N. pastoral song. Her program of folk songs included several madrigals that she sang to the accompaniment of a lute.

- maelstrom  N. whirlpool. The canoe was tossed about in the maelstrom.

- magisterial  ADJ. authoritative; imperious. The learned doctor laid down the law to his patient in a magisterial tone of voice.

- magnanimity  N. generosity. Noted for his magnanimity, philanthropist Eugene Lang donated millions to charity.

- magnanimous  ADJ.

- magnate  N. person of prominence or influence. Growing up in Pittsburgh, Annie Dillard was surrounded by the mansions of the great steel and coal magnates who set their mark on that city.

- magniloquent  ADJ. haughty, pompous. In their stories of the trial, the reporters ridiculed the magniloquent speeches of the defense attorney.

- magnitude  N. greatness; extent. It is difficult to comprehend the magnitude of his crime.

- main  v. mutilate; injure. The hospital could not take care of all who had been mangled or mained in the railroad accident.

- maladroit  ADJ. clumsy; blundering. "Oh! My stupid tongue!" exclaimed Jane, embarrassed at having said anything so maladroit.

- malady  N. illness. A mysterious malady swept the country, filling doctors' offices with feverish, purple-spotted patients.

- malaria  N. uneasiness; vague feeling of ill health. Feeling slightly queasy before going onstage, Carol realized that this touch of malaria was merely stage fright.

- malapropism  N. comic misuse of a word. When Mrs. Malaprop criticizes Lydia for being "as headstrong as an alleyway on the banks of the Nile," she confuses "alleyway" and "alligator" in a typical malapropism.

- malcontent  N. person dissatisfied with existing state of affairs. He was one of the few malcontents in Congress.
he constantly voiced his objections to the presidential program; also adj. madediction n. curse. When the magic mirror revealed that Snow White was still alive, the wicked queen cried out in rage and uttered dreadful maledictions.

malefactor n. evildoer; criminal. Mighty Mouse will save the day, hunting down malefactors and rescuing innocent mice from peril.

malevolent adj. wishing evil. Iago is a malevolent villain who takes pleasure in ruining Othello. malevolence n.

malefeasance n. wrongdoing. The authorities did not discover the campaign manager's malefeasance until after he had spent most of the money he had embezzled.

malicious adj. hateful; spiteful; Jealous of Cinderella's beauty, her malicious stepsisters expressed their spite by forcing her to do menial tasks. malice n.

malign v. speak evil of; bad-mouth; defame. Putting her hands over her ears, Rose refused to listen to Betty malign her friend Susan. malignity n.

malignant adj. injurious; tending to cause death; aggressively malevolent. Though many tumors are benign, some are malignant, growing out of control and endangering the life of the patient. malignancy n.

maligner n. one who feigns illness to escape duty. The captain ordered the sergeant to punish all malingerers and force them to work. malinger v.

malleable adj. capable of being shaped by pounding; impressionable. Gold is a malleable metal, easily shaped into bracelets and rings. Fagin hoped Oliver was a malleable lad, easily shaped into a thief.

malodorous adj. foul-smelling. The compost heap was most malodorous in summer.

mammal n. vertebrate animal whose female suckles its young. Many people regard the whale as a fish and do not realize that it is a mammal.

mammoth adj. gigantic; enormous. To try to memorize every word on this vocabulary list would be a mammoth undertaking; take on projects that are more manageable in size.

manacled v. restrain; handcuff. The police immediately manacled the prisoner so he could not escape. also n.

mandate n. order; charge. In his inaugural address, the president stated that he had a mandate from the people to seek an end to social evils such as poverty and poor housing. also v.

mandatory adj. obligatory. These instructions are mandatory; any violation will be severely punished.

mangy adj. shabby; wretched. We finally threw out the mangy rug that the dog had destroyed.

maniacal adj. raging mad; insane. Though Mr. Rochester had locked his mad wife in the attic, he could still hear her maniacal laughter echoing throughout the house. maniac n.

manifest adj. evident; visible; obvious. Digby's embarrassment when he met Madonna was manifest: his ears turned bright pink, he kept scuffling one shoe in the dirt, and he couldn't look her in the eye.

manifestation n. outward demonstration; indication. Mozart's early attraction to the harpsichord was the first manifestation of his pronounced musical bent.

manifesto n. declaration; statement of policy. The Communist Manifesto by Marx and Engels proclaimed the principles of modern communism.

manifest adj. numerous; varied. I cannot begin to tell you how much I appreciate your manifold kindnesses.

manipulate v. operate with one's hands; control or play upon (people, forces, etc.) artfully. Jim Henson understood how to manipulate the Muppets. Madonna understands how to manipulate publicity (and men).

mannered adj. affected; not natural. Attempting to copy the style of his wealthy neighbors, Gatsby adopted a mannered, artificial way of speech.

marumit v. emancipate; free from bondage. Enlightened slave owners were willing to marumit their slaves and thus put an end to the evil of slavery in the country.

marital adj. pertaining to marriage. After the publication of his book on marital affairs, he was often consulted by married people on the verge of divorce.

maritime adj. bordering on the sea; nautical. The Maritime Provinces depend on the sea for their wealth.

marked adj. noticeable; targeted for vengeance. He walked with a marked limp, a souvenir of an old IRA attack. As British ambassador, he knew he was a marked man.

marred adj. damaged; disfigured. She had to refinish the marred surface of the table. mar v.

marshal v. put in order. At a debate tournament, extemporaneous speakers have only a minute or two to marshal their thoughts before addressing their audience.

marsupial n. one of a family of mammals that nurse their offspring in a pouch. The most common marsupial in North America is the opossum.

martial adj. warlike. The sound of martial music inspired the young cadet with dreams of military glory.

martinet n. No talking at meals! No mingling with the servants! Miss Minchin was a martinet who insisted that the schoolgirls in her charge observe each regulation to the letter.

martyr n. one who voluntarily suffers death for his or her religion or cause; great sufferer. By burning her at the stake, the English made Joan of Arc a martyr for her faith. Mother played the martyr by staying home to clean the house while the rest of the family went off to the beach.

masochist n. person who enjoys his own pain. The masochist begs, "Hit me." The sadist smiles and says, "I won't."

masticate v. chew. We must masticate our food carefully and slowly in order to avoid digestive disorders.

materialism n. preoccupation with physical comforts and things. By its nature, materialism is opposed to idealism, for where the materialist emphasizes the needs of the body, the idealist emphasizes the needs of the soul.

maternal adj. motherly. Many animals display maternal instincts only while their offspring are young and helpless. maternity n.
matriarch n. woman who rules a family or larger social group. The matriarch ruled her gypsy tribe with a firm hand.

matriculate v. enroll (in college or graduate school). Incoming students formally matriculate at our college in a special ceremony during which they sign the official register of students.

matrix n. point of origin; array of numbers or algebraic symbols; mold or die. Some historians claim the Nile Valley was the matrix of Western civilization.

maudlin adj. effusively sentimental. Whenever a particularly maudlin teardriker was playing at the movies, Marvin would embarrass himself by weeping copiously.

maul v. handle roughly. The rock star was mauled by his overexcited fans.

Test

Word List 29 Synonyms and Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar to or opposite of the word in capital letters and write the letter of your choice on your answer paper.

421. LUGUBRIOUS (A) frantic (B) cheerful (C) burdensome (D) oily (E) militant
422. LURID (A) dull (B) duplicate (C) heavy (D) painstaking (E) intelligent
423. MACABRE (A) musical (B) frightening (C) chewed (D) wicked (E) exceptional
424. MAGNILEQUENT (A) loquacious (B) bombastic (C) rudimentary (D) qualitative (E) minimizing
425. MAGNITUDE (A) realization (B) fascination (C) enormity (D) gratitude (E) interference
426. MALADOBIT (A) malicious (B) starving (C) thirsty (D) tactless (E) artistic

427. MALEDICTION (A) misfortune (B) hap (C) fruition (D) correct pronunciation (E) benediction
428. MALEFACTOR (A) quail (B) lawbreaker (C) beneficiary (D) barkeeper (E) female agent
429. MALEVOLENT (A) kindly (B) vacuous (C) ambivalent (D) volatile (E) primitive
430. MALIGNS (A) intersperse (B) vary (C) emphasize (D) frighten (E) eulogize
431. MALLEABLE (A) brittle (B) blatant (C) brilliant (D) brownish (E) basking
432. MANICAL (A) demoniac (B) saturated (C) sane (D) sanitary (E) handcuffed
433. MANIFEST (A) limited (B) obscure (C) faulty (D) varied (E) vital
434. MANUMIT (A) print (B) impress (C) enslave (D) endeavor (E) fail
435. MARTIAL (A) bellicose (B) celibate (C) divorced (D) quiescent (E) planetary

Word List 30 mausoleum-misnomer

mausoleum n. monumental tomb. His body was placed in the family mausoleum.

mauve adj. pale purple. The mauve tint in the lilac bush was another indication that spring had finally arrived.

maverick n. rebel; nonconformist. To the masculine literary establishment, George Sand with her insistence on wearing trousers and smoking cigarettes was clearly a maverick who fought her proper womanly role.

mawkish adj. mushy and gushy; icky-sticky sentimental; maudlin. Whenever Gigi and her boyfriend would sigh and get all lovey-dovey, her little brother would shout, "Yuck!" protesting their mawkish behavior.

maxim n. proverb; a truth pithily stated. Aesop’s fables illustrate moral maxims.

mayhem n. injury to body. The riot was marked not only by mayhem, with its attendant loss of life and limb, but also by arson and pillage.

meager adj. scanty; inadequate. Still hungry after his meager serving of porridge, Oliver Twist asked for a second helping.

maulmouthead adj. indirect in speech, hypocritical; evasive. Rather than tell Jill directly what he disliked, Jack made a few mauledmouth comments and tried to change the subject.

meander v. wind or turn in its course. Needing to stay close to a source of water, he followed every twist and turn of the stream as it meandered through the countryside.

meddlesome adj. interfering. He felt his marriage was suffering because of his meddlesome mother-in-law.

mediate v. settle a dispute through the services of an outsider. King Solomon was asked to mediate a dispute between two women, each of whom claimed to be the mother of the same child.
mediocre adj. ordinary; commonplace. We were disappointed because he gave a rather mediocre performance in this role.

meditation n. reflection; thought. She reached her decision only after much meditation.

medium n. element that is a creature’s natural environment; nutrient setting in which microorganisms are cultivated. We watched the dolphins sporting in the sea and marveled at their grace in their proper medium. The bacteriologist carefully observed the microorganisms’ rapid growth in the culture medium.

medium n. appropriate occupation or means of expression; channel of communication; compromise. Film was Anna’s medium: she expressed herself through her cinematography. However, she never watched television, claiming she despised the medium. For Anna, it was all or nothing: she could never strike a happy medium.

medley n. mixture. To avoid boring dancers by playing any one tune for too long, bands may combine three or four tunes into a medley.

meek adj. submissive; patient and long-suffering. Mr. Barrett never expected his meek daughter would dare to defy him by eloping with her suitor.

megalomania n. mania for doing grandiose things. Developers who spend millions trying to build the world’s tallest skyscraper suffer from megalomania.

melancholy adj. gloomy; morose; blue. To Eugene, stuck in his small town, a train whistle was a melancholy sound, for it made him think of all the places he would never get to see.

melee n. fight. The captain tried to ascertain the cause of the melee that had broken out among the crew members.

mellifluous adj. sweetly or smoothly flowing; melodious. Italian is a mellifluous language, especially suited to being sung.

memento n. token; reminder. Take this book as a memento of your visit.

memorialize v. commemorate. Let us memorialize his great contribution by dedicating this library in his honor.

menagerie n. collection of wild animals. Whenever the children run wild around the house, Mom shouts, “Calm down! I’m not running a menagerie!”

■ mendacious adj. lying; habitually dishonest. Distrusting Huck from the start, Miss Watson assumed he was mendacious and refused to believe a word he said. mendacity, n.

■ mendicant n. beggar. “O noble sir, give alms to the poor,” cried Aladdin, playing the mendicant. mendicancy, n.

menial adj. suitable for servants; lowly; mean. Her wicked stepmother forced Cinderella to do menial tasks around the house while her ugly stepisters lolled around painting their toenails. also n.

mentor n. counselor; teacher. During this very trying period, she could not have had a better mentor, for the teacher was sympathetic and understanding.

mercantile adj. concerning trade. I am more interested in the opportunities available in the mercantile field than I am in those in the legal profession.

mercurial adj. capricious; changing; fickle. Quick as quicksilver to change, he was mercurial in nature and therefore unreliable.

meretricious adj. flashy; tawdry. Her jewels were expensive but not meretricious.

■ merger n. combination (of two business corporations). When the firm’s president married the director of financial planning, the office joke was that it wasn’t a marriage, it was a merger.

mesmerize v. hypnotize. The incessant drone seemed to mesmerize him and place him in a trance.

metallurgical adj. pertaining to the art of removing metals from ores. During the course of his metallurgical research, the scientist developed a steel alloy of tremendous strength.

■ metamorphosis n. change of form. The metamorphosis of caterpillar to butterfly is typical of many such changes in animal life. metamorphose, v.

metaphor n. implied comparison. “He soared like an eagle” is an example of a simile; “He is an eagle in flight,” a metaphor.

■ metaphysical adj. pertaining to speculative philosophy. The modern poets have gone back to the fanciful poems of the metaphysical poets of the seventeenth century for many of their images. metaphysics, n.

■ mete v. measure; distribute. He tried to be impartial in his efforts to mete out justice.

■ meteoric adj. swift; momentarily brilliant. We all wondered at his meteoric rise to fame.

■ methodical adj. systematic. An accountant must be methodical and maintain order among his financial records.

■ meticulous adj. excessively careful; painstaking. Martha Stewart was a meticulous housekeeper, fussing about each and every detail that went into making up her perfect home.

metropolis n. large city. Every evening this terminal is filled with the thousands of commuters who are going from this metropolis to their homes in the suburbs.

mettle n. courage; spirit. When challenged by the other horses in the race, the thoroughbred proved its mettle by its determination to hold the lead. mettlesome, adj.

miasma n. swamp gas; heavy, vaporous atmosphere, often emanating from decaying matter; pervasive corrupting influence. The smell hung over Victorian London like a dark cloud; noisome, reeking of decay, it was a visible miasma.

microcosm n. small world; the world in miniature. The village community that Jane Austen depicts serves as a microcosm of English society in her time, for in this small world we see all the social classes meeting and mingling.

■ migrant adj. changing its habitat; wandering. These migrant birds return every spring. also n.
migratory adj. wandering: The return of the migratory birds to the northern sections of this country is a harbinger of spring.
milieu n. environment; means of expression. Surrounded by smooth preppies and arty bohemians, the country boy from Smalltown, USA, felt out of his milieu. Although he has produced excellent oil paintings and lithographs, his proper milieu is watercolor.
militant adj. combative; bellicose. Although at this time he was advocating a policy of neutrality, one could usually find him adopting a more militant attitude. Also N. 
militate v. work against. Your record of laiseness and absence will militate against your chances of promotion.
millennium n. thousand-year period; period of happiness and prosperity. I do not expect the millennium to come during my lifetime.
mimicry n. imitation. Her gift for mimicry was so great that her friends said that she should be in the theater.
mimentary adj. menacing; threatening. Jabbing a minary forefinger at Dorothy, the Wicked Witch cried, "I'll get you, and your little dog, too!"
mincing adj. affectedly dainty. Yum-Yum waked across the stage with mincing steps.
mignon n. a servile dependent. He was always accompanied by several of his minions because he enjoyed their subservience and flattery.

message adj. extremely small. Why should I involve myself with a project so minute a chance for success?
minute adj. extremely small. The twins resembled one another closely; only minute differences set them apart.
minuette n. petty details. She would have liked to ignore the minuette of daily living.
mirage n. unreal reflection; optical illusion. The lost prospector was fooled by a mirage in the desert.

mire v. entangle; stick in swampy ground. Their rear wheels became mired in mud. Also N.
mirth n. merriment; laughter. Sober Malvolio found Sir Toby's mirth improper.

misadventure n. mischance; ill luck. The young explorer met death by misadventure.

misanthrope n. one who hates mankind. In Gulliver's Travels, Swift portrays human beings as vile, degraded beasts. For this reason, various critics consider him a misanthrope, misanthropic, adj.

misapprehension n. error; misunderstanding. To avoid misapprehension, I am going to ask all of you to repeat the instructions I have given.

miscellany n. mixture of writings on various subjects. This is an interesting miscellany of nineteenth-century prose and poetry.

mischance n. ill luck. By mischance, he lost his week's salary.

misconstrue v. interpret incorrectly; misjudge. She took the passage seriously rather than humorously because she misconstrued the author's ironic tone.

miscreant n. wretch; villain. His kindness to the miscreant amazed all of us who had expected to hear severe punishment pronounced.

misdemeanor n. minor crime. The culprit pleaded guilty to a misdemeanor rather than face trial for a felony.
miserly adj. stingy; mean. Transformed by his vision on Christmas Eve, mean old Scrooge ceased being miserly and became a generous, kind old man. miser, n.

misgivings n. doubts. Hamlet described his misgivings to Horatio but decided to fence with Laertes despite his foreboding of evil.

mishap n. accident. With a little care you could have avoided this mishap.

misnomer n. wrong name; incorrect designation. His tyrannical conduct proved to all that his nickname, King Eric the Just, was a misnomer.
misogamy  N. hatred of marriage. He remained a bachelor not because of misogamy but because of ill fate: his fiancée died before the wedding.

misogynist  N. hater of women. She accused him of being a misogynist because he had been a bachelor all his life.

missile  N. object to be thrown or projected. After carefully folding his book report into a paper airplane, Beavis threw the missile across the classroom at Butthead. Rocket scientists are building guided missiles; Beavis and Butthead can barely make unguided ones.

missive  N. letter. The ambassador received a missive from the Secretary of State.

mite  N. very small object or creature; small coin. Gnats are annoying mites that sting.

mitigate  v. lessen in intensity; moderate; appease. Because solar energy has the power to reduce greenhouse gases and provide increased energy efficiency, conversion to the use of solar energy may help mitigate global warming.

mnemonic  adj. pertaining to memory. She used mnemonic tricks to master new words.

mobile  adj. movable; not fixed. The mobile blood bank operated by the Red Cross visited our neighborhood today. mobility, N.

mock  v. ridicule; imitate, often in derision. It is unkind to mock anyone; it is stupid to mock anyone significantly bigger than you. mockery, N.

mode  N. prevailing style; manner; way of doing something. The rock star had to have her hair done in the latest mode: frizzed, with occasional moussed spikes for variety. Henry plans to adopt a simpler mode of life: he is going to become a mushroom hunter and live off the land.

modicum  N. limited quantity. Although his story is based on a modicum of truth, most of the events he describes are fictitious.

modish  adj. fashionable. She always discarded all garments that were no longer modish.

modulate  v. tone down in intensity; regulate; change from one key to another. Always singing at the top of her lungs, the budding Brunhilde never learned to modulate her voice. modulation, N.

mogul  N. powerful person. The oil moguls made great profits when the price of gasoline rose.

molecule  N. the smallest particle (one or more atoms) of a substance that has all the properties of that substance.

In chemistry, we study how atoms and molecules react to form new substances.

mollify  v. soothe. The airline customer service representative tried to mollify the angry passenger by offering her a seat in first class.

mollycoddle  v. pamper; indulge excessively. Don’t mollycoddle the boy. Maud! You’ll spoil him.

molt  v. shed or cast off hair or feathers. When Molly’s canary molted, he shed feathers all over the house.

melted  v. melted. The city of Pompeii was destroyed by volcanic ash rather than by molten lava flowing from Mount Vesuvius.

momentous  adj. very important. When Marie and Pierre Curie discovered radium, they had no idea of the momentous impact their discovery would have upon society.

momentum  N. quantity of motion of a moving body; impetus. The car lost momentum as it tried to ascend the steep hill.

monarchy  N. government under a single ruler. Though England today is a monarchy, there is some question whether it will be one in 20 years, given the present discontent at the prospect of Prince Charles as king.

monastic  adj. related to monks or monasteries; removed from worldly concerns. Withdrawing from the world, Thomas Merton joined a contemplative religious order and adopted the monastic life.

monetary  adj. pertaining to money. Jane held the family purse strings; she made all monetary decisions affecting the household.

monochromatic  adj. having only one color. Most people who are color blind actually can distinguish several colors; some, however, have a truly monochromatic view of a world all in shades of gray.

monolithic  adj. solidly uniform; unyielding. Knowing the importance of appearing resolute, the patriots sought to present a monolithic front.

monotheism  N. belief in one God. Abraham was the first to proclaim his belief in monotheism.

monotony  N. sameness leading to boredom. What could be more deadly dull than the monotony of punching numbers into a computer hour after hour? monotonous, adj.

monumental  adj. massive. Writing a dictionary is a monumental task.

moodiness  N. fits of depression or gloom. We could not discover the cause of her recurrent moodiness.
moratorium n. legal delay of payment. If we declare a moratorium and delay collection of debts for six months, I am sure the farmers will be able to meet their bills.

morbid adj. given to unwholesome thought; moody; characteristic of disease. People who come to disaster sites just to peer at the grisly wreckage are indulging their morbid curiosity. Morbidity, n.

mordant adj. biting; sarcastic; stinging. Actors feared the critic's mordant pen.

mores n. conventions; moral standards; customs. In America, Benazir Bhutto dressed as Western women did; in Pakistan, however, she followed the mores of her people, dressing in traditional veil and robes.

moribund adj. dying. Hearst took a moribund, failing weekly newspaper and transformed it into one of the liveliest, most profitable daily papers around.

morose adj. ill-humored; sullen; melancholy. Forced to take early retirement, Bill acted morose for months; then, all of a sudden, he shook off his gloom and was his usual cheerful self.

mortician n. undertaker. The mortician prepared the corpse for burial.

mortify v. humiliate; punish the flesh. She was so mortified by her blunder that she ran to her room in tears.

mosaic n. picture made of small, colorful inlaid tiles. The mayor compared the city to a beautiful mosaic made up of people of every race and religion on earth. Also adj.

mote n. small speck. The tiniest mote in the eye is very painful.

motif n. theme. This simple motif runs throughout the score.

motility n. ability to move spontaneously. Certain organisms exhibit remarkable motility; motile spores, for example, may travel for miles before coming to rest. Motile, adj.

motley adj. multicolored; mixed. The jester wore a motley tunic, red and green and blue and gold all patched together haphazardly. Captain Ahab had gathered a motley crew to sail the vessel: old sea dogs and runaway boys, pillars of the church and drunkards, even a tattooed islander who terrified the rest of the crew.

mottled adj. blotched in coloring; spotted. When old Falstaff blushed, his face became mottled, all pink and purple and red.

mountebank n. charlatan; boastful pretender. The patent medicine man was a mountebank.

muddle v. confuse; mix up. Her thoughts were muddled and chaotic. Also n.

muggy adj. warm and damp. August in New York City is often muggy.

mulct v. defraud a person of something. The lawyer was accused of trying to mulct the boy of his legacy.

multifarious adj. varied; greatly diversified. A career woman and mother, she was constantly busy with the multifarious activities of her daily life.

multiform adj. having many forms. Snowflakes are multiform but always hexagonal.

multilingual adj. having many languages. Because they are bordered by so many countries, the Swiss people are multilingual.

multiplicity n. state of being numerous. She was appalled by the multiplicity of details she had to complete before setting out on her mission.

mundane adj. worldly as opposed to spiritual; everyday. Uninterested in philosophical or spiritual discussions, Tom talked only of mundane matters such as the daily weather forecast or the latest baseball results.

munificent adj. very generous. Shamelessly fawning over a particularly generous donor, the dean kept referring to her as "our munificent benefactor." Munificence.

mural n. wall painting. The walls of the Chicano Community Center are covered with murals painted in the style of Diego Rivera, the great Mexican artist.

murky adj. dark and gloomy; thick with fog; vague. The murky depths of the swamp were so dark that you couldn’t tell the vines and branches from the snakes.

murkiness, n.

muse v. ponder. For a moment he mused about the beauty of the scene, but his thoughts soon changed as he recalled his own personal problems. Also n.

musky adj. having the odor of musk. She left a trace of musky perfume behind her.

muster v. gather; assemble. Washington mustered his forces at Trenton.

musty adj. stale; spoiled by age. The attic was dark and musty.

mutability n. ability to change in form; fickleness. Going from rags to riches, and then back to rags again, the bankrupt financier was a victim of the mutability of fortune. Mutably, adj.

muted adj. silent; muffled; toned down. Thanks to the thick, sound-absorbing walls of the cathedral, only muted traffic noise reached the worshippers within. Mute.

mutate v. maim. The torturer threatened to mutate his victim.

mutinous adj. unruly; rebellious. The captain had to use force to quiet his mutinous crew. Mutiny.

myopic adj. nearsighted; lacking foresight. Stumbling into doors despite the coke-bottle lenses on his glasses, the nearsighted Mr. Magoo is markedly myopic. In playing all summer long and failing to store up food for winter, the grasshopper in Aesop’s fable was myopic as well. Myopia.

myriad n. very large number. Myriads of mosquitoes from the swamps invades our village every twilight. Also adj.

nadir n. lowest point. Although few people realized it, the Dow-Jones averages had reached their nadir and would soon begin an upward surge.

naïveté n. quality of being unsophisticated; simplicity; artlessness; guillibility. Touched by the naïveté of sweet, convent-trained Cosette, Marius pledges himself to protect her innocence. Naïve, adj.
narcissist N. conceited person. A narcissist is his own best friend.
narrative adj. related to telling a story. A born teller of tales, Olsen used her impressive narrative skills to advantage in her story "I Stand Here Ironing," also n. narration, n.
nascent adj. incipient; coming into being. If we could identify these revolutionary movements in their nascent state, we would be able to eliminate serious trouble in later years.

Test

Word List 31 Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

451. MODISH (A) sentimental (B) stylish (C) vacillating (D) contrary (E) adorned

452. MOLLIFY (A) avenge (B) attenuate (C) attribute (D) mortify (E) appease

453. MONETARY (A) boring (B) fascinating (C) fiscal (D) stationary (E) scrupulous

454. MORATORIUM (A) burial (B) gathering (C) delay (D) refusal (E) suspicion

455. MORDANT (A) dying (B) trenchant (C) fabricating (D) controlling (E) avenging

456. MORIBUND (A) dying (B) appropriate (C) leather bound (D) answering (E) undertaking

457. MOTLEY (A) active (B) disguised (C) variegated (D) somber (E) sick

458. MUGGY (A) attacking (B) fascinating (C) humid (D) characteristic (E) gielid

459. MULCT (A) swindle (B) hold (C) record (D) print (E) fertilize

460. MULTILINGUAL (A) variegated (B) polyglot (C) multilateral (D) polyandrous (E) multiplied

461. MUNDANE (A) global (B) futile (C) spatial (D) heretic (E) worldly

462. MUNIFICENT (A) grandiose (B) puny (C) philanthropic (D) poor (E) gracious

463. MUSTY (A) flat (B) necessary (C) indifferent (D) nonchalant (E) vivid

464. MYOPIC (A) visionary (B) nearsighted (C) moral (D) glassy (E) blind

465. NASCENT (A) incipient (B) ignorant (C) loyal (D) treacherous (E) unnamed

Word List 32 natation-obsidian

natation n. swimming. The Red Cross emphasizes the need for courses in natation.
natty adj. neatly or smartly dressed. Priding himself on being a natty dresser, the gangster Bugsy Segel collected a wardrobe of imported suits and ties.
nauseate v. cause to become sick; fill with disgust. The foul smells began to nauseate her.
nautical adj. pertaining to ships or navigation. The Maritime Museum contains models of clipper ships, logbooks, anchors, and many other items of a nautical nature.
navigable adj. wide and deep enough to allow ships to pass through; able to be steered. So much sand had built up at the bottom of the canal that the waterway was barely navigable.
nebulous adj. vague; hazy; cloudy. Phil and Dave tried to come up with a clear, intelligible business plan, not some hazy, nebulous proposal.
necromancy n. black magic; dealings with the dead. The evil sorcerer performed feats of necromancy, calling on the spirits of the dead to tell the future. necromancer, n.
nefarious adj. very wicked. The villain’s crimes, though various, were one and all nefarious.

negate v. cancel out; nullify; deny. A sudden surge of adrenaline can negate the effects of fatigue: there’s nothing like a good shock to wake you up. negation, n.
negligence n. neglect; failure to take reasonable care. Tommy failed to put back the cover on the well after he fetched his pail of water; because of his negligence, Kitty fell in. negligent, adj.
negligible adj. so small, trifling, or unimportant as to be easily disregarded. Because the damage to his car had been negligible, Michael decided he wouldn’t bother to report the matter to his insurance company.
nemesis n. someone seeking revenge. Abandoned at sea in a small boat, the vengeful Captain Bligh vowed to be the nemesis of Fletcher Christian and his fellow mutineers.
neologism n. new or newly coined word or phrase. As we invent new techniques and professions, we must also invent neologisms such as “microcomputer” and “astronaut” to describe them.
neophyte N. recent convert; beginner. This mountain slope contains slids that will challenge experts as well as neophytes.

neptunism N. favoritism (to a relative). John left his position with the company because he felt that advancement was based on neptunism rather than ability.

nether ADJ. lower. Tradition locates hell in the nether regions.

nettle v. annoy; vex. Do not let her nettle you with her sarcastic remarks.

nexus N. connection. I fail to see the nexus that binds these two widely separated events.

nib N. beak; pen point. The nibs of fountain pens often become clotted and corroded.

nicety N. precision; minute distinction. I cannot distinguish between such niceties as reasoning, nice, ADJ. (secondary meaning)

niggardly ADJ. meanly stingy; parsimonious. The niggardly pittance the widow receives from the government cannot keep her from poverty.

niggle v. spend too much time on minor points; carp. Let's not niggle over details, nigging, ADJ.

nihilist N. one who considers traditional beliefs to be groundless and existence meaningless; absolute skeptic; revolutionary terrorist. In his final days, Hitler revealed himself a power-mad nihilist, ready to annihilate all of Western Europe, even to destroy Germany itself, in order that his will might prevail. The root of the word nihilist is nihil. Latin for "nothing." nihilism, N.

nip v. stop something's growth or development; nip off; bite; make numb with cold. The twins were plotting mischief, but Mother intervened and nipped their plan in the bud. The gardener nipped off a lovely rose and gave it to me. Last week a guard dog nipped the postman in the leg; this week the extreme chill nipped his fingers till he could barely hold the mail.

nirvana N. in Buddhist teachings, the ideal state in which the individual loses himself in the attainment of an impersonal beatitude. Despite his desire to achieve nirvana, the young Buddhist found that even the buzzing of a fly could distract him from his meditation.

nocturnal ADJ. done at night. Mr. Jones obtained a watchdog to prevent the nocturnal raids on his chicken coops.

noisome ADJ. foul-smelling; unwholesome. The noisome atmosphere downwind of the oil refinery not only stank but also damaged the lungs of everyone living in the area.

nomadic ADJ. wandering. Several nomadic tribes of Indians would hunt in this area each year. nomad, N.

nomenclature N. terminology; system of names. Sharon found Latin word parts useful in translating medical nomenclature when her son had to have a bilateral myringotomy, she figured out that he needed a hole in each of his eardrums to end his earaches.

nominal ADJ. in name only; trifling. He offered to drive her to the airport for only a nominal fee.

nonchalance N. indifference; lack of concern; composure. Cool, calm, and collected under fire, James Bond shows remarkable nonchalance in the face of danger. nonchalant, ADJ.

noncommittal ADJ. neutral; unpledged; undecided. We were annoyed by his noncommittal reply for we had been led to expect definite assurances of his approval.

nondescript ADJ. undistinctive; ordinary. The private detective was a short, nondescript fellow with no outstanding features, the sort of person one would never notice in a crowd.

nonentity N. person of no importance; nonexistence. Because the two older princes dismissed their youngest brother as a nonentity, they did not realize that he was quietly plotting to seize the throne.

nonplus v. bring to a halt by confusion; perplex. Jack's uncharacteristic rudeness nonplussed Jill, leaving her uncertain how to react.

nostalgia N. homesickness; longing for the past. My grandfather seldom spoke of life in the old country; he had little patience with nostalgia. nostalgic, ADJ.

nostro n. questionable medicine. No quack selling nostrums is going to cheat me.

notable ADJ. conspicuous; important; distinguished. Normally notable for his calm in the kitchen, today the head cook was shaking, for the notable chef Julia Child was coming to dinner. also N.

notoriety N. disrepute; ill fame. To the starlet, any publicity was good publicity: if she couldn't have a good reputation, she'd settle for notoriety. notorious, ADJ.

novelty N. something new; newness. The computer is no longer a novelty around the office. novel, ADJ.

novice N. beginner. Even a novice at working with computers can install Barron's Computer Study Program for the GRE by following the easy steps outlined in the user's manual.

noxious ADJ. harmful. We must trace the source of these noxious gases before they asphyxiate us.

nuance N. shade of difference in meaning or color; subtle distinction. Jody gazed at the Monet landscape for an hour, appreciating every subtle nuance of color in the painting.

nubile ADJ. marriageable. Mrs. Bennet, in Pride and Prejudice by Jane Austen, was worried about finding suitable husbands for her five nubile daughters.

nugatory ADJ. futile; worthless. This agreement is nugatory for no court will enforce it.

nullify v. to make invalid. Once the contract was nullified, it no longer had any legal force.

numismatist N. person who collects coins. The numismatist had a splendid collection of antique coins.

nuptial ADJ. related to marriage. Reluctant to be married in a traditional setting, they decided to hold their nuptial ceremony at the carousel in Golden Gate Park. nuptials, N. PL.
nurture v. nourish; educate; foster. The Head Start program attempts to nurture prekindergarten children so that they will do well when they enter public school. also n. nutrient n. nourishing substance. As a budding nutritionist, Kim has learned to design diets that contain foods rich in important basic nutrients. also adj. caf n. stupid, awkward person. "Watch what you’re doing, you clumsy caf!" Bill shouted at the waiter who had drenched him with iced coffee.

■ obdurate adj. stubborn. He was obdurate in his refusal to listen to our complaints.

obeisance n. bow. She made an obeisance as the king and queen entered the room.

obelisk n. tall column tapering and ending in a pyramid. Cleopatra’s Needle is an obelisk in New York City’s Central Park.

obese adj. excessively fat. It is advisable that obese people try to lose weight. obesity, n.

obfuscate v. confuse; muddle; cause confusion; make needlessly complex. Was the president’s spokesman trying to clarify the Whitewater mystery, or was he trying to obfuscate the issue so the voters would never figure out what went on?

obituary n. death notice. I first learned of her death when I read the obituary in the newspaper. also adj.

objective adj. not influenced by emotions; fair. Even though he was her son, she tried to be objective about his behavior.

objective n. goal; aim. A degree in medicine was her ultimate objective.

obligatory adj. binding; required. It is obligatory that books borrowed from the library be returned within two weeks.

oblique adj. indirect; slanting (deviating from the perpendicular or from a straight line). Casting a quick oblique glance at the reviewing stand, the sergeant ordered the company to march “Oblique Right.”

oblitrate v. destroy completely. The tidal wave obliterated several island villages.

oblivion n. obscurity; forgetfulness. After a decade of popularity, Hurston’s works had fallen into oblivion; no one bothered to read them any more.

oblivious adj. inattentive or unmindful; wholly absorbed. Deep in her book, Nancy was oblivious to the noisy squabbles of her brother and his friends.

obloquy n. slander; disgrace; infamy. I resent the obloquy that you are casting upon my reputation.

obnoxious adj. offensive. I find your behavior obnoxious; please mend your ways.

obscure adj. dark; vague; unclear. Even after I read the poem a fourth time, its meaning was still obscure. obscurity, n.

obscure v. darken; make unclear. At times he seemed purposely to obscure his meaning, preferring mystery to clarity.

■ obsequious adj. slavishly attentive; servile; sycophantic. Helen valued people who behaved as if they respected themselves; nothing irritated her more than an excessively obsequious waiter or a fawning salesclerk.

obsequy n. funeral ceremony. Hundreds paid their last respects at his obsequies.

obsessive adj. related to thinking about something constantly; preoccupying. Ballet, which had been a hobby, began to dominate his life; his love of dancing became obsessive. obsession, n.

obsidian n. black volcanic rock. The deposits of obsidian on the mountain slopes were an indication that the volcano had erupted in ancient times.

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Test

Word List 32  Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

466. NEBULOUS (A) starry (B) clear (C) cold (D) fundamental (E) porous
467. HEFARIOUS (A) various (B) lacking (C) benign (D) pompous (E) futile
468. NEGATION (A) postulation (B) hypote...
477. OBLIGATORY (A) demanding (B) optional (C) facile (D) friendly (E) divorced

478. OBLOQUY (A) praise (B) rectangle (C) circle (D) dialogue (E) cure

479. OBSEQUIOUS (A) successful (B) democratic (C) supercilious (D) ambitious (E) lamentable

480. OBSESSION (A) whim (B) loss (C) phobia (D) delusion (E) laud

Word List 33 obsolete—overweening

obsolete ADJ. outmoded. "Hog" is an obsolete expression; it went out with love beads and tie-dye shirts.

obstetrician N. physician specializing in delivery of babies. Unlike midwives, who care for women giving birth at home, obstetricians generally work in a hospital setting.

obstinate ADJ. stubborn; hard to control or treat. We tried to persuade him to give up smoking, but he was obstinate and refused to change. Blackberry stickers are the most obstinate weeds I know: once established in a yard, they're extremely hard to root out. obstinacy, N.

obstreporous ADJ. boisterous, noisy. What do you do when an obstreporous horde of drunken policemen carouses through your hotel, crashing into potted plants and singing vulgar songs?

obtrude V. push (oneself or one's ideas) forward or intrude; but in; stick out or extrude. Because Fanny was reluctant to obtrude her opinions about child-raising upon her daughter-in-law, she kept a close watch on her tongue. obtrusive, ADJ. obtrusion, N.

obtuse ADJ. blunt; stupid. What can you do with somebody who's so obtuse that he can't even tell that you're insulting him?

obviate V. make unnecessary; get rid of. I hope this contribution will obviate any need for further collections of funds.

Occident N. the West. It will take time for the Occident to understand the ways and customs of the Orient.

occlude V. shut; close. A blood clot occluded an artery to the heart. occlusion, N.

occult ADJ. mysterious; secret; supernatural. The occult rites of the organization were revealed only to members. also N.

oculist N. physician who specializes in treatment of the eyes. In many states, an oculist is the only one who may apply medicinal drops to the eyes for the purpose of examining them.

odious ADJ. hateful; vile. Cinderella's ugly stepsisters had the odious habit of popping their zits in public.

odium N. detestation; hatred; disrepute. Prince Charming could not express the odium he felt toward Cinderella's stepsisters because of their mistreatment of poor Cinderella.

odoriferous ADJ. giving off an odor. The odoriferous spices stimulated her jaded appetite.

odorous ADJ. having an odor. This variety of hybrid tea rose is more odorous than the one you have in your garden.

odyssey N. long, eventful journey. The refugee's journey from Cambodia was a terrifying odyssey.

offensive ADJ. attacking; insulting; distasteful. Getting into street brawls is no minor offense for professional boxers, who are required by law to restrict their offensive impulses to the ring.

offhand ADJ. casual; done without prior thought. Expecting to be treated with due propriety by her hosts, Great-Aunt Maud was offended by their offhand manner.

officious ADJ. meddlesome; excessively pushy in offering one's services. After her long flight, Jill just wanted to nap, but the officious bellboy was intent on showing her all the special features of the deluxe suite.

ogle V. look at amorously; make eyes at. At the coffee house, Walter was too shy to ogle the pretty girls openly; instead, he peeked out at them from behind a rubber plant.

olfactory ADJ. concerning the sense of smell. A wine taster must have a discriminating palate and a keen olfactory sense, for a good wine appeals both to the taste buds and to the nose.

oligarchy N. government by a privileged few. One small clique ran the student council; what had been intended as a democratic governing body had turned into an oligarchy.

ominous ADJ. threatening. Those clouds are ominous; they suggest that a severe storm is on the way.

omnipotent ADJ. all-powerful. The monarch regarded himself as omnipotent and responsible for no one for his acts.

omnipresent ADJ. universally present; ubiquitous. On Christmas Eve, Santa Claus is omnipresent.

omniscient ADJ. all-knowing. I do not pretend to be omniscient, but I am positive about this fact.

omnivorous ADJ. eating both plant and animal food; devouring everything. Some animals, including humans, are omnivorous and eat both meat and vegetables; others are either carnivorous or herbivorous.

onerous ADJ. burdensome. She asked for an assistant because her work load was too onerous.

onomatopoeia N. words formed in imitation of natural sounds. Words like "rustle" and "gargle" are illustrations of onomatopoeia.

onslaught N. vicious assault. We suffered many casualties during the unexpected onslaught of the enemy troops.

onus N. burden; responsibility. The emperor was spared the onus of signing the surrender papers; instead, he relegated the assignment to his generals.
opaque adj. dark; not transparent. The opaque window shade kept the sunlight out of the room. opacity, N.

opiate N. medicine to induce sleep or deaden pain; something that relieves emotions or causes inaction. To say that religion is the opiate of the people is to condemn religion as a drug that keeps the people quiet and submissive to those in power.

opportune adj. timely; well-chosen. Cher looked at her father struggling to balance his checkbook; clearly this would not be an opportune moment to ask him for an increase in her allowance.

opportunist N. individual who sacrifices principles for expediency by taking advantage of circumstances. Forget about ethics! He's such an opportunist that he'll vote in favor of any deal that will give him a break.

appraisium N. infamy; vilification. He refused to defend himself against the slander and appraisium hurled against him by the newspapers; he preferred to rely on his record.

optician N. maker and seller of eyeglasses. The patient took the prescription given him by his oculist to the optician.

optimist N. person who looks on the bright side. The pessimist says the glass is half-empty; the optimist says it is half-full.

optimum adj. most favorable. If you wait for the optimum moment to act, you may never begin your project. also N.

optional adj. not compulsory; left to one's choice. I was impressed by the range of optional accessories for my microcomputer that were available. option, N.

optometrist N. one who fits glasses to remedy visual defects. Although an optometrist is qualified to treat many eye disorders, she may not use medicines or surgery in her examinations.

opulence N. extreme wealth; luxuriousness; abundance. The glitter and opulence of the ballroom took Cinderella's breath away. opulent, ADJ.

opus N. work. Although many critics hailed his Fifth Symphony, he did not regard it as his major opus.

oracular adj. prophetic; uttered as if with divine authority; mysterious or ambiguous. Like many others who sought divine guidance from the oracle at Delphi, Oedipus could not understand the enigmatic oracular warning he received. oracle, N.

orator N. public speaker. The abolitionist Frederick Douglass was a brilliant orator whose speeches brought home to his audience the evils of slavery.

oratorio N. dramatic poem set to music. The Glee Club decided to present an oratorio during their recital.

ordain v. decree or command; grant holy orders; predestine. The king ordained that no foreigner should be allowed to enter the city. The Bishop of Michigan ordained David a deacon in the Episcopal Church. The young lovers felt that fate had ordained their meeting.

ordeal N. severe trial or affliction. June was so painfully shy that it was an ordeal for her to speak up when the teacher called on her in class.

ordinance N. decree. Passing a red light is a violation of a city ordinance.

ordination N. ceremony conferring holy orders. The candidate for ordination had to meet with the bishop and the diocesan officers before being judged ready to be ordained a deacon. ordain, v.

orgy N. wild, drunken revelry; unrestrained indulgence. The Roman emperor's orgies were far wilder than the toga party in the movie Animal House. When her income tax refund check finally arrived, Sally indulged in an orgy of shopping.

orient v. get one's bearings; adjust. Philip spent his first day in Denver orienting himself to the city.

orientation N. act of finding oneself in society. Freshman orientation provides the incoming students with an opportunity to learn about their new environment and their place in it.

orifice N. mouthlike opening; small opening. The Howe Caverns were discovered when someone observed that a cold wind was issuing from an orifice in the hillside.

ornate adj. excessively or elaborately decorated. With its elaborately carved, convoluted lines, furniture of the Baroque period was highly ornate.

ornithologist N. scientific student of birds. Audubon's drawings of American bird life have been of interest not only to ornithologists but also to the general public.

orthodox adj. traditional; conservative in belief. Faced with a problem, she preferred to take an orthodox approach rather than shock anyone. orthodoxy, N.

orthography N. correct spelling. Many of us find English orthography difficult to master because so many of our words are not written phonetically.

oscillate v. vibrate pendulumlike; waver. It is interesting to note how public opinion oscillates between the extremes of optimism and pessimism.

osseous adj. made of bone; bony. The hollow "soft spot" found at the top of the infant's skull gradually closes as new osseous tissue fills in the gap.

ossify v. change or harden into bone. When he called his opponent a "bonehead," he implied that his adversary's brain had ossified and that he was not capable of clear thinking.

ostensible adj. apparent; professed; pretended. Although the ostensible purpose of this expedition is to discover new lands, we are really interested in finding new markets for our products.

ostentatious adj. showy; pretentious; trying to attract attention. Trump's latest casino in Atlantic City is the most ostentatious gambling palace in the East: it easily out-glitters its competitors. ostentation, N.

ostracize v. exclude from public favor; ban. As soon as the newspapers carried the story of his connection with the criminals, his friends began to ostracize him. ostracism, N.
outst. v. expeil; drive out. The world wondered if Aquino would be able to outst Marcos from office.

outlandish adj. bizarre; peculiar; unconventional. The eccentric professor who engages in markedly outlandish behavior is a stock figure in novels with an academic setting.

outmoded adj. no longer stylish; old-fashioned. Unconcerned about keeping in style, Lenore was perfectly happy to wear outmoded clothes as long as they were clean and unfrayed.

outskirts n. fringes; outer borders. Living on the outskirts of Boston, Sarah sometimes felt as if she were cut off from the cultural heart of the city.

outspoken adj. candid; blunt. The candidate was too outspoken to be a successful politician; he had not yet learned to weigh his words carefully.

outstrip v. surpass; outdo. Jesse Owens easily outstripped his competitors to win the gold medal at the Olympic Games.

outwit v. outsmart; trick. By disguising himself as an old woman, Holmes was able to outwit his pursuers and escape capture.

ovation n. enthusiastic applause. When Placido Domingo came on stage in the first act of La Bohème, he was greeted by a tremendous ovation.

overbearing adj. bossy; arrogant; decisively important. Certain of her own importance and of the unimportance of everyone else, Lady Bracknell was intolerably overbearing in manner. “In choosing a husband,” she said, “good birth is of overbearing importance; compared to that, neither wealth nor talent signifies.”

overt adj. open to view. According to the United States Constitution, a person must commit an overt act before he may be tried for treason.

overweening adj. presumptuous; arrogant. His overweening pride in his accomplishments was not justified.

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Test

Word List 33 Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

481. OBSCENE (A) heated (B) desolate (C) renovated (D) frightful (E) automatic

482. OBSTREPEROUS (A) turbid (B) quiet (C) remote (D) lucid (E) active

483. OBSCURE (A) sheer (B) transparent (C) tranquil (D) timid (E) shrewd

484. ODIOUS (A) fragrant (B) redolent (C) fetid (D) delightful (E) pury

485. ODIOUS (A) noise (B) liking (C) dominant (D) hasty (E) atrium

486. OMNIPOTENT (A) weak (B) democratic (C) despotic (D) passionate (E) late

487. OMNISCIENT (A) sophisticated (B) ignorant (C) essential (D) trivial (E) isolated

488. OPIATE (A) distress (B) sleep (C) stimulant (D) laziness (E) despair

489. OPPORTUNE (A) occasional (B) fragrant (C) fragile (D) awkward (E) neglected

490. OPPORTUNIST (A) man of destiny (B) man of principle (C) changeling (D) adversary (E) colleague

491. OPPROBRIUM (A) delineation (B) aptitude (C) majesty (D) freedom (E) praise

492. OPTIMUM (A) pessimistic (B) knowledgeable (C) worst (D) minimum (E) chosen

493. OPULENCE (A) pessimism (B) patriotism (C) poverty (D) passion (E) poverty

494. OSTENTATIOUS (A) inactive (B) unassuming (C) impolite (D) illicit (E) irrational

495. OVERWEENING (A) humble (B) impotent (C) avid (D) acrimonious (E) exaggerated
overwrought | ADJ. extremely agitated; hysterical. When Kate heard the news of the sudden tragedy, she became too overwrought to work and had to leave the office early.

ovoid | ADJ. egg-shaped. At Easter she had to cut out hundreds of brightly colored ovoid shapes.

pachyderm | N. thick-skinned animal. The elephant is probably the best-known pachyderm.

pacifist | N. one opposed to force; antimilitarist. During the war, pacifists, though they refused to bear arms, served in the front lines as ambulance drivers and medical corpsmen. Also ADJ. pacifism, N.

pacify | V. soothe; make calm or quiet, subdued. Dentists criticize the practice of giving fussy children sweets to pacify them.

paean | N. song of praise or joy. Paeans celebrating the victory filled the air.

painstaking | ADJ. showing hard work; taking great care. The new high-frequency word list is the result of painstaking efforts on the part of our research staff.

palatable | ADJ. agreeable; pleasing to the taste. Neither Jack’s underbaked opinions nor his overcooked casseroles were palatable to me.

palate | N. roof of the mouth; sense of taste. When you sound out the letter “d,” your tongue curves up to touch the edge of your palate. When Alice was sick, her mother made special meals to tempt her palate.

palatial | ADJ. magnificent. He proudly showed us through his palatial home.

palaeontology | N. study of prehistoric life. The professor of palaeontology had a superb collection of fossils.

palette | N. board on which a painter mixes pigments. At the present time, art supply stores are selling a paper palette that may be discarded after use.

papyrus | N. parchment used for second time after original writing has been erased. Using chemical reagents, scientists have been able to restore the original writings on many papyrus.

pall | V. grow tiresome. The study of word lists can eventually pall and put one to sleep.

pallet | N. small, poor bed. The weary traveler went to sleep on his straw pallet.

palitate | V. ease pain; make less severe or offensive. If we cannot cure this disease at present, we can, at least, try to palilate the symptoms, palliation, N.

palial | ADJ. pale; wan. Because his occupation required that he work at night and sleep during the day, he had an exceptionally palial complexion.

palpable | ADJ. tangible; easily perceptible. I cannot understand how you could overlook such a palpable blunder.

palpitate | V. throb; flutter. As she became excited, her heart began to palpitate more and more erratically.

pantry | ADJ. insignificant; petty; trifling. One hundred dollars for a genuine imitation Rolex watch! Lady, this is a pantry sum to pay for such a high-class piece of jewelry.

pan | V. criticize harshly. Hoping for a rave review of his new show, the playwright was miserable when the critics panned it unanimously.

panacea | N. cure-all; remedy for all diseases. There is no easy panacea that will solve our complicated international situation.

panache | N. flair; flamboyance. Many performers imitate Noel Coward, but few have his panache and sense of style.

pandemic | ADJ. widespread; affecting the majority of people. They feared the AIDS epidemic would soon reach pandemic proportions.

pandemonium | N. wild tumult. When the ships collided in the harbor, pandemonium broke out among the passengers.

pander | V. cater to the low desires of others. The reviewer accused the makers of Lethal Weapon of pandering to the masses’ taste for violence.

panegyric | N. formal praise. Blushing at all the praise heaped upon him by the speakers, the modest hero said, “I don’t deserve such panegyrics.”

panoramic | ADJ. denoting an unobstructed and comprehensive view. On a clear day, from the top of the Empire State Building you can get a panoramic view of New York City and neighboring stretches of New Jersey and Long Island. panorama, N.

pantomime | N. acting without dialogue. Because he worked in pantomime, the clown could be understood wherever he appeared. Also V.

papyrus | N. ancient paper made from stem of papyrus plant. The ancient Egyptians were among the first to write on papyrus.

parable | N. short, simple story teaching a moral. Let us apply to our own conduct the lesson that this parable teaches.

paradigm | N. model; example; pattern. Pavlov’s experiment in which he trains a dog to salivate on hearing a bell is a paradigm of the conditioned-response experiment in behavioral psychology. paradigmatic, ADJ.

paradox | N. something apparently contradictory in nature; statement that looks false but is actually correct. Richard presents a bit of a paradox, for he is a card-carrying member of both the National Rifle Association and the relatively pacifist American Civil Liberties Union. paradoxical, ADJ.

paragon | N. model of perfection. Her fellow students disliked Lavinia because Miss Minchin always pointed her out as a paragon of virtue.
parallelism n. state of being parallel; similarity. Although the twins were separated at birth and grew up in different adoptive families, a striking parallelism exists between their lives.

parameter n. limit; independent variable. We need to define the parameters of the problem.

paramount adj. foremost in importance; supreme. Proper nutrition and hygiene are of paramount importance in adolescent development and growth.

paramour n. illicit lover. She sought a divorce on the grounds that her husband had a paramour in another town.

paranoia n. psychosis marked by delusions of grandeur or persecution. Suffering from paranoia, he claimed everyone was out to get him. Ironically, his claim was accurate; even paranoids have enemies. paranoid, paranoia, n. and adj.

paraphernalia n. equipment; odds and ends. Her desk was cluttered with paper, pen, ink, dictionary and other paraphernalia of the writing craft.

paraphrase v. restate a passage in one's own words while retaining thought of author. In 250 words or less, paraphrase this article. Also n.

parasite n. animal or plant living on another; toady; sycophant. The tapeworm is an example of the kind of parasite that may infest the human body.

pariah n. social outcast. If everyone ostracized singer Mariah Carey, would she then be Mariah the pariah?

parity n. equality; close resemblance. I find your analogy inaccurate because I do not see the parity between the two illustrations.

parlance n. language; idiom. All this legal parlance confuses me; I need an interpreter.

parley n. conference. The peace parley has not produced the anticipated truce. Also v.

parochial adj. narrow in outlook; provincial; related to parishes. Although Jane Austen writes novels set in small rural communities, her concerns are universal, not parochial.

parody n. humorous imitation; spoof; takeoff; travesty. The show Forbidden Broadway presents parodies spoofing the year's new productions playing on Broadway. Also v.

paroxysm n. fit or attack of pain, laughter, rage. When he heard of his son's misdeeds, he was seized by a paroxysm of rage.

parquet n. floor made of wood strips inlaid in a mosaic-like pattern. In laying the floor, the carpenters combined redwood and oak in an elegant parquet.

parry v. ward off a blow; deflect. Unwilling to injure his opponent in such a pointless clash, Darlagnan simply tried to parry his rival's thrusts. What fun it was to watch Katherine Hepburn and Spencer Tracy parry each other's verbal thrusts in their classic screwball comedies! Also n.

parsimony n. stinginess; excessive frugality. Silas Marner's parsimony did not allow him to indulge in any luxuries. parsimonious, adj.

partial adj. incomplete; having a liking for something. In this issue we have published only a partial list of contributors because we lack space to acknowledge everyone. I am extremely partial to chocolate eclairs. partiality, n.

partiality n. inclination; bias. As a judge, not only must I be unbiased, but I must also avoid any evidence of partiality when I award the prize.

partisan adj. one-sided; prejudiced; committed to a party. Rather than joining forces to solve our nation's problems, the Democrats and Republicans spend their time on partisan struggles. Also n.

partition v. divide into parts. Before their second daughter was born, Jason and Lizzie decided each child needed a room of her own, and so they partitioned a large bedroom into two small but separate rooms. Also n.

passé adj. old-fashioned; past the prime. Her style is passé and reminiscent of the Victorian era.

passive adj. not active; acted upon. Mahatma Gandhi urged his followers to pursue a program of passive resistance as he felt that it was more effective than violence and acts of terrorism.

pastiche n. imitation of another's style in musical composition or in writing. We cannot even say that her music is a pastiche of this or that composer; it is, rather, reminiscent of many musicians.

pastoral adj. rural. In these stories of pastoral life, we find an understanding of the daily tasks of country folk.

patent adj. open for the public to read; obvious. It was patent to everyone that the witness spoke the truth.

pathetic adj. causing sadness, compassion, pity; touching. Everyone in the auditorium was weeping by the time she finished her pathetic tale about the orphaned boy.

pathological adj. pertaining to disease. As we study the pathological aspects of this disease, we must not overlook the psychological elements.

pathos n. tender sorrow; pity; quality in art or literature that produces these feelings. The quiet tone of pathos that ran through the novel never degenerated into the maudlin or the overly sentimental.

patina n. green crust on old bronze works; tone slowly taken by varnished painting. Judging by the patina on this bronze statue, we can conclude that this is the work of a medieval artist.

patois n. local or provincial dialect. His years of study of the language at the university did not enable him to understand the patois of the natives.

patriarch n. father and ruler of a family or tribe. In many primitive tribes, the leader and lawmaker was the patriarch.

patrician adj. noble; aristocratic. We greatly admired her well-bred, patrician elegance. Also n.
patronize  v. support; act superior toward; be a customer of. Penniless artists hope to find some wealthy art lover who will patronize them. If some condescending wine steward patronized me because he saw I knew nothing about fine wine, I'd refuse to patronize his restaurant.

paucity n. scarcity. They closed the restaurant because the paucity of customers made it uneconomical to operate.

pauper n. very poor person. Though Widow Brown was living on a reduced income, she was by no means a pauper.

peccadillo n. slight offense. Whenever Huck dipped a cookie from the jar, Miss Watson reacted as if he were guilty of armed robbery, not of some mere peccadillo.

Test

Word List 34  Synonyms and Antonyms

Each of the following questions consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar or opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

496. PAEAN (A) serf (B) pealing (C) lien (D) lament (E) folly
497. Pallet (A) bed (B) pigment board (C) bench (D) spectrum (E) quality
498. Palliate (A) smoke (B) quicken (C) substitute (D) alleviate (E) sadden
499. Pandemonium (A) calm (B) frustration (C) efficiency (D) impishness (E) sophistication
500. PANGEYRIC (A) medication (B) panacea (C) rotation (D) vacillation (E) praise
501. PARABLE (A) equality (B) allegory (C) frenzy (D) folly (E) cuticle

502. PARADOX (A) exaggeration (B) contradiction (C) hyperbole (D) invective (E) poetic device
503. PARAMOUR (A) illicit lover (B) majority (C) importance (D) hatred (E) clandestine affair
504. PARANOIA (A) fracture (B) statement (C) quantity (D) benefaction (E) sanity
505. PARIAH (A) village (B) suburb (C) outcast (D) disease (E) benefactor
506. PARITY (A) duplicate (B) miniature (C) golf tee (D) similarity (E) event
507. PARSONOUS (A) grammatical (B) syntactical (C) effective (D) extravagant (E) esoteric
508. PARTIALITY (A) completion (B) equality (C) bias (D) divorce (E) reflection
509. PASE (A) scornful (B) rural (C) out-of-date (D) silly (E) barbaric
510. PASTICHE (A) imitation (B) glue (C) present (D) greeting (E) family

Word List 35  pecuniary-philanderer

pecuniary  adj. pertaining to money. Seldom earning enough to cover their expenses, folk-dance teachers work because they love dancing, not because they expect any pecuniary reward.

pedagogue n. teacher. He could never be a stuffy pedagogue; his classes were always lively and filled with humor.

pedagogy n. teaching; art of education. Though Maria Montessori gained fame for her innovations in pedagogy, it took years before her teaching techniques became common practice in American schools.

pedant n. scholar who overemphasizes book learning or technicalities. Her insistence that the book be memorized marked the teacher as a pedant rather than a scholar.

pedantic  adj. showing off learning; bookish. Leavening her decisions with humorous, down-to-earth anecdotes, Judge Judy was not at all the pedantic legal scholar. pedantry, n.

pedestrian  adj. ordinary; unimaginative. Unintentionally boring, he wrote page after page of pedestrian prose.

pediatrician n. physician specializing in children's diseases. The family doctor advised the parents to consult a pediatrician about their child's ailment.

peerless  adj. having no equal; incomparable. The reigning operatic tenor of his generation, to his admirers Luciano Pavarotti was peerless: no one could compete with him.

pejorative  adj. negative in connotation; having a belittling effect. Instead of criticizing Clinton's policies, the Republicans made pejorative remarks about his character.

pel-mell  adv. in confusion; disorderly. The excited students dashed pel-mell into the stadium to celebrate the victory.
pellucid ADJ. transparent; limpid; easy to understand. After reading these stodgy philosophers, I find his pellucid style very enjoyable.

penance N. self-imposed punishment for sin. The Ancient Mariner said, "I have penance done and penance more will do," to atone for the sin of killing the albatross.

*penchant N. strong inclination; liking. Dave has a penchant for taking risks: one semester he went steady with three girls, two of whom were stars on the school karate team.

pendant ADJ. hanging down from something. Her pendant earrings glistened in the light.

pendant N. ornament (hanging from a necklace, etc.). The grateful team presented the coach with a silver chain and pendant engraved with the school's motto.

pendulous ADJ. hanging; suspended. The pendulous chandeliers swayed in the breeze as if they were about to fall from the ceiling.

penitent ADJ. repentant. When he realized the enormity of his crime, he became remorseful and penitent. Also N.

pensive ADJ. dreamily thoughtful; thoughtful with a hint of sadness; contemplative. The pensive lover gazed at the portrait of his beloved and sighed deeply.

penumbra N. partial shadow (in an eclipse). During an eclipse, we can see an area of total darkness and a lighter area, which is the penumbra.

perjury N. false testimony while under oath. Rather than lie under oath and perhaps be indicted for perjury, the witness chose to take the Fifth Amendment, refusing to answer any questions on the grounds that he might incriminate himself.

permeable ADJ. penetrable; porous; allowing liquids or gas to pass through. If your jogging clothes weren't made out of permeable fabric, you'd drown in your own sweat (figuratively speaking). permeate, V.

pernicious ADJ. very destructive. The Athenians argued that Socrates' teachings had a pernicious effect on young and susceptible minds; therefore, they condemned him to death.

peroration N. conclusion of an oration. The peroration was largely hortatory and brought the audience to its feet clamoring for action at its close.

perpetrate V. commit an offense. Only an insane person could perpetrate such a horrible crime.

perpetual ADJ. everlasting. Ponce de Leon hoped to find the legendary fountain of perpetual youth.

perpetuate V. make something last; preserve from extinction. Some critics attack The Adventures of Huckleberry Finn because they believe Twain's book perpetuates a false image of blacks in this country. perpetuity, N.

perquisite N. any gain above stipulated salary. The perquisites attached to this job make it even more attractive than the salary indicates.

personable ADJ. attractive. The individual I am seeking to fill this position must be personable since he or she will be representing us before the public.

perspicacious ADJ. having insight; penetrating; astute. The brilliant lawyer was known for his perspicacious deductions.

perspicuity N. clearness of expression; freedom from ambiguity. One of the outstanding features of this book is the perspicuity of its author; her meaning is always clear.
perspicuous ADJ. plainly expressed. Her perspicuous comments eliminated all possibility of misinterpretation.

pert ADJ. impertinent; forward. I think your pert and impudent remarks call for an apology.

pertinacious ADJ. stubborn; persistent. She is bound to succeed because her pertinacious nature will not permit her to quit.

pertinent ADJ. suitable; to the point. The lawyer wanted to know all the pertinent details.

perturb v. disturb greatly. The thought that electricity might be leaking out of the empty light-bulb sockets perturbed my aunt so much that at night she crept about the house screwing fresh bulbs in the vacant spots. perturbation, n.

peruse v. read with care. After the conflagration that burned down her house, Joan closely perused her home insurance policy to discover exactly what benefits her coverage provided. perusal, n.

pervasive ADJ. spread throughout. Despite airing them for several hours, she could not rid her clothes of the pervasive odor of mothballs that clung to them. pervade, v.

perversion n. corruption; turning from right to wrong. Inasmuch as he had no motive for his crimes, we could not understand his perversion.

pessimism n. belief that life is basically bad or evil; gloominess. Considering how well you have done in the course so far, you have no real reason for such pessimism about your final grade. pessimistic, ADJ.

pestilential ADJ. causing plague; baneful. People were afraid to explore the pestilential swamp. pestilence, n.

pestle n. tool for mashing or grinding substances in a hard bowl. From the way in which the elderly pharmacist pounded the drug with his pestle, young George could tell that his employer was agitated about something.

petrify v. turn to stone. His sudden and unexpected appearance seemed to petrify her.

petty ADJ. trivial; unimportant; very small. She had no major complaints to make about his work, only a few petty quibbles that were almost too minor to state.

petulant ADJ. touchy; peevish. If you'd had hardly any sleep for three nights and people kept on phoning and waking you up, you’d sound petulant, too. petulance, n.

pharisaical ADJ. pertaining to the Pharisees, who paid scrupulous attention to tradition; self-righteous; hypocritical. Walter Lippmann has pointed out that moralists who do not attempt to explain the moral code they advocate are often regarded as pharisaical and ignored.

phenomena n. pl. observable facts; subjects of scientific investigation. We kept careful records of the phenomena we noted in the course of these experiments. phenomenon, sing.

philanderer n. faithless lover; flirt. Swearing he had never so much as looked at another woman, Jack assured Jill he was no philanderer.

Test

Word List 35 Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

517. PERIPATETIC (A) worldly (B) stationary (C) disarming (D) seeking (E) inherent

518. PERMEABLE (A) perishable (B) effective (C) plodding (D) impenetrable (E) lasting

519. PERNICIOUS (A) practical (B) comparative (C) harmless (D) tangible (E) detailed

520. PERPETUAL (A) momentary (B) standard (C) serious (D) industrial (E) interpretive

521. PERSPICUCITY (A) grace (B) feature (C) review (D) difficulty (E) vagueness

522. PERT (A) polite (B) perishable (C) moral (D) deliberate (E) stubborn

523. PERTINACIOUS (A) vengeful (B) consumptive (C) superficial (D) skilled (E) advertised

524. PERTINENT (A) understood (B) living (C) discontented (D) puzzling (E) irrelevant

525. PETULANT (A) angry (B) moral (C) declining (D) underhanded (E) uncomplaining
philanthropist N. lover of mankind; doer of good. In his role as philanthropist and public benefactor, John D. Rockefeller, Sr., donated millions to charity; as an individual, however, he was a light-fisted old man.

philatelist N. stamp-collector. When she heard the value of the Penny Black stamp, Phyllis was inspired to become a philatelist.

philistine N. narrow-minded person, uncultured and exclusively interested in material gain. We need more men and women of culture and enlightenment; we have too many philistines among us.

philology N. study of language. The professor of philology advocated the use of Esperanto as an international language.

- phlegmatic adj. calm; not easily disturbed. The nurse was a cheerful but phlegmatic person, unexcited in the face of sudden emergencies.

phobia N. morbid fear. Her fear of flying was more than mere nervousness; it was a real phobia.

phoenix N. symbol of immortality or rebirth. Like the legendary phoenix rising from its ashes, the city of San Francisco rose again after its destruction during the 1906 earthquake.

phyllum N. major classification, second to kingdom, of plants and animals; division. In sorting out her hundreds of packets of seeds, Katya decided to file them by phylum.

physiognomy N. face. He prided himself on his ability to analyze a person's character by studying his physiognomy.

physiological adj. pertaining to the science of the function of living organisms. To understand this disease fully, we must examine not only its physiological aspects but also its psychological elements.

piebald adj. of different colors; mottled; spotted. You should be able to identify Polka Dot in this race; he is the only piebald horse running.

piecemeal adv. one part at a time; gradually. Tolstoy's War and Peace is too huge to finish in one sitting; I'll have to read it piecemeal.

pied adj. variegated; multicolored. The Pied Piper of Hamelin got his name from the multicolored clothing he wore.

piety N. devoutness; reverence for God. Living her life in prayer and good works, Mother Teresa exemplified the true spirit of piety. Pious, adj.

pigment N. coloring matter. Van Gogh mixed various pigments with linseed oil to create his paintings.

pillage v. plunder. The enemy pillaged the quiet village and left it in ruins. Also N.

pillory v. punish by placing in a wooden frame; subject to criticism and ridicule. Even though he was mocked and pilloried, he maintained that he was correct in his beliefs. Also N.

piner v. languish, decline; long for; yearn. Though she tried to be happy living with Clara in the city, Heidi pined for the mountains and for her gruff but loving grandfather.

pinion v. restrain. They pinioned his arms against his body but left his legs free so that he could move about, also N.

pinnacle N. peak. We could see the morning sunlight illuminate the pinnacle while the rest of the mountain lay in shadow.

pious adj. devout; religious. The challenge for church people today is how to be pious in the best sense, that is, to be devout without becoming hypocritical or sanctimonious. Pious, N.

piquant adj. pleasantly tart-tasting; stimulating. The piquant sauce added to our enjoyment of the meal. Piquancy, N.

pike N. irritation; resentment. She showed her pique at her loss by refusing to appear with the other contestants at the end of the competition.

plaque v. provoke or arouse; annoy. "I know something you don't know," said Lucy, trying to plaque Ethel's interest.

piscatorial adj. pertaining to fishing. He spent many happy hours at the lake in his piscatorial activities.

piffal N. hidden danger; concealed trap. The preacher warned his flock to beware the piffal of excessive pride, for pride brought on the angels' fall.

pith N. core or marrow; essence; substance. In preparing a pineapple for the table, first slice it in half and remove the woody central pith.

pithy adj. concise; meaningful; substantial; meaty. While other girls might have gone on and on about how uncool Elton was, Cher summed it up in one pithy remark: "He's bogus!"

pittance N. a small allowance or wage. He could not live on the pittance he received as a pension and had to look for an additional source of revenue.

pivotal adj. central; critical. De Klerk's decision to set Nelson Mandela free was pivotal; without Mandela's release, there was no possibility that the African National Congress would entertain talks with the South African government.

- placate v. pacify; conciliate. The store manager tried to placate the angry customer, offering to replace the damaged merchandise or to give back her money.

placebo N. harmless substance prescribed as a dummy pill. In a controlled experiment, fifty volunteers were given erythromycin tablets; the control group received only placebos.

placid adj. peaceful; calm. After his vacation in this placid section, he felt soothed and rested.

plagiarize v. steal another's ideas and pass them off as one's own. The teacher could tell that the student had plagiarized parts of his essay. She recognized whole paragraphs straight from Barron's Book Notes. Plagiarism, N.

plaintive adj. mournful. The dove has a plaintive and melancholy call.
plait v. braid; intertwine. The maypole dancers plaited bright green ribbons in their hair. Also n.
plasticity n. ability to be molded. When clay dries out, it loses its plasticity and becomes less malleable.
platitude n. trite remark; commonplace statement. In giving advice to his son, old Polonius expressed himself only in platitudes; every word out of his mouth was a truism.
platonically adj. purely spiritual; theoretical; without sensual desires. Accused of impropriety in his dealings with female students, the professor maintained he had only a platonic interest in the women involved.
plaudit n. enthusiastic approval; round of applause. The theatrical company reprinted the plaudits of the critics in its advertisements. Plauditary, adj.
plausible adj. having a show of truth but open to doubt; specious. Your mother made you stay home from school because she needed you to program the VCR? I'm sorry, you'll have to come up with a more plausible excuse than that.
palestinian adj. common; pertaining to the common people. His speeches were aimed at the plebeian minds and emotions; they disgusted the more refined.
plenary adj. complete; full. The union leader was given plenary power to negotiate a new contract with the employers.
plenitude n. abundance; completeness. Looking in the pantry, we admired the plenitude of fruits and pickles we had preserved during the summer.
plenary adj. complete; full. The union leader was given plenary power to negotiate a new contract with the employers.
pliable adj. flexible; yielding; adaptable. In remodeling the bathroom, we replaced all the old, rigid lead pipes with new, pliable copper tubing.
pliant adj. flexible; easily influenced. Pinocchio's disposition was pliant; he was like putty in his tempters' hands.
plight n. condition, state (especially a bad state or condition); predicament. Loggers, unmoved by the plight of the spotted owl, plan to keep on felling trees whether or not they ruin the bird's habitat.
pluck n. courage. Even the adversaries of young Indiana Jones were impressed by the boy's pluck in trying to rescue the archeological treasure they had stolen.
plume n. feathers of a bird. Bird watchers identify different species of birds by their characteristic songs and distinctive plumage.
plumb v. examine critically in order to understand; measure depth (by sounding). Try as he would, Watson could never fully plumb the depths of Holmes's thought processes.
plumb adj. vertical. Before hanging wallpaper it is advisable to drop a plumb line from the ceiling as a guide. Also n.
plummets v. fall sharply. Stock prices plummeted as Wall Street reacted to the rise in interest rates.
plutocracy n. society ruled by the wealthy. From the way the government caters to the rich, you might think our society is a plutocracy rather than a democracy.
ploddratist n. doctor who treats ailments of the feet. He consulted a podiatrist about his hallen arches.
podium n. pedestal; raised platform. The audience applauded as the conductor made her way to the podium.
pognancy n. quality of being deeply moving; keenness of emotion. Watching the tearful reunion of the long-separated mother and child, the social worker was touched by the pognancy of the scene. Pognant, adj.
polarize v. split into opposite extremes or camps. The abortion issue has polarized the country into pro-choice and anti-abortion camps.
polemical adj. aggressive in verbal attack; disputatious. Lexy was a master of polemical rhetoric; she should have worn a T-shirt with the slogan "Born to Debate."
politic adj. expedient; prudent; well devised. Even though he was disappointed, he did not think it politic to refuse this offer.
policy n. form of government of nation or state. Our policy should be devoted to the concept that the government should strive for the good of all citizens.
polygamist n. one who has more than one spouse at a time. He was arrested as a polygamist when his two wives filed complaints about him.
polyglot adj. speaking several languages. New York City is a polyglot community because of the thousands of immigrants who settle there.
pompous adj. self-important behavior; acting like a stuffed shirt. Although the commencement speaker had some good things to say, we had to laugh at his pompous and general air of parading his own dignity.
pontificial adj. pertaining to a bishop or pope; pompous or pretentious. From the very beginning of his ministry it was clear from his pontifical pronouncements that John was destined for a high pontifical office.
pore v. study industriously; ponder; scrutinize. Determined to become a physician, Beth spends hours poring over her anatomy text.
porous adj. full of pores; like a sieve. Dancers like to wear porous clothing because it allows the ready passage of water and air.
portend v. foretell; presage. The king did not know what these omens might portend and asked his soothsayers to interpret them.
portent n. sign; omen; forewarning. He regarded the black cloud as a portent of evil.
portly adj. stout; corpulent. The salesclerk tactfully referred to the overweight customer as portly rather than fat.

poseur n. person who pretends to be sophisticated; elegant, etc., to impress others. Some thought Dali was a brilliant painter; others dismissed him as a poseur.

posterity n. descendants; future generations. We hope to leave a better world to posterity.

posthumous adj. after death (as of child born after father's death or book published after author's death). The critics ignored his works during his lifetime; it was only after the posthumous publication of his last novel that they recognized his great talent.

postulate n. self-evident truth. We must accept these statements as postulates before pursuing our discus- sions any further. also v.

posture v. assume an affected pose; act artificially. No matter how much Arnold boasted or postured, I could not believe he was as important as he pretended to be.

potable adj. suitable for drinking. The recent drought in the Middle Atlantic States has emphasized the need for extensive research in ways of making sea water potable. also n.

potent adj. powerful; persuasive; greatly influential. Looking at the expiration date on the cough syrup bottle, we wondered whether the medication would still be potent. potency, n.

potentate n. monarch; sovereign. The potentate spent more time at Monte Carlo than he did at home on his throne.

potential adj. expressing possibility; latent. This juvenile delinquent is a potential murderer. also n.

potion n. dose (of liquid). Tristan and Isolde drink a love potion in the first act of the opera.

potpourri n. heterogeneous mixture; medley. The folk singer offered a potpourri of songs from many lands.

poultice n. soothing application applied to sore and inflamed portions of the body. She was advised to apply a flaxseed poultice to the inflammation.

practicable adj. feasible. The board of directors decided that the plan was practicable and agreed to undertake the project.

practical adj. based on experience; useful. He was a practical man, opposed to theory.

pragmatic adj. practical (as opposed to idealistic); concerned with the practical worth or impact of something. This coming trip to France should provide me with a pragmatic test of the value of my conversational French class.

pragmatist n. practical person. No pragmatist enjoys becoming involved in a game that he can never win.

prate v. speak foolishly; boast idly. Let us not prate about our qualities; rather, let our virtues speak for themselves.

prattle v. babble. Baby John prattled on and on about the cats and his ball and the Cookie Monster. also n.

preamble n. introductory statement. In the Preamble to the Constitution, the purpose of the document is set forth.

precarious adj. uncertain; risky. Saying the stock was currently overpriced and would be a precarious investment, the broker advised her client against purchasing it.

precedent n. something preceding in time that may be used as an authority or guide for future action; an earlier occurrence. The law professor asked Jill to state which famous case served as a precedent for the court's decision in Brown v. Board of Education.

precede v. preceding in time, rank, etc. Our discussions, preceded to this event, certainly did not give you any reason to believe that we would adopt your proposal.

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Test

Word List 36 Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

526. PHLEGMATIC (A) calm (B) cryptic (C) practical (D) salutary (E) dishonest

527. PHYSIOGNOMY (A) posture (B) head (C) physique (D) face (E) size

528. PIEBALD (A) motley (B) coltish (C) hairless (D) thoroughbred (E) delicious

529. PILLAGE (A) hoard (B) plunder (C) versify (D) denigrate (E) confide

530. PINION (A) express (B) report (C) reveal (D) submit (E) restrain

531. PINNACLE (A) foothills (B) card game (C) pass (D) taunt (E) peak

532. PIETOUS (A) historic (B) devout (C) multiple (D) fortunate (E) authoritative

533. PIQUE (A) pyramid (B) revolt (C) resentment (D) struggle (E) inventory

534. PLACATE (A) determine (B) transmit (C) pacify (D) allow (E) define

535. PLAGIARISM (A) theft of funds (B) theft of ideas (C) belief in God (D) arson (E) ethical theory

536. PLAINTIVE (A) mournful (B) senseless (C) persistent (D) rural (E) evasive
537. PLATITUDE (A) fatness (B) bravery (C) dimension (D) trite remark (E) strong belief
538. POLEMIC (A) blackness (B) lighting (C) magnetism (D) controversy (E) grimace
539. PONDEROUS (A) contemplative (B) moist (C) rambling (D) bulky (E) erect
540. PRECARIOUS (A) priceless (B) premature (C) primitive (D) hazardous (E) unwelcome

Word List 37  precept-propitiate

precept  n. practical rule guiding conduct. “Love thy neighbor as thyself” is a worthwhile precept.
precipice  n. cliff; dangerous position. Suddenly Indiana Jones found himself dangling from the edge of a precipice.
precipitant  n. something that causes a substance in a chemical solution to separate out in solid form. Solvents by definition dissolve; precipitants, however, cause solids to precipitate or form. precipitate, v.
• precipitate  adj. rash; premature; hasty; sudden. Though I was angry enough to resign on the spot, I had enough sense to keep myself from quitting a job in such a precipitate fashion.
precipitate  v. throw headlong; hasten. The removal of American political support appeared to have precipitated the downfall of the Marcos regime.
predatory  adj. steep; overhasty. This hill is difficult to climb; because it is so predatory; one slip, and our descent will be predatory as well.
précis  n. concise summing up of main points. Before making her presentation at the conference, Ellen wrote a neat précis of the major elements she would cover.
precise  adj. exact. If you don’t give me precise directions and a map, I’ll never find your place.
preclude  v. make impossible; eliminate. The fact that the band was already booked to play in Hollywood on New Year’s Eve precluded their accepting the offer of a New Year’s Eve gig in London.
precocious  adj. advanced in development. Listening to the grown-up way the child discussed serious topics, we couldn’t help remarking how precocious she was. precocity, n.
• precursor  n. forerunner. Though Gray and Burgess share many traits with the Romantic poets who followed them, most critics consider them precursors of the Romantic Movement, not true Romantics.
predator  n. creature that seizes and devours another animal; person who robs or exploits others. Not just cats, but a wide variety of predators—owls, hawks, waspels, foxes—catch mice for dinner. A carnivore is by definition predatory, for he preys on weaker creatures. predation, n.
predessor  n. former occupant of a post. I hope I can live up to the fine example set by my late predecessor in this office.
predetermine  v. predestine; settle or decide beforehand; influence markedly. Romeo and Juliet believed that Fate had predetermined their meeting. Bet gathered estimates from caterers, florists, and stationers so that she could predetermine the costs of holding a catered buffet. Philip’s love of athletics predetermined his choice of a career in sports marketing.
predicament  n. tricky or dangerous situation; dilemma. Tied to the railroad tracks by the villain, Pauline strained against her bonds. How would she escape from this terrible predicament?
predilection  n. partiality; preference. Although the artist used various media from time to time, she had a predilection for watercolors.
predispose  v. give an inclination toward; make susceptible to. Olga’s love of dressing up her big sister’s Barbie doll may have predisposed him to become a fashion designer. Genetic influences apparently predispose people to certain forms of cancer. predisposition, n.
preaminant  adj. outstanding; superior. The king traveled to Boston because he wanted the preeminent surgeon in the field to perform the operation.
preampt  v. head off; forestall by acting first; appropriate for oneself; supplant. Hoping to preempt any attempts by the opposition to make educational reform a hot political issue, the candidate set out her own plan to revitalize the public schools. preemptive, adj.
preen  v. make oneself tidy in appearance; feel self-satisfaction. As Kitty preened before the mirror, carefully smoothing her shining hair, she couldn’t help preening herself on her good looks.
prefatory  adj. introductory. The chairman made a few prefatory remarks before he called on the first speaker.
prefersible  adj. capable of grasping or holding. Monkeys use not only their arms and legs but also their prehensile tails in traveling through the trees.
priest  n. church dignitary. The archbishop of Moscow and other high-ranking priests visited the Russian Orthodox seminary.
priest  n. introduction; forerunner. I am afraid that this border raid is the prelude to more serious attacks.
premeditate  v. plan in advance. She had premeditated the murder for months, reading about common poisons and buying weed killer that contained arsenic.
preeimise  n. assumption; postulate. On the premise that there’s no fool like an old fool, P. T. Barnum hired a 90-year-old clown for his circus.
preeouncement  n. forewarning. We ignored these preeouncements of disaster because they appeared to be based on childish fears.
preeomitory  adj. serving to warn. You should have visited a doctor as soon as you felt these preeomitory chest pains.
preponderance N. superiority of power, quantity, etc. The rebels sought to overcome the preponderance of strength of the government forces by engaging in guerrilla tactics. preponderate, v. preponderant, ADJ.

preposterous ADJ. absurd; ridiculous. When the candidate tried to downplay his youthful experiments with marijuana by saying he hadn’t inhaled, we all thought, "What a preposterous excuse!"

prerogative N. privilege; unquestionable right. The President cannot levy taxes; that is the prerogative of the legislative branch of government.

presage v. foretell. The vultures flying overhead presaged the discovery of the corpse in the desert.

prescience N. ability to foretell the future. Given the current wave of Japan-bashing, it does not take prescience for me to foresee problems in our future trade relations with Japan.

presentiment N. feeling something will happen; anticipation; fear; premonition. Saying goodbye at the airport, Jack had a sudden presentiment that this was the last time he would see Jill.

prestige N. impression produced by achievements or reputation. Many students want to go to Harvard University, not for the education offered, but for the prestige of Harvard’s name. prestigious, ADJ.

presumptuous ADJ. arrogant; taking liberties. It seems presumptuous for one so relatively new to the field to challenge the conclusions of its leading experts. presumption, n.

pretentious ADJ. ostentatious; pompous; making unjustified claims; overambitious. The other prize winner isn’t wearing her medal; isn’t it a bit pretentious of you to wear yours?

preternatural ADJ. beyond that which is normal in nature. John’s mother’s total ability to tell when he was lying struck him as almost preternatural.

pretext N. excuse. She looked for a good pretext to get out of paying a visit to her aunt.

prevail v. induce; triumph over. He tried to prevail on her to type his essay for him.

prevalent ADJ. widespread; generally accepted. A radical committed to social change, Reed had no patience with the conservative views prevalent in the America of his day.

prevaticate v. lie. Some people believe that to prevaricate in a good cause is justifiable and regard the statement as a "white lie."

prey N. target of a hunt; victim. In Stalking the Wild Asparagus, Euell Gibbons has as his prey not wild beasts but wild plants, also v.

prism ADJ. very precise and formal; exceedingly proper. Many people commented on the contrast between the prism attire of the young lady and the inappropriate clothing worn by her escort.

primogeniture N. seniority by birth. By virtue of primogeniture, in some cultures the first-born child has many privileges denied his brothers and sisters.

primordial ADJ. existing at the beginning (of time); rudimentary. The Neanderthal Man is one of our primordial ancestors.

primp v. groom oneself with care; adorn oneself. The groom stood by idly while his nervous bride-to-be primped one last time before the mirror.

pristine ADJ. characteristic of earlier times; primitive, unspoiled. This area has been preserved in all its pristine wilderness.

privation N. hardship; want. In his youth, he knew hunger and privation.

privey ADJ. secret; hidden; not public. We do not care for privey chamber government.

probe v. explore with tools. The surgeon probed the wound for foreign matter before suturing it. Also n.

probit N. uprightness; incorruptibility. Everyone took his probity for granted; his defalcations, therefore, shocked us all.

problematic ADJ. doubtful; unsettled; questionable; perplexing. Given the way building costs have exceeded estimates for the job, whether the arena will ever be completed is problematic.

procility N. inclination; natural tendency. Watching the two-year-old voluntarily put away his toys, I was amazed by his procility for neatness.

procrastinate v. postpone; delay or put off. Looking at four years of receipts and checks he still had to sort through, Bob was truly sorry he had procrastinated for so long and had not finished filing his taxes long ago.

procurement N. obtaining. The personnel department handles the procurement of new employees.

prod v. poke; stir up; urge. If you prod him hard enough, he’ll eventually clean his room.

profligate ADJ. wasteful; reckless with money. Don’t be so profligate spending my money; when you’ve earned some money, you can waste as much of it as you want! Also n.

prodigious ADJ. marvelous; enormous. Watching the champion weight lifter heave the weighty barbell to shoulder height and then boost it overhead, we marvelled at his prodigious strength.

prodigy N. highly gifted child; marvel. Munchin was a prodigy, performing wonders on his violin when he was barely eight years old.

profane v. violate, desecrate; treat unworthily. The members of the mysterious Far Eastern cult sought to kill the British explorer because he had profaned the sanctity of their holy goblet by using it as an ashtray. Also ADJ.

profligate ADJ. dissipated; wasteful; wildly immoral. Although surrounded by wild and profligate companions, she managed to retain some sense of decency. Also n. profigacy, N.

profound ADJ. deep; not superficial; complete. Freud’s remarkable insights into human behavior caused his fellow scientists to honor him as a profound thinker. Profundity, N.
profusion n. overabundance; lavish expenditure; excess. Freddy was so overwhelmed by the profusion of choices on the menu that he knocked over his wine glass and soaked his host. He made profuse apologies to his host, the waiter, the busboy, the people at the next table, and the man in the men's room giving out paper towels.

progenitor n. ancestor. The Roth family, whose progenitors emigrated from Germany early in the nineteenth century, settled in Peru, Illinois.

progeny n. children; offspring. He was proud of his progeny but regarded George as the most promising of all his children.

prognosis n. forecasted course of a disease; prediction. If the doctor's prognosis is correct, the patient will be in a coma for at least twenty-four hours.

prognosticate v. predict. I prognosticate disaster unless we change our wasteful ways.

prohibitive adj. tending to prevent the purchase or use of something; inclined to prevent or forbid. Susie wanted to buy a new Volvo but had to settle for a used Dodge because the new car's price was prohibitive. Prohibition, n.

projectile n. missile. Man has always hurled projectiles at his enemy whether in the form of stones or of highly explosive shells.

proletarian n. member of the working class; blue collar guy. "Workers of the world, unite! You have nothing to lose but your chains" is addressed to proletarians, not preppies. Also, adj. proletarian, n.

proliferate v. grow rapidly; spread; multiply. Times of economic hardship inevitably encourage countless get-rich-quick schemes to proliferate. Proliferation, n.

prolific adj. abundantly fruitful. She was a prolific writer who produced as many as three books a year.

proximity n. tedious wordiness; verbosity. A writer who suffers from proximity tells his reader everything they never wanted to know about his subject (or were too bored to ask). Prolix, adj.

prologue n. introduction (to a poem or play). In the prologue to Romeo and Juliet, Shakespeare introduces the audience to the feud between the Montagues and the Capulets.

prolong v. extend; draw out; lengthen. In their determination to discover ways to prolong human life, doctors fail to take into account that longer lives are not always happier ones.

prominent adj. conspicuous, notable; protruding. Have you ever noticed that Prince Charles's prominent ears make him resemble the big-eared character in Mad Comics?

promiscuous adj. mixed indiscriminately; haphazard; irregular, particularly sexually. In the opera La Bohème, we get a picture of the promiscuous life led by the young artists of Paris. Promiscuity, n.

promontory n. headland. They erected a lighthouse on the promontory to warn approaching ships of their nearness to the shore.

promote v. help to flourish; advance in rank; publicize. Founder of the Children's Defense Fund, Marian Wright Edelman ceaselessly promotes the welfare of young people everywhere.

prompt v. cause; provoke; provide a cue for an actor. Whatever prompted you to ask for such a big piece of cake when you're on a diet?

promulgate v. proclaim a doctrine or law; make known by official publication. When Moses came down from the mountaintop prepared to promulgate God's commandments, he was appalled to discover his followers worshipping a golden calf.

prone adj. inclined to; prostrate. She was prone to sudden fits of anger during which she would lie prone on the floor, screaming and kicking her heels.

propagate v. multiply, spread. Since bacteria propagate more quickly in unsanitary environments, it is important to keep hospital rooms clean.

propellant n. substance that propels or drives forward. The development of our missile program has forced our scientists to seek more powerful propellants. Also, adj.

propensity n. natural inclination. Convinced of his own talent, Soi has an unfortunate propensity to belittle the talents of others.

prophetic adj. having to do with predicting the future. In interpreting Pharaoh's prophetic dream, Joseph said that the seven fat cows eaten by the seven lean cows represented seven years of plenty followed by seven years of famine. Prophecy, n.

prophylactic adj. used to prevent disease. Despite all prophylactic measures introduced by the authorities, the epidemic raged until cool weather set in. Prophylaxis, n.

propinquity n. nearness; kinship. Their relationship could not be explained as being based on mere propinquity. They were more than relatives; they were true friends.

propitiate v. appease. The natives offered sacrifices to propitiate the gods.

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Test

Word List 37 Antonyms

Each of the following questions consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.
541. PRECIPITATE (A) dull (B) anticipatory (C) cautious (D) considerate (E) welcome
542. PREFATORY (A) outstanding (B) magnificent (C) conclusive (D) intelligent (E) predatory
543. PRELUDE (A) intermezzo (B) diva (C) aria (D) aftermath (E) duplication
544. PRESUMPTION (A) assertion (B) activation (C) motivation (D) proposition (E) humility
545. PRETENTIOUS (A) ominous (B) calm (C) unassuming (D) futile (E) volatile
546. PRIM (A) informal (B) prior (C) exterior (D) private (E) cautious
547. PRISTINE (A) cultivated (B) condemned (C) irreligious (D) cautious (E) critical
548. PROBITY (A) regret (B) assumption (C) compatibility (D) extent (E) upswing
549. PRODIGAL (A) large (B) thrifty (C) consistent (D) compatible (E) remote
550. PRODIGIOUS (A) infinitesimal (B) indignant (C) indifferent (D) indisposed (E) insufficient
551. PROFANE (A) sanctify (B) desecrate (C) define (D) manifest (E) urge
552. PROLIFIC (A) unworkable (B) backward (C) barren (D) controversial (E) unfocused
553. PROLIX (A) stupid (B) indifferent (C) redundant (D) livid (E) pitiful
554. PROPHYLACTIC (A) causing growth (B) causing disease (C) antagonistic (D) brushing (E) favorable
555. PROPINQUITY (A) remoteness (B) uniqueness (C) health (D) virtue (E) simplicity

Word List 38 propitious-quarry

propitious ADJ. favorable; fortunate; advantageous. Chloe consulted her horoscope to see whether Tuesday would be a propitious day to dump her boyfriend.
proponent N. supporter; backer; opposite of opponent
In the Senate, proponents of the universal health care measure lobbied to gain additional support for the controversial legislation.
propound V. put forth for analysis. In your discussion, you have propounded several questions; let us consider each one separately.
propriety N. fitness; correct conduct. Miss Manners counsels her readers so that they may behave with propriety in any social situation and not embarrass themselves.
propulsive ADJ. driving forward. The jet plane has a greater propulsive power than the engine-driven plane.
prosaic ADJ. dull and unimaginative; matter-of-fact; factual. Though the ad writers had come up with a highly creative campaign to publicize the company's newest product, the head office rejected it for a more prosaic, down-to-earth approach.
proscenium N. part of stage in front of curtain. In the theater-in-the-round there can be no proscenium or proscenium arch. Also ADJ.
proscribe V. ostracize; banish; outlaw. Antony, Octavius, and Lepidus proscribed all those who had conspired against Julius Caesar.
proselytize V. induce someone to convert to a religion or belief. In these interfaith meetings, there must be no attempt to proselytize; we must respect all points of view.
prosody N. the art of versification. This book on prosody contains a rhyming dictionary as well as samples of the various verse forms.
prosperity N. good fortune; financial success; physical well-being. Promising to stay together "for richer, for poorer," the newlyweds vowed to be true to one another in prosperity and hardship alike.
prostrate V. stretch out full on ground. He prostrated himself before the idol. Also ADJ.
protean ADJ. versatile; able to take on many forms. A remarkably protean actor, Alec Guinness could take on any role.
protégé N. person receiving protection and support from a patron. Born with an independent spirit, Cyrano de Bergerac refused to be a protégé of Cardinal Richelieu.
protocol N. diplomatic etiquette. We must run this state dinner according to protocol if we are to avoid offending any of our guests.
prototype N. original work used as a model by others. The crude typewriter on display in this museum is the prototype of the elaborate machines in use today.
protract V. prolong. Seeking to delay the union members' vote, the management team tried to protract the negotiations endlessly, but the union representatives saw through their strategy.
protrude V. stick out. His fingers protruded from the holes in his gloves.
protuberance N. protrusion; bulge. A ganglion cyst is a fluid-filled tumor (generally benign) that develops near a joint membrane or tendon sheath, and that bulges beneath the skin, forming a protuberance.
provenance N. origin or source of something. I am not interested in its provenance; I am more concerned with its usefulness than with its source.
proverbial

provisional

proviso

provocative

proximity

proxy

prude

prudent

prune

prudent

pity

pseudo

psychic

psychiatrist

psychopathic

psychology

psychosis

pterodactyl

puerile

pugnacious

puissant

puisance

puisate

puiser

puissant

punctilious

pundit

pungent

punitive

puny

purchase

purge

purifying

purgatory

purgative

puritanical

purist
purport n. intention; meaning. If the purport of your speech was to arouse the rabble, you succeeded admirably. Also v.

portated adj. alleged; claimed; reputed or rumored. The purported Satanists sacrificing live roosters in the park turned out to be a party of Shriners holding a chicken barbecue.

purse v. pucker; contract into wrinkles. Miss Watson pursed her lips to show her disapproval of Huck’s bedraggled appearance.

purveyor n. furnisher of foodstuffs; caterer. As purveyor of rare wines and viands, he traveled through France and Italy every year in search of new products to sell.

pusillanimous adj. cowardly; faint-hearted. You should be ashamed of your pusillanimous conduct during this dispute. Pusillanimity. n.

putative adj. supposed; reputed. Although there are some doubts, the putative author of this work is Massinger.

putrid adj. foul; rotten; decayed. When the doctor removed the bandages, the putrid smell indicated that the wound had turned gangrenous. Putrescence, putrefaction. n.

pylon n. marking post to guide aviators; steel tower supporting cables or telephone lines. Amelia Earhart carefully banked her airplane as she followed the line of pylons set up to mark the course of the Great Plane Race.

pyromaniac n. person with an insane desire to set things on fire. The detectives searched the area for the pyromaniac who had set these costly fires.

quack n. charlatan; impostor. Do not be misled by the exorbitant claims of this quack; he cannot cure you.

quadruped n. four-footed animal. Most mammals are quadrupeds.

quaff v. drink with relish. As we quaffed our ale, we listened to the gay songs of the students in the tavern.

quagmire n. soft, wet, boggy land; complex or dangerous situation from which it is difficult to free oneself. Up to her knees in mud, Myra wondered how on earth she was going to extricate herself from this quagmire.

quail v. cower; lose heart. He was afraid that he would quail in the face of danger.

quaint adj. odd; old-fashioned; picturesque. Her quaint clothes and old-fashioned language marked her as an eccentric.

qualified adj. limited; restricted. Unable to give the candidate full support, the mayor gave him only a qualified endorsement. (Secondary meaning)

qualms n. misgivings; uneasy fears, especially about matters of conscience. I have no qualms about giving this assignment to Helen; I know she will handle it admirably.

quandary n. dilemma. When both Harvard and Stanford accepted Laura, she was in a quandary as to which school she should attend.

quarantine n. isolation of a person, place, or ship to prevent spread of infection. We will have to place this house under quarantine until we determine the exact nature of the disease. Also v.

quarry n. victim; object of a hunt. The police closed in on their quarry.

quarry v. dig into. They quarried blocks of marble out of the hillside.

Test

Word List 38  Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

556. PROPITIOUS (A) rich (B) induced (C) promoted (D) indicative (E) unfavorable

557. PROSAIC (A) pacified (B) reprieved (C) pensive (D) imaginative (E) rhetorical

558. PROTEAN (A) amateur (B) catholic (C) unchanging (D) rapid (E) unfavorable

559. PROTRACT (A) make circular (B) shorten (C) further (D) retract (E) involve

560. PROVIDENT (A) unho6y (B) rash (C) miserable (D) disabled (E) remote

561. PROVINCIAL (A) wealthy (B) crass (C) literary (D) aural (E) sophisticated

562. PSYCHOTIC (A) dangerous (B) clairvoyant (C) criminal (D) soulful (E) sane

563. PUERILE (A) fragrant (B) adult (C) lonely (D) feminine (E) masterly

564. PUGNACIOUS (A) pacific (B) feline (C) mature (D) angular (E) inactive

565. PUSSANT (A) pouring (B) fashionable (C) articulate (D) healthy (E) weak

566. PUICHRITUDE (A) ugliness (B) notoriety (C) bestialty (D) masculinity (E) servitude

567. PUNCTILIOUS (A) happy (B) active (C) vivid (D) careless (E) futile

568. PUNITIVE (A) large (B) humorous (C) rewarding (D) restive (E) languishing

569. PUSILLANIMOUS (A) poverty-stricken (B) chained (C) posthumous (D) courageous (E) strident

570. PUTATIVE (A) colonial (B) quarrelsome (C) undisputed (D) powerful (E) unremarkable
Word List 39  quash-recurrent

quash  v. subdue; crush; squash. The authorities acted quickly to quash the student rebellion, sending in tanks to cow the demonstrators.

quay  n. dock; landing place. Because of the captain's carelessness, the ship crashed into the quay.

quassy  adj. easily nauseated; squeamish. Remember that great chase movie, the one with the carsick passenger? That's right: Quassy Rider!

quell  v. extinguish; put down; quiet. Miss Minchin's demeanor was so stern and forbidding that she could quell any unrest among her students with one intimidating glance.

quench  v. douse or extinguish; assuage or satisfy. What's the favorite song of the Fire Department? "Baby, Quench My Fire!" After Bob ate the heavily salted popcorn, he had to drink a pitcher of water to quench his thirst.

querulous  adj. fretful; whining. Even the most agreeable toddlers can begin to act querulous if they miss their nap.

query  n. inquiry; question. In her column "Ask Beth," the columnist invites young readers to send their queries about life and love to her. Also v.

queue  n. line. They stood patiently in the queue outside the movie theater.

quibble  n. minor objection or complaint. Aside from a few hundred teesy-weesy quibbles about the set, the script, the actors, the director, the costumes, the lighting, and the props, the hypercritical critic loved the play. Also v.

quiescent  adj. at rest; dormant; temporarily inactive. After the devastating eruption, fear of Mount Etna was great; people did not return to cultivate its rich hillside lands until the volcano had been quiescent for a full two years.

quietude  n. tranquility. He was impressed by the air of quietude and peace that pervaded the valley.

quintessence  n. purest and highest embodiment. Noel Coward displayed the quintessence of wit.

quip  n. taunt. You are unpopular because you are too free with your quips and sarcastic comments. Also v.

quirk  n. startling twist; caprice. By a quirk of fate, he found himself working for the man whom he had discharged years before.

quisling  n. traitor who aids invaders. In his conquest of Europe, Hitler was aided by the quislings who betrayed their own people and served in the puppet governments established by the Nazis.

quiver  n. case for arrows. Robin Hood reached back and plucked one last arrow from his quiver. (Secondary meaning)

quiver  v. tremble; shake. The bird dog's nose twitched and his whiskers quivered as he strained eagerly against the leash. Also n.

quixotic  adj. idealistic but impractical. Constantly coming up with quixotic, unworkable schemes to save the world, Simon has his heart in the right place, but his head is somewhere off in the clouds.

quizical  adj. teasing; bantering; mocking; curious. When the skinny teenager tripped over his own feet stepping into the bullpen, Coach raised one quizical eyebrow, shook his head, and said, "Okay, kid. You're here; let's see what you've got."

quorum  n. number of members necessary to conduct a meeting. The senator asked for a roll call to determine whether a quorum was present.

quotidian  adj. daily; commonplace; customary. To Philip, each new day of his internship was filled with excitement; he could not dismiss his rounds as merely quotidian routine.

rabid  adj. like a fanatic; furious. He was a rabid follower of the Dodgers and watched them play whenever he could go to the ballpark.

raconteur  n. story-teller. My father was a gifted raconteur with an unlimited supply of anecdotes.

ragamuffin  n. person wearing tattered clothes. He felt sorry for the ragamuffin who was begging for food and gave him money to buy a meal.

rail  v. scold; rant. You may rail at him all you want; you will never change him.

raiment  n. clothing. "How can I go to the ball?" asked Cinderella. "I have no raiment fit to wear."

rakish  adj. stylish; sporty. He wore his hat at a rakish and jaunty angle.

rally  v. call up or summon (forces; vital powers, etc.); revive or recover. Washington quickly rallied his troops to fight off the British attack. The patient had been sinking throughout the night, but at dawn she rallied and made a complete recovery. Also n.

ramble  v. wander aimlessly (physically or mentally). Listening to the teacher ramble, Judy wondered whether he'd ever get to his point. Also n.

ramification  n. branching out; subdivision. We must examine all the ramifications of this problem.

rampant  adj. growing in profusion; unrestrained. The rampart weeds in the garden choked the asters and marigolds until the flowers died. Rampancy, n.

rampart  n. defensive mound or earth. "From the ramparts we watched" as the fighting continued.
ramshackle ADJ. rickety; falling apart. The boys propped up the ramshackle clubhouse with a couple of boards.

rancid ADJ. having the odor of stale fat. A rancid odor filled the ship’s galley and nauseated the crew.
rancor N. bitterness; hatred. Thirty years after the war, she could not let go of the past but was still consumed with rancor against the foe. Rancorous, ADJ.

random ADJ. without definite purpose, plan, or aim; haphazard. Although the sponsor of the raffle claimed all winners were chosen at random, people had their suspicions when the grand prize went to the sponsor’s brother-in-law.
rattle V. irritate, frustrate. The memory of having been jilted rambled him for years.
rave V. rave; talk excitedly; scold; make a grandiloquent speech. When he heard that I’d totaled the family car, Dad began to rave at me like a complete madman.

ravine N. narrow valley with steep sides. Steeper than a guilty, less precipitous than a canyon, a ravine is, like them, the product of years of erosion.
ravage V. destroy completely. Spelling matters: to raise a building is to put it up; to raze a building is to tear it down.

reactionary ADJ. opposing progress; politically ultraconservative. Opposing the use of English in worship services, reactionary forces in the church fought to reinstate the mass in Latin. Also N.

realm N. kingdom; field or sphere. In the animal realm, the lion is the king of beasts.

reap N. one who harvests grain. Death, the Grim Reaper, cuts down mortal men and women, just as a farmer cuts down the ripened grain.

rebate N. discount. We offer a rebate of ten percent to those who pay cash.

rebuff V. snub; beat back. She rebuffed his invitation so smoothly that he did not realize he had been snubbed. Also N.

rebuke V. scold harshly; criticize severely. No matter how sharply Miss Watson rebuked Huck for his misconduct, he never talked back but just stood there like a stump. Also N.

rebuke N. puzzle in which pictures stand for words. A coven of witches beside a tree is a possible rebus for the town Coventry.

rebuttal N. refutation; response with contrary evidence. The defense lawyer confidently listened to the prosecutor sum up his case, sure that she could answer his arguments in her rebuttal.

rectification N. reasoning; act of drawing conclusions from premises. While Watson was a man of average intelligence, Holmes was a genius, whose gift for rectification made him a superb detective.

rational N. fundamental reason or justification; grounds for an action. Her need for a vehicle large enough to accommodate five children and a Saint Bernard was Judy’s rationale for buying a minivan.

rationalize V. give a plausible reason for an action in place of a true, less admirable one; offer an excuse. When David refused Gabby Gabrielle a ride to the dance because, he said, he had no room in the car, he was rationalizing; actually, he couldn’t stand being cooped up in a car with anyone who talked as much as she did.
rationalization, N.

raucous ADJ. harsh and shrill; disorderly and boisterous. The raucous crowd of New Year’s Eve revelers grew progressively noisier as midnight drew near.
ravage V. plunder; despoil. The marauding army ravaged the countryside.

rave N. overwhelmingly favorable review. Though critic John Simon seldom has a good word to say about contemporary plays, his review of All In the Timing was a total rave.
vison; the number of persons serving second and third terms indicates the failure of the prisons to rehabilitate the inmates.

recipient N. receiver. Although he had been the recipient of many favors, he was not grateful to his benefactor.

reciprocal adj. mutual; exchangeable; interacting. The two nations signed a reciprocal trade agreement.

reciprocate v. repay in kind. If they attack us, we shall be compelled to reciprocate and bomb their territory. reciprocity, n.

recluse n. hermit; loner. Disappointed in love, Miss Emily became a recluse; she shut herself away in her empty mansion and refused to see another living soul.

reconcile v. correct inconsistencies; become friendly after a quarrel. Every time we try to reconcile our checkbook with the bank statement, we quarrel. However, despite these monthly lovers' quarrels, we always manage to reconcile.

recondite adj. abstruse; profound; secret. He read many recondite books in order to obtain the material for his scholarly thesis.

reconnaissance n. survey of enemy by soldiers; reconnoitering. If you encounter any enemy soldiers during your reconnaissance, capture them for questioning.

recount v. narrate or tell; count over again. About to recount the latest adventure of Sherlock Holmes, Watson lost track of exactly how many cases Holmes had solved and refused to begin his tale until he'd recounted them one by one.

recourse n. resorting to help when in trouble. The boy's only recourse was to appeal to his father for aid.

recrimination n. countercharges. Loud and angry recriminations were her answer to his accusations.

rectify v. set right; correct. You had better send a check to rectify your account before American Express cancels your credit card.

rectitude n. uprightness; moral virtue; correctness of judgment. The Eagle Scout was a model of rectitude; smugness was the only flaw he needed to correct.

recumbent adj. reclining; lying down completely or in part. The command "AT EASE" does not permit you to take a recumbent position.

re recuperate v. recover. The doctors were worried because the patient did not recuperate as rapidly as they had expected.

recurring adj. occurring again and again. These recurring attacks disturbed us and we consulted a physician.

Test

Word List 39 Synonyms and Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar or opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

571. QUEASY (A) toxic (B) easily upset (C) chronic (D) choleric (E) false

572. QUELL (A) boast (B) incite (C) reverse (D) wet (E) answer

573. QUIXOTIC (A) rapid (B) exotic (C) longing (D) timid (E) idealistic

574. RAGAMUFFIN (A) dandy (B) miser (C) exotic dance (D) light snack (E) baker

575. RAUCOUS (A) mellifluous (B) uncooked (C) realistic (D) veracious (E) anticipating

576. RAVAGE (A) rankle (B) revive (C) plunder (D) pillory (E) age

577. RAZE (A) shave (B) heckle (C) finish (D) tear down (E) write
redolent adj. fragrant; odorous; suggestive of an odor. Even though it is February, the air is redolent of spring.

redoubtable adj. formidable; causing fear. During the Cold War period, neighboring countries tried not to offend the Russians because they could be redoubtable foes.

redress n. remedy; compensation. Do you mean to tell me that I can get no redress for my injuries? also v.

redundant adj. superfluous; repetitious; excessively wordy. The bottle of wine I brought to Bob's party was certainly redundant; how was I to know Bob owned a winery? In your essay, you repeat several points unnecessarily; try to avoid redundancy in the future.

reek v. emit (odor). The room reeked of stale tobacco smoke. Also n.

refectory n. dining hall. In this huge refectory, we can feed the entire student body at one sitting.

refraction n. bending of a ray of light. When you look at a stick inserted in water, it looks bent because of the refraction of the light by the water.

refractory adj. stubborn; unmanageable. The refractory horse was eliminated from the race when he refused to obey the jockey.

refrain v. abstain from; resist. n. chorus. Whenever he heard a song with a lively chorus, Sol could never refrain from joining in on the refrain.

refulgent adj. brightly shining; gleaming. The squire polished the knight's armor until it gleamed in the light like the refulgent moon.

refurbish v. renovate; make bright by polishing. The flood left a deposit of mud on everything; it was necessary to refurbish our belongings.

refute v. disprove. The defense called several respectable witnesses who were able to refute the lying testimony of the prosecution's sole witness. refutation n.

regal adj. royal. Prince Albert had a regal manner.

regale v. entertain. John regaled us with tales of his adventures in Africa.

regatta n. boat or yacht race. Many boating enthusiasts followed the regatta in their own yachts.

regeneration n. spiritual rebirth. Modern penologists strive for the regeneration of the prisoners.

regicide n. murder of a king or queen. The beheading of Mary Queen of Scots was an act of regicide.

regime n. method or system of government. When a Frenchman mentions the Old Regime, he refers to the government existing before the revolution.

regimen n. prescribed diet and habits. I doubt whether the results warrant our living under such a strict regimen.

rehabilitate v. restore to proper condition. We must rehabilitate those whom we send to prison.

reimburse v. repay. Let me know what you have spent and I will reimburse you.

reiterate v. repeat. She reiterated the warning to make sure everyone understood it.

rejoinder n. retort; comeback; reply. When someone has been rude to me, I find it particularly satisfying to come up with a quick rejoinder.

rejuvenate v. make young again. The charlatan claimed that his elixir would rejuvenate the aged and weary.

relegate v. banish to an inferior position; delegate; assign. After Ralph dropped his second tray of drinks that week, the manager swiftly relegated him to a minor post cleaning up behind the bar.

relent v. give in. When her stern father would not relent and allow her to marry Robert Browning, Elizabeth Barrett eloped with her suitor, relentless, adj.

relevant adj. pertinent; referring to the case in hand. Teri was impressed by how relevant Virginia Woolf's remarks were to her as a woman writer; it was as if Woolf had been writing with Teri's situation in mind. relevance, n.

relic n. surviving remnant; memento. Egypt's Department of Antiquities prohibits tourists from taking mummies and other ancient relics out of the country. Mike keeps his photos of his trip to Egypt in a box with other relics of his travels.

relinquish v. give up something with reluctance, yield. Once you get used to fringe benefits like expense-account meals and a company car, it's very hard to relinquish them.

relish v. savor; enjoy. Watching Peter enthusiastically chew down, I thought, "Now there's a man who relishes a good dinner!" also n.

remediable adj. repairable. Let us be grateful that the damage is remediable.

reminiscence n. recollection. Her reminiscences of her experiences are so fascinating that she ought to write a book.

remiss adj. negligent. When the prisoner escaped, the guard was accused of being remiss in his duty.

remission n. temporary moderation of disease symptoms; cancellation of a debt; forgiveness or pardon. Though Senator Tsongas had been treated for cancer, his symptoms were in remission, and he was considered fit to handle the strains of a presidential race.

remnant n. remainder. I suggest that you wait until the store places the remnants of these goods on sale.

remonstrance n. protest; objection. The authorities were deaf to the pastor's remonstrances about the lack of police protection in the area. remonstrate, v.

remorse n. guilt; self-reproach. The murderer felt no remorse for his crime.

remunerative adj. compensating; rewarding. I find my new work so remunerative that I may not return to my previous employment. remuneration, n.
rend  v. split; tear apart. In his grief, he tried to rend his garments. rent, v.
render  v. deliver; provide; represent. He rendered aid to the needy and indigent.
rendezvous  n. meeting place. The two fleets met at the rendezvous at the appointed time. Also v.
rendition  n. translation: artistic interpretation of a song, etc. The audience cheered enthusiastically as she completed her rendition of the aria.
renegade  n. deserter; traitor. Because he had abandoned his post and joined forces with the Indians, his fellow officers considered the hero of Dances with Wolves a renegade. Also adj.
renge  v. deny; go back on. He reneged on paying off his debt.
renounce  v. abandon; disown; repudiate. Even though she knew she would be burned at the stake as a witch, Joan of Arc refused to renounce her belief that her voices came from God. renunciation, n.
renovate  v. restore to good condition; renew. They claim that they can renovate worn shoes so that they look like new ones.
renown  n. fame. For many years an unheralded researcher, Barbara McClintock gained international renown when she won the Nobel Prize in Physiology and Medicine. renowned, adj.
rent  n. rent; split. Kit did an excellent job of mending the rent in the lining of her coat. rend, v.
reparable  adj. capable of being repaired. Fortunately, the damages suffered in the accident were repairable and our car looks brand new.
reparation  n. amends; compensation. At the peace conference, the defeated country promised to pay reparations to the victors.
repartee  n. clever reply. He was famous for his witty repartee and his sarcasm.
repart  n. meal; feast; banquet. The caterers prepared a delicious repast for Fred and Judy's wedding day.
repeal  v. revoke; annul. What would the effect on our society be if we decriminalized drug use by repealing the laws against the possession and sale of narcotics?
repeal  v. drive away; disgust. At first, the Beast's ferocious appearance repelled Beauty, but she came to love the tender heart hidden behind that beastly exterior.
repellent  adj. driving away; unattractive. Mosquitoes find the odor so repellent that they leave any spot where this liquid has been sprayed. Also n.
repercussion  n. rebound; reverberation; reaction. I am afraid that this event will have serious repercussions.
repertory  n. list of works of music, drama, etc., a performer is prepared to present. The opera company decided to include Madame Butterfly in its repertory for the following season.
repine  v. fret; complain. There is no sense repining over the work you have left undone.
replenish  v. fill up again. Before she could take another backpacking trip, Caria had to replenish her stock of freeze-dried foods.
replete  adj. filled to the brim or to the point of being stuffed, abundantly supplied. The movie star's memoir was replete with juicy details about the love life of half of Hollywood.
replica  n. copy. Are you going to hang this replica of the Declaration of Independence in the classroom or in the auditorium?
replicate  v. reproduce; duplicate. Because he had always wanted a palace, Donald decided to replicate the Taj Mahal in miniature on his estate.
repository  n. storehouse. Libraries are repositories of the world's best thoughts.
reprehensible  adj. deserving blame. Shocked by the viciousness of the bombing, politicians of every party uniformly condemned the terrorists' reprehensible deed.
repress  v. restrain; crush; oppress. Anne's parents tried to curb her impetuousity without repressing her boundless high spirits.
reproach  n. temporary stay. During the twenty-four-hour reprieve, the lawyers sought to make the stay of execution permanent. Also v.
reprimand  n. strong rebuke; formal reproof; scolding. Every time Erma got a mistake in class, she was terrified that she would receive a harsh reprimand from Miss Minchin.
reprisal  n. retaliation. I am confident that we are ready for any reprisals the enemy may undertake.
reprise  n. musical repetition; repeat performance; recurrent action. We enjoyed the soprano's solo in Act I so much that we were delighted by its reprise in the finale. At Waterloo, it was not the effect of any one skirmish that exhausted Colonel Audley; rather, it was the cumulative effect of the constant reprisals that left him spent.
reproach  v. express disapproval or disappointment. He Never could do anything wrong without imagining how the look on his mother's face would reproach him afterwards. Also n. reproachful, adj.
reprobate  n. person hardened in sin, devoid of a sense of decency. I cannot understand why he has so many admirers if he is the reprobate you say he is.
reprobation  n. severe disapproval. The students showed their reprobation of his act by refusing to talk with him.
reprove  v. censure; rebuke. Though Aunt Bea at times would reprove Opie for inattention in church, she believed he was at heart a God-fearing lad. reproof, n.
repudiate  v. disown; disavow. On separating from Tony, Tina announced that she would repudiate all debts incurred by her soon-to-be ex-husband.
repugnance  n. loathing. She looked at the snake with repugnance.
reputation  n. distaste; act of driving back. Halting bloodshed, she viewed war with repulsion. Even defensive battles distressed her, for the repulsion of enemy forces is never accomplished bloodlessly. Repulse, v.
reputable ADJ. respectable. If you want to buy antiques, look for a reputable dealer; far too many dealers today pass off fakes as genuine antiques.

reputed ADJ. supposed. He is the reputed father of the child. repute, v. repute, n.

requiem n. mass for the dead: dirge. They played Mozart's Requiem at the funeral.

requisite N. necessary requirement. Many colleges state that a student must offer three years of a language as a requisite for admission.

requite v. repay; revenge. The wretch requited his benefactors by betraying them.

Test

Word List 40 Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

586. REFRACTORY (A) articulate (B) sinkable (C) vaunted (D) useless (E) unmanageable
587. REGAL (A) oppressive (B) royal (C) major (D) basic (E) entertaining
588. REITERATE (A) gainsay (B) revive (C) revenge (D) repeat (E) return
589. RELISH (A) desire (B) nibble (C) savor (D) vindicate (E) avail
590. REMISS (A) lax (B) lost (C) foolish (D) violating (E) ambitious
591. REMONSTRATE (A) display (B) restate (C) protest (D) resign (E) reiterate

592. REPARTEE (A) witty retort (B) willful departure (C) spectator (D) monologue (E) sacrifice
593. REPELLENT (A) propulsive (B) unattractive (C) porous (D) stiff (E) elastic
594. REPERCUSSION (A) reaction (B) restitution (C) resistance (D) magnificence (E) acceptance
595. REPLENISH (A) polish (B) repeat (C) reinstated (D) refill (E) refuse
596. REPLICA (A) museum piece (B) famous site (C) battle emblem (D) facsimile (E) replacement
597. REPRISAL (A) reevaluation (B) assessment (C) loss (D) retaliation (E) nonsense
598. REPROVE (A) prevail (B) rebuke (C) ascertain (D) prove false (E) draw back
599. REPUDIATE (A) besmirch (B) appropriate (C) annoy (D) reject (E) avow
600. REPUGNANCE (A) belligerence (B) tenacity (C) renewal (D) pity (E) loathing

Word List 41 rescind-sacrosanct

rescind v. cancel. Because of the public outcry against the new taxes, the senator proposed a bill to rescind the unpopular financial measure.

resentment n. indignation: bitterness: displeasure. Not wanting to appear a sore loser, Bill tried to hide his resentment of Barry's success.

reserve n. self-control: formal but distant manner. Although some girls were attracted by Mark's reserve, Judy was put off by it, for she felt his aloofness indicated a lack of openness. reserved, ADJ.

residue n. remainder: balance. In his will, he requested that after payment of debts, taxes, and funeral expenses, the residue be given to his wife.

resignation n. patient submissiveness; statement that one is quitting a job. If Bob Cratchit had not accepted Scrooge's bullying with timid resignation, he might have gotten up the nerve to hand in his resignation. resigned, ADJ.

resilient ADJ. elastic; having the power of springing back. Highly resilient, steel makes excellent bed springs. resilience, n.

resolution n. determination. Nothing could shake his resolution to succeed despite all difficulties. resolute, ADJ.

resolve n. determination; firmness of purpose. How dare you question my resolve to take up sky-diving! Of course I haven't changed my mind! also v.

resolve v. decide; settle; solve. Holmes resolved to travel to Bohemia to resolve the dispute between Irene Adler and the King.

resonant ADJ. echoing; resounding; deep and full in sound. The deep, resonant voice of the actor James Earl Jones makes him particularly effective when he appears on stage.

respiration n. breathing; exhalation. The doctor found that the patient's years of smoking had adversely affected both his lung capacity and his rate of respiration.

respite n. interval of relief; time for rest; delay in punishment. For David, the two weeks vacationing in New Zealand were a delightful respite from the pressures of his job.
resplendent ADJ. dazzling; glorious; brilliant. While all the adults were commenting how glorious the emperor looked in his resplendent new clothes, one little boy was heard to say, "But he's naked!"

responsiveness N. state of reacting readily to appeals, orders, etc. The audience cheered and applauded, delighting the performers by its responsiveness.

restitution N. reparation; indemnification. He offered to make restitution for the window broken by his son.

restitute ADJ. restlessly impatient; obstinately resisting control. Waiting impatiently in line to see Santa Claus, even the best-behaved children grew restless and start to fidget.

restraint N. moderation or self-control; controlling force; restriction. Show some restraint, young lady! These desserts is quite enough!

resumption N. taking up again; recommencement. During the summer break, Don had not realized how much he missed university life at the resumption of classes, however, he felt marked excitement and pleasure. resume, v.

resurge v. rise again; flow to and fro. It was startling to see the spirit of nationalism resurge as the Soviet Union disintegrated into a loose federation of ethnic and national groups: resurgence, n. resurgent, ADJ.

resuscitate v. revive. The lifeguard tried to resuscitate the drowned child by applying artificial respiration.

rein v. keep; employ. Fighting to retain his seat in Congress, Senator Foghorn retained a new manager to head his reelection campaign.

retaliatory v. action of retaliation. Because everyone knew the Princeton band had stolen Brown's mascot, the whole Princeton student body expected some sort of retaliation from Brown. retaliate, v.

retractive ADJ. holding; having a good memory. The pupil did not need to spend much time in study as he had a retractive mind.

reticent ADJ. reserved; uncommunicative; inclined to silence. Fearing his competitors might get advance word about his plans from talkative staff members, Hughes preferred reticent employees to loquacious ones. reticence, n.

retinue N. following; attendants. The queen's retinue followed her down the aisle.

retiring ADJ. modest; shy. Given Susan's retiring personality, no one expected her to take up public speaking; surprisingly enough, she became a star of the school debate team.

retort N. quick, sharp reply. Even when it was advice for her to keep her mouth shut, she was always ready with a retort. also v.

retract v. withdraw; take back. When I saw how Fred and his fraternity brothers had trashed the frat house, I decided to retract my offer to let them use our summer cottage for the weekend. retraction, N.

retranche v. cut down; economize. If they were to be able to send their children to college, they would have to retranche.

retribution N. vengeance; compensation; punishment for offenses. The evangelist maintained that an angry deity would exact retribution from the sinners.

retrieve v. recover; find and bring in. The dog was intelligent and quickly learned to retrieve the game killed by the hunter. retrieval, n.

retroactive ADJ. taking effect before its enactment (as a law) or imposition (as a tax). Because the new pension law was retroactive to the first of the year, even though Martha had retired in February she was eligible for the pension.

retrograde v. go backwards; degenerate. Instead of advancing, our civilization seems to have retrograded in ethics and culture, also ADJ.

retrospective ADJ. looking back on the past. The Museum of Graphic Arts is holding a retrospective showing of the paintings of Michael Whelan over the past two decades. also n. retrospective.

revelry N. boisterous merrymaking. New Year's Eve is a night of revelry.

reverberate v. echo; resound. The entire valley reverberated with the sound of the church bells.

reverent ADJ. respectful; worshipful. Though I bow my head in church and recite the prayers, sometimes I don't feel properly reverent. reverence, n.

reverie N. daydream; musing. She was awakened from her reverie by the teacher's question.

revert v. relapse; backslide; turn back to. Most of the time Andy seemed sensitive and mature, but occasionally he would revert to his smart-ass, macho, adolescent self. reversion, n.

revile v. attack with abusive language; vilify. Though most of his contemporaries reviled Captain Kidd as a notorious, bloodthirsty pirate, some of his fellow merchant-captains believed him innocent of his alleged crimes.

revoke v. cancel; retract. Repeat offenders who continue to drive under the influence are having their driver's licenses permanently revoked. revocation, n.

reulsion N. sudden violent change of feeling; negative reaction. Many people in this country who admired dictators underwent a revulsion when they realized what Hitler and Mussolini were trying to do.

rhapsodize v. to speak or write in an exaggeratedly enthusiastic manner. She greatly enjoyed her Hawaiian vacation and rhapsodized about it for weeks.

rhetoric N. art of effective communication; insincere or grandiloquent language. All writers, by necessity, must be skilled in rhetoric. rhetorical, ADJ.

ribald ADJ. wanton; profane. He sang a ribald song that offended many of the more prudish listeners. ribaldry, n.

riddle v. pierce with holes; permeate or spread throughout. With his machine gun, Tracy riddled the car with
bullets till it looked like a slice of Swiss cheese. During the proofreaders’ strike, the newspaper was riddled with typos.

rider N. amendment or clause added to a legislative bill. Senator Foghorn said he would support Senator Filibuster’s tax reform bill only if Filibuster agreed to add an antipollution rider to the bill.

rife ADJ. abundant; current. In the face of the many rumors of scandal, which are rife at the moment, it is best to remain silent.

rift N. opening; break. The plane was lost in the stormy sky until the pilot saw the city through a rift in the clouds.

rig v. fix or manipulate. The ward boss was able to rig the election by bribing people to stuff the ballot boxes with ballots marked in his candidate’s favor.

rigid ADJ. stiff and unyielding; strict; hard and unbending. By living with a man to whom she was not married, George Eliot broke Victorian society’s most rigid rule of respectable behavior.

rigor N. severity. Many settlers could not stand the rigors of the New England winters.

rile v. vex; irritate; muddy. Red had a hair-trigger temper: he was an easy man to rile.

riveting ADJ. absorbing; engrossing. The reviewer described Byatt’s novel Possession as a riveting tale, absorbed in the story, she had finished it in a single evening.

rivulet N. small stream. As the rains continued, the trickle of water running down the hillside grew into a rivulet that threatened to wash away a portion of the slope.

robust ADJ. vigorous; strong. After pumping iron and taking karate for six months, the little old lady was far more robust in health and could break a plank with her fist.

rococo ADJ. ornate; highly decorated. The rococo style in furniture and architecture, marked by scrollwork and excessive decoration, flourished during the middle of the eighteenth century.

roll v. to make liquids murky by stirring up sediment; to disturb. Be careful when you pour not to roll the wine; if you stir up the sediment you destroy the flavor.

rosate ADJ. rosy; optimistic. I am afraid you will have to alter your rosy views in the light of the distressing news that has just arrived.

roster N. list. They print the roster of players in the season’s program.

rostrum N. platform for speech-making; pulpit. The crowd murmured angrily and indicated that they did not care to listen to the speaker who was approaching the rostrum.

rote N. repetition. He recited the passage by rote and gave no indication he understood what he was saying, also ADJ.

rotunda N. circular building or hall covered with a dome. His body lay in state in the rotunda of the Capitol.

rotundity N. roundness; sonorously of speech. Washington Irving emphasized the rotundity of the governor by describing his height and circumference.

rousing ADJ. lively; stirring. “And now, let’s have a rousing welcome for TV’s own Rosie O’Donnell, who’ll lead us in a rousing rendition of The Star-Spangled Banner.”

ruin v. stampede; drive out. The reinforcements were able to ruin the enemy, also N.

rubble N. fragments. Ten years after World War II, some of the rubble left by enemy bombings could still be seen.

rubric N. title or heading (in red print); directions for religious ceremony; protocol. In ordaining the new priests, the bishop carefully observed all the rubrics for the ordination service.

ruddy ADJ. reddish; healthy-looking. Santa Claus’s ruddy cheeks nicely complemented Rudolph the Reindeer’s bright red nose.

rudimentary ADJ. not developed; elementary; crude. Although my grandmother’s English vocabulary was limited to a few rudimentary phrases, she always could make herself understood.

rue v. regret; lament; mourn. Tina rued the night she met Tony and wondered how she ever fell for such a jerk, also N. rueful, ADJ.

ruffian N. bully; scandrel. The ruffians threw stones at the police.

ruminant v. chew over and over (mentally or, like cows, physically); mull over; ponder. Unable to digest quickly the baffling events of the day, Reuben ruminated about them till four in the morning.

rummage v. ransack; thoroughly search. When we rummaged through the trunks in the attic, we found many souvenirs of our childhood days, also N.

runic ADJ. mysterious; set down in an ancient alphabet. Tolkien’s use of Old English words and inscriptions in the runic alphabet give The Lord of the Rings its atmosphere of antiquity.

ruse N. trick; stratagem. You will not be able to fool your friends with such an obvious ruse.

rustic ADJ. pertaining to country people; uncouth. The backwoodsman looked out of place in his rustic attire.

rusticate v. banish to the country; dwell in the country. I like city life so much that I can never understand how people can rusticate in the suburbs.

ruthless ADJ. pitiless; cruel. Captain Hook was a dangerous, ruthless villain who would stop at nothing to destroy Peter Pan.

sabotage N. one who commits sabotage; destroyer of property. Members of the Resistance acted as saboteurs, blowing up train lines to prevent supplies from reaching the Nazi army.

saccharine ADJ. cloyingly sweet. She tried to ingratiating herself, speaking sweetly and smiling a saccharine smile.

sacrilegious ADJ. desecrating; profane. His stealing of the altar cloth was a very sacrilegious act.

sacrosanct ADJ. most sacred; inviolate. The brash insurance salesman invaded the sacrosanct privacy of the office of the president of the company.
Word List 41 Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

601. RESILIENT (A) pungent (B) foolish (C) worthy (D) insolent (E) unyielding

602. RESTIVE (A) buoyant (B) placid (C) remorseful (D) resistant (E) retiring

603. RETENTIVE (A) forgetful (B) accepting (C) repetitive (D) avoiding (E) fascinating

604. RETICENCE (A) fatigue (B) fashion (C) treachery (D) loquaciousness (E) magnanimity

605. RETROGRADE (A) progressing (B) inclining (C) evaluating (D) concentrating (E) directing

606. REVERE (A) advance (B) dishonor (C) age (D) preceae (E) wake

607. RIFE (A) direct (B) scant (C) peaceful (D) grim (E) mature

608. ROBUST (A) weak (B) violent (C) vicious (D) villainous (E) hungry

609. ROTUNDITY (A) promenade (B) nave (C) grotesqueness (D) slimmness (E) impropriety

610. RUBBLE (A) artificial facade (B) unbroken stone (C) pale complexion (D) strong defense (E) glib answer

611. RUDDY (A) robust (B) witty (C) wan (D) exotic (E) creative

612. RUDIMENTARY (A) pale (B) polite (C) asinine (D) developed (E) quiescent

613. RUEFUL (A) trite (B) content (C) capable (D) capital (E) zealous

614. RUSTIC (A) urban (B) slow (C) corroded (D) mercenary (E) civilian

615. RUTHLESS (A) merciful (B) majestic (C) mighty (D) militant (E) maximum

Word List 42 sadness-sepulcher

sadistic ADJ., inclined to cruelty. If we are to improve conditions in this prison, we must first get rid of the sadistic warden. sadness N. Scandinavian myth; any legend. This is a saga of the sea and the men who risk their lives on it.

sagacious ADJ. perceptive; shrewd; having insight. My father was a sagacious judge of character: he could spot a phony a mile away. sagacity N.

sage N. person celebrated for wisdom. Hearing tales of the mysterious Master of All Knowledge who lived in the hills of Tibet, Sandy was possessed with a burning desire to consult the legendary sage, also ADJ.

salacious ADJ. lascivious; lustful. Chaucer’s monk is not pious but salacious, a teller of lewd tales and ribald jests.

salient ADJ. prominent. One of the salient features of that newspaper is its excellent editorial page.

saline ADJ. salty. The slightly saline taste of this mineral water is pleasant.

sallow ADJ. yellowish; sickly in color. We were disturbed by her sallow complexion, which was due to jaundice.

salubrious ADJ. healthful. Many people with hay fever move to more salubrious sections of the country during the months of August and September.

salutary ADJ. tending to improve; beneficial; wholesome. The punishment had a salutary effect on the boy, as he became a model student.

salvage v. rescue from loss. All attempts to salvage the wrecked ship failed; also N.

sanctimonious ADJ. displaying ostentatious or hypocritical devoutness. You do not have to be so sanctimonious to prove that you are devout.

sanction v. approve; ratify. Nothing will convince me to sanction the engagement of my daughter to such a worthless young man.

sanctuary N. refuge; shelter; shrine; holy place. The tiny attic was Helen’s sanctuary to which she fled when she had to get away from her bickering parents and brothers.

sanguinary ADJ. bloody. The battle of Two Jima was unexpectedly sanguinary, with many casualties.

sanguine ADJ. cheerful; hopeful. Let us not be too sanguine about the outcome; something could go wrong.

sap v. diminish; undermine. The element kryptonite had an unhealthy effect on Superman: it sapped his strength.

sarcasm N. scornful remark; stinging rebuke. Though Ralph pretended to ignore the mocking comments of his supposed friends, their sarcasm wounded him deeply.

sarcastic, ADJ.

sardonic ADJ. disdainful; sarcastic; cynical. The sardonic humor of nightclub comedians who satirize or ridicule patrons in the audience strikes some people as amusing and others as rude.

sartorial ADJ. pertaining to tailors. He was as famous for the sartorial splendor of his attire as he was for his acting.

sate v. satisfy to the full; cloy. Its hunger sated, the lion dozed.
satellite N. small body revolving around a larger one. During the first few years of the Space Age, hundreds of satellites were launched by Russia and the United States.

satiety N. form of literature in which irony, sarcasm, and ridicule are employed to attack vice and folly. Gulliver's Travels, which is regarded by many as a tale for children, is actually a bitter satire attacking human folly.

saturate V. soak thoroughly. Through watering is the key to lawn care; you must saturate your new lawn well to encourage its growth.

saturine ADJ. gloomy. Do not be misled by his saturenian countenance; he is not as gloomy as he looks.

satury N. half-human, half-bestial being in the court of Dionysus, portrayed as wanton and cunning. He was like a sature in his lustful conduct.

saunter V. stroll slowly. As we sauntered through the park, we stopped frequently to admire the spring flowers.

savant N. scholar. Our faculty includes many world-famous savants.

savory ADJ. tasty; pleasing, attractive, or agreeable. Julia Child's recipes enable amateur chefs to create savory delicacies for their guests.

scabbard N. case for a sword blade; sheath. The drill master told the recruit to wipe the blood from his sword before slipping it back into the scabbard.

scald N. a great quantity. Refusing Dave's offer to lend him a shirt, Phil replied, "No, thanks; I've got scads of clothes."

scaffold N. temporary platform for workers; bracing framework; platform for execution. Before painting the house, the workers put up a scaffold to allow them to work on the second story.

scale V. climb up; ascend. To locate a book on the top shelf of the stacks, Lee had to scale an exceptionally rickety ladder.

scanty ADJ. meager; insufficient. Thinking his helping of food was scanty, Oliver Twist asked for more.

scapecog N. someone who bears the blame for others. After the Challenger disaster, NASA searched for scapegoats on whom they could cast the blame.

scavenge V. hunt through discarded materials for usable items; search, especially for food. If you need car parts that the dealers no longer stock, try scavenging for odd bits and pieces at the auto wreckers' yards.

scenario N. plot outline; screenplay; opera libretto. Scaramouche startled the other actors in the commedia
troupe when he suddenly departed from their customary scenario and began to improvise.

schematic ADJ. relating to an outline or diagram; using a system of symbols. In working out the solution to an analytical logic question, you may find it helpful to construct a simple schematic diagram illustrating the relationships between the items of information given in the question.

schism N. division; split. Let us not widen the schism by further bickering.

scintilla N. shred; least bit. You have not produced a scintilla of evidence to support your argument.

scintillate V. sparkle; flash. I enjoy her dinner parties because the food is excellent and the conversation scintillates.

 scoff V. mock; ridicule. He scoffed at dentists until he had his first toothache.

scotch V. stamp out; thwart; hinder. Heather tried to scotch the rumor that she had stolen her best friend's fiancé.

scourge N. lash; whip; severe punishment. They feared the plague and regarded it as a deadly scourge also. v. sculpel V. fret about; hesitate, for ethical reasons. Fearing that her husband had become involved in an affair, she did not sculpel to read his diary. Also n.

scrupulous ADJ. conscientious; extremely thorough. Though Alfred is scrupulous in fulfilling his duties at work, he is less conscientious about his obligations to his family and friends.

scrutinize V. examine closely and critically. Searching for flaws, the sergeant scrutinized every detail of the private's uniform.

scuffle V. struggle confusedly; move off in a confused hurry. The twins briefly scuffled, wrestling to see which of them would get the toy. When their big brother yelled, "Let go of my Gameboy!" they scuffled off down the hall.

scurrilous ADJ. obscene; indecent. Your scurrilous remarks are especially offensive because they are untrue.

scurry V. move briskly. The White Rabbit had to scurry to get to his appointment on time.

scurvy ADJ. despicable; contemptible. Peter Pan sneered at Captain Hook and his scurvy crew.

scuttle V. sink. The sailors decided to scuttle their vessel rather than surrender it to the enemy.

seamy ADJ. sordid; unwholesome. In The Godfather, Michael Corleone is unwilling to expose his wife and children to the seamy side of his life as the son of a Mafia don.

sear V. char or burn; brand. Accidentally brushing against the hot grill, she seared her hand badly.

seasoned ADJ. experienced. Though pleased with her new batch of rookies, the basketball coach wished she had a few more seasoned players on the team.
secession N. withdrawal. The secession of the Southern states provided Lincoln with his first major problem after his inauguration. secede, v.

seclusion N. isolation; solitude. One moment she loved crowds; the next, she sought seclusion.

secrete v. hide away or cache; produce and release a substance into an organism. The pack rat secretes odds and ends in its nest; the pancreas secretes insulin in the islets of Langerhans.

sect N. separate religious body; faction. As university chaplain, she sought to address universal religious issues and not limit herself to the concerns of any one sect. sectarian, ADJ.

secular ADJ. worldly; not pertaining to church matters; temporal. The church leaders decided not to interfere in secular matters.

sedate ADJ. composed; grave. The parents were worried because they felt their son was too quiet and sedate.

sedentary ADJ. requiring sitting. Sitting all day at the computer, Sharon grew to resent the sedentary nature of her job.

sedition N. resistance to authority; insubordination. Her words, though not treasonous in themselves, were calculated to arouse thoughts of sedition.

sedulous ADJ. diligent. The young woman was so sedulous that she received a commendation for her hard work. sedulity, N.

seedy ADJ. run-down; decrepit; disreputable. I would rather stay in dormitory lodgings in a decent youth hostel than have a room of my own in a seedy downtown hotel.

seemly ADJ. proper; appropriate. Lady Bracknell did not think it was seemly for Ernest to lack a proper family; no baby abandoned on a doorstep could grow up to marry her daughter.

seep v. ooze; trickle. During the rainstorm, water seeped through the crack in the basement wall and damaged the floor boards. seepage, N.

seethe v. be disturbed; boil. The nation was seething with discontent as the noblemen continued their arrogant ways.

seine N. net for catching fish. When the shad run during the spring, you may see fishermen with seines along the banks of our coastal rivers.

seismic ADJ. pertaining to earthquakes. The Richter scale is a measurement of seismic disturbances.

semblance N. outward appearance; guise. Although this book has a semblance of wisdom and scholarship, a careful examination will reveal many errors and omissions.

seminal ADJ. germinial; influencing future developments; related to seed or semen. Although Freud has generally been regarded as a seminal thinker who shaped the course of psychology, his psychoanalytic methods have come under attack recently.

seminary N. school for training future ministers; secondary school, especially for young women. Sure of his priestly vocation, Terrence planned to pursue his theological training at the local Roman Catholic seminary.

senility N. old age; feeblemindedness of old age. Most of the decisions are being made by the junior members of the company because of the senility of the president.

senile, ADJ.

sensitization N. process of being made sensitive or acutely responsive to an external agent or substance. The paint fumes triggered a bad allergic response in Vicky; even now, her extreme sensitization to these chemicals causes her to faint whenever she is around wet paint.

sensual ADJ. devoted to the pleasures of the senses; carnal; voluptuous. I cannot understand what caused him to drop his sensual way of life and become so ascetic.

sensuous ADJ. pertaining to the physical senses; operating through the senses. She was stimulated by the sights, sounds, and smells about her; she was enjoying her sensuous experience.

sententious ADJ. terse; concise; aphoristic. After reading so many redundant speeches, I find his sententious style particularly pleasing.

sentient ADJ. capable of sensation; aware; sensitive. In the science fiction story, the hero had to discover a way to prove that the rocklike extraterrestrial creature was actually a sentient intelligent creature. sentience, N.

sentinel N. sentry; lookout. Though camped in enemy territory, Bledsoe ignored the elementary precaution of posting sentinels around the encampment.

septic ADJ. putrid; producing putrefaction. The hospital was in such a filthy state that we were afraid that many of the patients would suffer from septic poisoning. sepsis, N.

sepulcher N. tomb. Annabel Lee was buried in a sepulcher by the sea.

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Test

Word List 42  Antonyms

Each of the following questions consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

616. SADISTIC (A) happy (B) quaint (C) kindhearted (D) vacant (E) fortunate

617. SAGACIOUS (A) foolish (B) bitter (C) voracious (D) veracious (E) fallacious
618. SALLOW (A) salacious (B) ruddy (C) colorless (D) permitted (E) minimum
619. SUBLIQUID (A) salty (B) bloody (C) miasmic (D) maudlin (E) wanted
620. SALVAGE (A) remove (B) outfit (C) burn (D) lose (E) confuse
621. SANCTIMONIOUS (A) hypothetical (B) paltry (C) mercenary (D) pious (E) grateful
622. SANGUINE (A) choleric (B) sickening (C) warranted (D) irritated (E) pessimistic
623. SATIETY (A) eminence (B) warmth (C) erectness (D) ignorance (E) straightness
624. SCANTY (A) collected (B) remote (C) invisible (D) plentiful (E) straight

625. SCURRILOUS (A) savage (B) scabby (C) decent (D) volatile (E) major
626. SECULAR (A) vivid (B) clerical (C) punitive (D) positive (E) varying
627. SEDENTARY (A) vicarious (B) 1oyal (C) accidental (D) active (E) afraid
628. SEDULOUS (A) indolent (B) guileless (C) vindictive (D) upright (E) incorrect
629. SENILITY (A) viritous (B) loquaciousness (C) forgetfulness (D) youth (E) majority
630. SENTENTIAL (A) paraplegic (B) positive (C) posthumous (D) pacific (E) wordy

Word List 43  sequester-somatic

sequestration. V. isolate; retire from public life; segregate; seclude. To prevent the jurors from hearing news broadcasts about the case, the judge decided to sequester the jury.

sere. Adj. parched; dry. After the unseasonably dry winter the Berkeley hills looked dusty and sere.

serendipity. N. gift for finding valuable or desirable things by accident; accidental good fortune or luck. Many scientific discoveries are a matter of serendipity. Newton was not sitting there thinking about gravity when the apple dropped on his head.

serenity. N. calmness, placidity. The serenity of the sleepy town was shattered by a tremendous explosion.

serpentine. Adj. winding; twisting. The car swerved at every curve in the serpentine road.

serrated. Adj. having a sawtoothed edge. The beech tree is one of many plants that have serrated leaves.

servile. Adj. slavish, cringing. Constantly fawning on his employer, humble Uriah Heep was a servile creature.

servitude. N. slavery; compulsory labor. Born a slave, Douglass resented his life of servitude and plotted to escape to the North.

sever. V. cut; separate. Dr. Guillotin invented a machine that could neatly sever an aristocratic head from its equally aristocratic body. Unfortunately, he couldn’t collect any severance pay.

severity. N. harshness; intensity, sternness; austerity. The severity of Jane’s migraine attack was so great that she took to her bed for a week. severe, ADJ.

sex. N. navigation tool used to determine a ship’s latitude and longitude. Given a clear night, with the aid of his sextant and compass he could keep the ship safely on course.

shackle. V. chain, fetter. The criminal’s ankles were shackled to prevent his escape, also N.

sham. V. pretend. She shammed sickness to get out of going to school, also N.

shambles. N. wreck; mess. After the hurricane, the Carolina coast was a shambles. After the New Year’s Eve party, the host’s apartment was a shambles.

shard. N. fragment, generally of pottery. The archaeologist assigned several students the task of reassembling earthenware vessels from the shards he had brought back from the expedition.

shaving. N. very thin piece, usually of wood. As the carpenter pared away the edge of the board with his plane, a small pile of shavings began to accumulate on the floor.

sheaf. N. bundle of stalks of grain; any bundle of things tied together. The lawyer picked up a sheaf of papers as she rose to question the witness.

sheath. V. place into a case. As soon as he recognized the approaching men, he sheathed his dagger and hailed them as friends.

sherbet. N. flavored dessert ice. I prefer raspberry sherbert to ice cream since it is less fattening.

shimmer. V. glimmer intermittently. The moonlight shimmered on the water as the moon broke through the clouds for a moment, also N.

shirk. V. avoid (responsibility, work, etc.); malinger. Brian has a strong sense of duty; he would never shirk any responsibility.

shoddy. Adj. sham; not genuine; inferior. You will never get the public to buy such shoddy material.

shrew. N. scolding woman. No one wanted to marry Shakespeare’s Kate because she was a shrew.

shrewd. Adj. clever; astute. A shrewd investor, she took clever advantage of the fluctuations of the stock market.

shun. V. keep away from. Cherishing his solitude, the recluse shunned the company of other human beings.
shunt v. turn aside; divert; sidetrack. If the switchman failed to shunt the Silver Streak onto a side track, the train would plow right into Union Station.

shyster n. lawyer using questionable methods. On L. A. Law, respectable attorney Brackman was horrified to learn that his newly discovered half brother was a cheap shyster.

sibling n. brother or sister. We may not enjoy being siblings, but we cannot forget that we still belong to the same family.

sibyl line adj. prophetic; oracular. Until their destruction by fire in 83 B.C., the sibyline books were often consulted by the Romans.

sidereal adj. relating to the stars. Although hampered by optical and mechanical flaws, the orbiting Hubble space telescope has relayed extraordinary images of distant sidereal bodies.

silt n. sediment deposited by running water. The harbor channel must be dredged annually to remove the silt.

simian adj. monkeylike. Lemurs are nocturnal mammals and have many simian characteristics, although they are less intelligent than monkeys.

simile n. comparison of one thing with another, using the word like or as. “My love is like a red, red rose” is a simile.

smirp v. smirk; smile affectedly. Complimented on her appearance, Stella self-consciously simpered.

simplistic adj. oversimplified. Though Jack’s solution dealt adequately with one aspect of the problem, it was simplistic in failing to consider various complicating factors that might arise.

simulate v. feign. She simulated insanity in order to avoid punishment for her crime.

sincere n. well-paid position with little responsibility. My job is no sincere; I work long hours and have much responsibility.

sinewy adj. tough; strong and firm. The steak was too sinewy to chew.

singular adj. unique; extraordinary; odd. Though the young man tried to understand Father William’s singular behavior, he still found it odd that the old man incessantly stood on his head.

sinister adj. evil. We must defeat the sinister forces that seek our downfall.

sinuous adj. winding; bending in and out; not morally honest. The snake moved in a sinuous manner.

 ■ skeptic n. doubter; person who suspends judgment until having examined the evidence supporting a point of view. I am a skeptic about the new health plan, I want some proof that it can work, skeptical, adj. skepticism, n.

skiff n. small, light sailboat or rowboat. Tom dreamed of owning an ocean-going yacht but had to settle for a skiff he could sail in the bay.

skimp v. provide scantily; live very economically. They were forced to skimp on necessities in order to make their limited supplies last the winter.

skinflint n. stingy person; miser. Scrooge was an ungenerous old skinflint until he reformed his ways and became a notable philanthropist.

skirmish n. minor fight. Custer’s troops expected they might run into a skirmish or two on maneuvers; they did not expect to face a major battle. Also v.

skittish adj. lively; frisky. She is as skittish as a kitten playing with a piece of string.

skulduggery n. dishonest behavior. The investigation into municipal corruption turned up new instances of skulduggery daily.

skulk v. move luridly and secretly. He skulked through the less fashionable sections of the city in order to avoid meeting any of his former friends.

slacken v. slow up; loosen. As they passed the finish line, the runners slackened their pace.

slag n. residue from smelting metal; dross; waste matter. The blast furnace had a special opening at the bottom to allow the workers to remove the worthless slag.

slake v. quench; sate. When we reached the oasis, we were able to slake our thirst.

slander n. defamation; utterance of false and malicious statements. Considering the negative comments politicians make about each other, it’s a wonder that more of them aren’t sued for slander, also v. slanderous, adj.

slapdash adj. haphazard; careless; sloppy. From the number of typos and misspellings I’ve found in it, it’s clear that Mario proofread the report in a remarkably slapdash fashion.

sleazy adj. flimsy; unsubstantial. This is a sleazy fabric; it will not wear well.

sleeper n. something originally of little value or importance that in time becomes very valuable. Unnoticed by the critics at its publication, the eventual Pulitzer Prize winner was a classic sleeper.

sleight n. dexterity. The magician amazed the audience with his sleight of hand.

slew n. large quantity or number. Although Ellen had checked off a number of items on her ‘To Do’ list, she still had a whole slew of errands left.

slight n. insult to one’s dignity: snub. Hypersensitive and ready to take offense at any discourtesy, Bertha was always on the lookout for real or imaginary slights, also v.

slipshod adj. untidy or slovenly; shabby. As a master craftsman, the carpenter prided himself on never doing slipshod work.

slither v. slip or slide. During the recent ice storm, many people slithered down this hill as they walked to the station.

sloth n. slow-moving tree-dwelling mammal. Note how well the somewhat greenish coat of the sloth enables it to blend in with its arboreal surroundings. (secondary meaning)

slothful adj. lazy. The British word “layabout” is a splendid descriptive term for someone slothful. What did the lazy bum do? He lay about the house all day. Sloth, n.

slough v. cast off. Each spring, the snake sloughs off its skin. Also n.
slovenly adj. untidy; careless in work habits. Unshaven, sitting around in his bathrobe all afternoon, Gus didn't care about the slovenly appearance he presented.

sluggard n. lazy person. "You are a sluggard, a drone, a parasite," the angry father shouted at his lazy son.

sluggish adj. slow; lazy; lethargic. After two nights without sleep, she felt sluggish and incapable of exertion.

sluice n. artificial channel for directing or controlling the flow of water. In times of drought, this sluice enables farmers to obtain water for irrigation.

slur n. insult to one's character or reputation; slander. Potts revealed that the front-runner's standing had been damaged by the slurs and innuendoes circulated by his opponent's staff. (secondary meaning) also v.

slur v. speak indistinctly; mumble. When Sol has too much to drink, he starts to slur his words. "Waschamatter? Canish you understand what I say?"

smattering n. slight knowledge. I don't know whether it is better to be ignorant of a subject or to have a mere smattering of information about it.

smelt v. melt or blend ores, changing their chemical composition. The furnaceman smelt the tin with copper to create a special alloy used in making bells.

smirk n. conceited smile. Wipe that smirk off your face! Also v.

smolder v. burn without flame; be liable to break out at any moment. The rags smoldered for hours before they burst into flame.

snicker n. half-stifled laugh. The boy could not suppress a snicker when the teacher sat on the tack. Also v.

snivel v. run at the nose; snuffle; whine. Don't you come sniveling to me complaining about your big brother.

sobriety n. moderation (especially regarding indulgence in alcohol); seriousness. Neither falling-down drunks nor stand-up comics are noted for sobriety. 

sodden adj. soaked; dull, as if from drink. He set his sodden overcoat near the radiator to dry.

sojourn n. temporary stay. After his sojourn in Florida, he began to long for the colder climate of his native New England home.

solace n. comfort in trouble. I hope you will find solace in the thought that all of us share your loss.

solder v. repair or make whole by using a metal alloy. The plumber fixed the leak in the pipes by soldering a couple of joints from which water had been oozing.

solecism n. construction that is flagrantly incorrect grammatically. I must give this paper a failing mark because it contains many solecisms.

solemnity n. seriousness; gravity. The minister was concerned that nothing should disturb the solemnity of the marriage service.

solict v. request earnestly; seek. Knowing she needed to have a solid majority for the budget to pass, the mayor telephoned all the members of the city council to solicit their votes.

solicitous adj. worried, concerned. The employer was very solicitous about the health of her employees as replacements were difficult to get. solicitude, n.

soliloquy n. talking to oneself. The soliloquy is a device used by the dramatist to reveal a character's innermost thoughts and emotions.

solitude n. state of being alone; seclusion. Much depends on how much you like your own company. What to one person seems fearful isolation to another is blessed solitude: solitary, adj.

solstice n. point at which the sun is farthest from the equator. The winter solstice usually occurs on December 21.

soluble adj. able to be dissolved; able to be worked out. Sugar is soluble in water; put a sugar cube in water and it will quickly dissolve. Because the test-maker had left out some necessary data, the problem was not soluble.

solvent adj. able to pay all debts. By dint of very frugal living, he was finally able to become solvent and avoid bankruptcy proceedings. solvenency, n.

some n. substance that dissolves another. Dip a cube of sugar into a cup of water; note how the water acts as a solvent, causing the cube to break down.

somatc adj. pertaining to the body; physical. Why do you ignore the spiritual aspects and emphasize only the corporeal and the somatic ones?

Test

Word List 43 Synonyms and Antonyms

Each of the following questions consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar or opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

631. SEQUESTER (A) request (B) preclude (C) seclude (D) witness (E) evolve

632. SERRATED (A) riddled (B) diagonal (C) sawtoothed (D) grooved (E) linear

633. SERVILE (A) moral (B) puerile (C) futile (D) foul (E) haughty

634. SHODDY (A) superior (B) barefoot (C) sunlit (D) querulous (E) Garrulous

635. SINGULAR (A) silent (B) angular (C) ordinary (D) desirable (E) Garrulous

636. SINISTER (A) unwed (B) ministerial (C) good (D) returned (E) splintered

637. SKITTISH (A) tractable (B) inquiring (C) dramatic (D) vain (E) Frisky
638. SLEAZY (A) fanciful (B) creeping (C) substantial (D) uneasy (E) warranted
639. SLOT (A) penitence (B) filth (C) futility (D) poverty (E) industry
640. SLOUGH (A) toughen (B) trap (C) violate (D) cast off (E) depart quickly
641. SLOVENLY (A) half-baked (B) loved (C) inappropriate (D) tidy (E) rapid

Word List 44  somber-sublime

somber  adj. gloomy; depressing. From the doctor’s grim expression, I could tell he had somber news.

somnambulist  n. sleepwalker. The most famous somnambulist in literature is Lady Maccieth; her monologue in the sleepwalking scene is one of the highlights of Shakespeare’s play.

somnolent  adj. half asleep. The heavy meal and the overheated room made us all somnolent and indifferent to the speaker. somnolence, n.

sonorous  adj. resonant. His sonorous voice resounded through the hall.

sophist  n. teacher of philosophy; quibbler; employer of fallacious reasoning. You are using all the devices of a sophist in trying to prove your case; your argument is specious.

sophisticated  adj. worldly wise and urbane; complex. When Sophy makes wisecracks, she thinks she sounds sophisticated, but instead she sounds sophomoric. The IBM laptop with the butterfly keyboard and the built-in FAX modem is a pretty sophisticated machine. sophistication, n.

sophistry  n. seemingly plausible but fallacious reasoning. Instead of advancing valid arguments, he tried to overwhelm his audience with a flood of sophistries.

sophomoric  adj. immature; half-baked; like a sophomore. Even if you’re only a freshman, it’s no compliment to be told your humor is sophomoric. The humor in Dumb and Dumber is sophomoric at best.

soporific  adj. sleep-causing; marked by sleepiness. Professor Pringle’s lectures were so soporific that even he fell asleep in class, also n.

sordid  adj. filthy; base; vile. The social worker was angered by the sordid housing provided for the homeless.

spangle  n. small metallic piece sewn to clothing for ornamentation. The thousands of spangles on her dress sparkled in the glare of the stage lights.

sparse  adj. not thick; thinly scattered; scanty. No matter how carefully Albert combed his hair to make it appear as full as possible, it still looked sparse.

spartan  adj. lacking luxury and comfort; sternly disciplined. Looking over the bare, unheated room with its hard cot, he wondered what he was doing in such spartan quarters. Only his spartan sense of duty kept him at his post.

spasmodic  adj. fitful; periodic. The spasmodic coughing in the auditorium annoyed the performers.

spat  n. squabble; minor dispute. What had started out as a mere spat escalated into a full-blown argument.

spate  n. sudden flood. I am worried about the possibility of a spate if the rains do not diminish soon.

spatial  adj. relating to space. Certain exercises test your sense of spatial relations by asking you to identify two views of an object seen from different points in space.

spatula  n. broad-bladed instrument used for spreading or mixing. The manufacturers of this frying pan recommend the use of a rubber spatula to avoid scratching the specially treated surface.

spawn  v. lay eggs. Fish ladders had to be built in the dams to assist the salmon returning to spawn in their native streams, also n.

specious  adj. seemingly reasonable but incorrect; misleading (often intentionally). To claim that, because houses and birds both have wings, both can fly is extremely specious reasoning.

spectral  adj. ghostly. We were frightened by the spectral glow that filled the room.

spectre  n. colored band produced when a beam of light passes through a prism. The visible portion of the spectrum includes red at one end and violet at the other.

spendthrift  n. someone who wastes money. Easy access to credit encourages people to turn into spendthrifts who shop till they drop.

sphinx-like  adj. enigmatic; mysterious. The Mona Lisa’s sphinx-like expression has puzzled art lovers for centuries.

splice  v. fasten together; unite. Before you splice two strips of tape together, be sure to line them up evenly, also n.

spontaneity  n. lack of premeditation; naturalness; freedom from constraint. The cast overrehearsed the play so much that the eventual performance lacked any spontaneity. spontaneous, adj.

spoonerism  n. accidental transposition of sounds in successive words. When the radio announcer introduced the President as Hoobert Herver, he was guilty of a spoonerism.
**sporadic** ADJ. occurring irregularly. Although you can still hear sporadic outbursts of laughter and singing outside, the big Halloween parade has passed; the party’s over till next year.

**sportive** ADJ. playful. Such a sportive attitude is surprising in a person as serious as you usually are.

**spruce** ADJ. neat and trim. Every button buttoned, tie firmly in place, young Alex Keaton looked spruce and tidy for his job interview at the bank. Also v.

**spry** ADJ. vigorously active, nimble. She was eighty years old, yet still spry and alert.

**spurious** ADJ. false; counterfeit; forged; illogical. The hero of Jonathan Safran Foer’s mystery novel is an antique dealer who gives the reader advice on how to tell spurious antiques from the real thing.

**spurn** v. reject; scorn. The heroine spurned the villain’s advances.

**squable** N. minor quarrel; bickering. Children invariably get involved in petty squabbles; wise parents know when to interfere and when to let the children work things out on their own.

**squalor** N. filth; degradation; dirty, neglected state. Rusted, broken-down cars in the yard, trash piled on the porch, tar paper peeling from the roof—the shack was the picture of squalor. Squalid. ADJ.

**squander** v. waste. If you squander your allowance on candy and comic books, you won’t have any money left to buy the new box of crayons you want.

**squat** ADJ. stocky; short and thick. Tolkien’s hobbits are somewhat squat, sturdy little creatures, fond of good ale, good music, and good food.

**staccato** ADJ. played in an abrupt manner; marked by abrupt, sharp sound. His staccato speech reminded one of the sound of a machine gun.

**stagnant** ADJ. motionless; stale; dull. Mosquitoes commonly breed in ponds of stagnant water. Mike’s career was stagnant; it wasn’t going anywhere, and neither was he! stagnate. v.

**staid** ADJ. sober; sedate. Her conduct during the funeral ceremony was staid and solemn.

**stalemate** N. deadlock. Negotiations between the union and the employers have reached a stalemate; neither side is willing to budge from previously stated positions.

**stalwart** ADJ. strong, brawny; steadfast. His consistent support of the party has proved that he is a stalwart and loyal member. Also N.

**stamina** N. strength; staying power. I doubt that she has the stamina to run the full distance of the marathon race.

**stanch** v. check flow of blood. It is imperative that we stanch the gushing wound before we attend to the other injuries.

**stanza** N. division of a poem. Do you know the last stanza of “The Star-Spangled Banner”?

**static** ADJ. unchanging; lacking development. Why do you watch chess on TV? I like watching a game with action, not something static where nothing seems to be going on. stasis. N.

**statute** N. law enacted by the legislature. The statute of limitations sets limits on how long you have to take legal action in specific cases.

**statutory** ADJ. created by statute or legislative action. The judicial courts review and try statutory crimes.

**steadfast** ADJ. loyal; unswerving. Penelope was steadfast in her affection, faithfully waiting for Ulysses to return from his wanderings.

**stealth** N. slyness; sneakiness; secretiveness. Fearing detection by the sentries on duty, the scout inched his way toward the enemy camp with great stealth.

**steep** v. soak; saturate. Be sure to steep the fabric in the dye bath for the full time prescribed.

**stellar** ADJ. pertaining to the stars. He was the stellar attraction of the entire performance.

**stem** v. check the flow. The paramedic used a tourniquet to stem the bleeding from the slashed artery.

**stem from** v. arise from. Milton’s problems in school stemmed from his poor study habits.

**stenorion** ADJ. extremely loud. The town crier had a stenodian voice.

**stereotype** N. fixed and unvarying representation; standardized mental picture, often reflecting prejudice. Critics object to the character of Jim in The Adventures of Huckleberry Finn because he seems to reflect the stereotype of the happy, ignorant slave. Also v.

**sticker** N. perfectionist; person who insists things be exactly right. The Internal Revenue Service agent was a stickler for accuracy; no approximations or rough estimates would satisfy him.

**stifle** v. suppress; extinguish; inhibit. Halfway through the boring lecture, Laura gave up trying to stifle her yawns.

**stigma** N. token of disgrace; brand. I do not attach any stigma to the fact that you were accused of this crime; the fact that you were acquitted clears you completely. Stigmatize. N.

**stilted** ADJ. bombastic; stiffly pompous. His stilted rhetoric did not impress the college audience; they were immune to bombastic utterances.

**stint** v. be thrifty; set limits. “Spare no expense,” the bride’s father said, refusing to stint on the wedding arrangements.

**stint** N. supply; allotted amount; assigned portion of work. She performed her daily stint cheerfully and willingly.

**stipend** N. pay for services. There is a nominal stipend for this position.

**stipple** v. paint or draw with dots. Seurat carefully stippled dabs of pure color on the canvas, juxtaposing dots of blue and yellow that the viewer’s eye would interpret as green.

**stipulate** v. make express conditions, specify. Before agreeing to reduce American military forces in Europe, the president stipulated that NATO teams be allowed to inspect Russian bases.
stock  Adj. typical; standard; kept regularly in supply. Victorian melodramas portrayed stock characters—the rich but wicked villain, the sweet young ingenue, the poor but honest young man—in exaggerated situations. Although the stationery store kept only stock sizes of paper on hand, the staff would special-order any items not regularly in stock.

stockade  N. wooden enclosure or pen; fixed line of posts used as defensive barrier. The Indians are coming!Quick! Round up the horses and drive them into the stockade.

stodgy  Adj. stiffly; boringly conservative. For a young person, Winston seems remarkably stodgy: you’d expect someone his age to have a little more life.

stoic  Adj. impassive; unmoved by joy or grief. I wasn’t particularly stoic when I had my flu shot; I squealed like a stuck pig. Also N. stoicism.

stoke  V. stir up a fire; feed plentifully. As a Scout, Marissa learned how to light a fire, how to stoke it if it started to die down, and how to extinguish it completely.

■ stolid  Adj. dull; impassive. The earthquake shattered Stuart’s usual stolid demeanor; trembling, he crouched on the no longer stable ground. Stolidity.

stratagem  N. clever trick; deceptive scheme. What a gem of a stratagem Watson, I have the perfect plan to trick Moriarty into revealing himself.

stratified  Adj. divided into classes; arranged into strata. As the economic gap between the rich and the poor increased, Roman society grew increasingly stratified.

stratify  V. divide into classes; arrange into strata. Thus the gap between the rich and the poor increased, Roman society grew increasingly stratified.

stratum  N. layer of earth’s surface; layer of society. Unless we alleviate conditions in the lowest stratum of our society, we may expect grumbling and revolt. strata, Pl.

strew  V. spread randomly; sprinkle; scatter. Preceding the bride to the altar, the flower girl will strew rose petals along the aisle.

■ streaked  Adj. marked with parallel bands; grooved. The glacier left many streaked rocks.

structure  N. critical comments; severe and adverse criticism. His structures on the author’s style are prejudiced and unwarranted.

strident  Adj. loud and harsh; insistent. We could barely hear the speaker over the strident cries of the hecklers.

stringent  Adj. binding; rigid. I think these regulations are too stringent.

strut  N. pompous walk. His strut as he marched about the parade ground revealed him for what he was: a pompous buffalo. Also V. strut

studied  Adj. unspontaneous; deliberate; thoughtful. Given Jil’s previous slights, Jack felt that the omission of his name from the guest list was a studied insult.

stultify  V. cause to appear or become stupid or inconsistent; frustrate or hinder. His long hours in the blacking factory left young Dickens numb and incurious, as if the menial labor had stultified his mind.

stupefy  V. make numb; stun; amaze. Disapproving of drugs in general, Laura refused to take sleeping pills or any other medicine that might stupefy her.

stupor  N. state of apathy; daze; lack of awareness. In his stupor, the addict was unaware of the events taking place around him.

stygian  Adj. gloomy; hellish; deathly. Shielding the flickering candle from any threatening draft, Tom and Becky descended into the stygian darkness of the underground cavern. Stygian derives from Styx, the chief river in the subterranean land of the dead.

stymie  V. present an obstacle; stump. The detective was stymied by the contradictory evidence in the robbery investigation.

suavely  N. urbanity; polish. He is particularly good in roles that require suavity and sophistication.

subaltern  N. subordinate. The captain treated his subalterns as though they were children rather than commissioned officers.

subdued  Adj. less intense; quieter. Bob liked the subdued lighting at the restaurant because he thought it was romantic. I just thought the place was dimly lit.

subjective  Adj. occurring or taking place within the mind; unreal. Your analysis is highly subjective; you have permitted your emotions and your opinions to color your thinking.

subjugate  V. conquer; bring under control. It is not our aim to subjugate our foe; we are interested only in establishing peaceful relations.

sublime  V. refine; purify. We must strive to sublime these desires and emotions into worthwhile activities.

sublime  Adj. exalted; noble and uplifting; utter. Lucy was in awe of Desi’s sublime musicianship, while he was in awe of her sublime naïveté.

Test

Word List 44 Synonyms and Antonyms

Each of the following questions consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar or opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.
646. SONOROUS (A) resonant (B) reassuring (C) repetitive (D) resinos (E) sisterly
647. SOPHOMORIC (A) unprecedented (B) mature (C) insipid (D) intellectual (E) illusionary
648. SOPORIFIC (A) dining (B) caustic (C) memorial (D) awakening (E) springing
649. SPASMODIC (A) intermittent (B) fit (C) inaccurate (D) violent (E) physical
650. SPORADIC (A) seedy (B) latent (C) vivid (D) inconsequential (E) occasional
651. SPORTIVE (A) competing (B) playful (C) indignant (D) foppish (E) fundamental
652. SPURIOUS (A) genuine (B) angry (C) mitigated (D) interrogated (E) glorious
653. SQUANDER (A) fortify (B) depart (C) roam (D) preserve (E) forfeit

654. STACCATO (A) musical (B) long (C) legato (D) sneezing (E) pounced
655. STAMINA (A) patience (B) pistills (C) weakness (D) fascination (E) patina
656. STEREOTYPED (A) original (B) antique (C) modeled (D) repetitious (E) continued
657. STILTED (A) candid (B) pompous (C) modish (D) acute (E) inarticulate
658. STRINGENT (A) binding (B) reserved (C) utilized (D) lambent (E) indigent
659. SUAVITY (A) ingeniousness (B) indifference (C) urbaniy (D) constancy (E) paucity
660. SUBLIME (A) unconscious (B) respected (C) exalted (D) sneaky (E) replaced

Word List 45  

subliminal  ADJ. below the threshold. We may not be aware of the subliminal influences that affect our thinking. submissive  ADJ. yielding; timid. When he refused to permit Elizabeth to marry her poet, Mr. Barrett expected her to be properly submissive; instead, she eloped with the guy.

subordinate  ADJ. occupying a lower rank; inferior; submissive. Bishop Proudie's wife expected the subordinate clergy to behave with great deference to the wife of their superior, also n.

suborn  v. persuade to act unlawfully (especially to commit perjury). In The Godfather, the mobsters used bribery and threats to suborn the witnesses against Don Michael Corleone.

subpoena  n. writ summoning a witness to appear. The prosecutor's office was ready to serve a subpoena on the reluctant witness. also v.

subsequent  ADJ. following; later. In subsequent lessons, we shall take up more difficult problems.

subservient  ADJ. behaving like a slave; servile; obsequious. She was proud and dignified; she refused to be subservient to anyone. subservience, n.

subside  v. settle down; descend; grow quiet. The doctor assured us that the fever would eventually subside.

subsidiary  ADJ. subordinate; secondary. This information may be used as subsidiary evidence but is not sufficient by itself to prove your argument. also n.

subsidy  n. direct financial aid by government, etc. Without this subsidy, American ship operators would not be able to compete in world markets.

subsistence  n. existence; means of support; livelihood. In those days of inflated prices, my salary provided a mere subsistence.

substantial  ADJ. ample; solid; essential or fundamental. The generous scholarship represented a substantial sum of money. If you don't eat a more substantial dinner, you'll be hungry later on.

substantiate  v. establish by evidence; verify; support. These endorsements from satisfied customers substantiate our claim that Barron's How to Prepare for the GRE is the best GRE-prep book on the market.

substantive  ADJ. essential; pertaining to the substance. Although the delegates were aware of the importance of the problem, they could not agree on the substantive issues.

subsume  v. include; encompass. Does the general theory of relativity contradict Newtonian physics, or is Newton's law of gravity subsumed into Einstein's larger scheme?

subterfuge  n. pretense; evasion. As soon as we realized that you had won our support by a subterfuge, we withdrew our endorsement of your candidacy.

subtle  adj. perceptive; ingenuity; delicacy. Never obvious, she expressed herself with such subtlety that her remarks went right over the heads of most of her audience. Subtle, adj.

subversive  ADJ. tending to overthrow, destructive. At first glance, the notion that styrofoam cups may actually be more ecologically sound than paper cups strikes most environmentalists as subversive.

succinct  ADJ. brief; terse; compact. Don't bore your audience with excess verbiage; be succinct.

succor  v. aid; assist; comfort. If you believe that man has come here to succor you in your hour of need, you're even a bigger sucker than I thought, also n.

succulent  ADJ. juicy; full of richness. To some people, Florida citrus fruits are more succulent than those from California. also n.
succumb v. yield; give in; die. I succumb to temptation whenever it comes my way.
suffragist n. advocate of voting rights (for women). In recognition of her efforts to win the vote for women, Congress authorized coining a silver dollar honoring the suffragist Susan B. Anthony.
suffuse v. spread over. A blush suffused her cheeks when we teased her about her love affair.
sully v. tarnish; soil. He felt that it was beneath his dignity to sully his hands in such menial labor.
sultry adj. sweltering. He could not adjust himself to the sultry climate of the tropics.
summation n. act of finding the total; summary. In his summation, the lawyer emphasized the testimony given by the two witnesses.
sumptuous adj. lavish; rich. I cannot recall when I have had such a sumptuous Thanksgiving feast.
sunder v. separate; part. Northern and southern Ireland are politically and religiously sundered.
sundry adj. various; several. My suspicions were aroused when I read sundry items in the newspapers about your behavior.
superannuated adj. retired or disqualified because of age. Don’t call me superannuated; I can still perform a good day’s work!
supercilious adj. arrogant; condescending; patronizing. The supercilious headwaiter sneered at customers who he thought did not fit the image of a restaurant catering to an ultrafashionable crowd.
supererogatory adj. superfluous; more than needed or demanded. We have more than enough witnesses to corroborate your statement; to present any more would be supererogatory.
superficial adj. trivial; shallow. Since your report gave only a superficial analysis of the problem, I cannot give you more than a passing grade.
superfluous adj. excessive; overabundant, unnecessary. Please try not to include so many superfluous details in your report; just give me the bare facts. superfluity, n.
superimpose v. place over something else. Your attempt to superimpose another agency in this field will merely increase the bureaucratic nature of our government.
surnumerary n. person or thing in excess of what is necessary; extra. His first appearance on the stage was as a surnumerary in a Shakespearean tragedy.
superceded v. cause to be set aside; replace; make obsolete. Bulk mailing postal regulation 326D superseded bulk mailing postal regulation 326C. If, in bundling your bulk mailing, you follow regulation 326C, your bulk mailing will be returned. supersession, n.
supine adj. lying on back. The altercation pugilist lay supine on the canvas.
supplant v. replace, usurp. Did the other woman actually supplant Princess Diana in Prince Charles’s affections, or did Charles never love Diana at all? Bolingbroke, later to be known as King Henry IV, fought to supplant his cousin, Richard III, as King of England.
supple adj. flexible; pliant. Years of yoga exercises made Grace’s body supple.
suppliant adj. entreating; beseeching. Unable to resist the dog’s suppliant whimpering, he gave it some food. also n.
suplicate v. petition humbly; pray to grant a favor. We supplicate Your Majesty to grant him amnesty.
supposition n. hypothesis, surmise. I based my decision to confide in him on the supposition that he would be discreet. suppose, v.
supposititious adj. assumed; counterfeit; hypothetical. I find no similarity between your supposititious illustration and the problem we are facing.
suppress v. stifle; overwhelm; subdue; inhibit. Too polite to laugh in anyone’s face, Roy did his best to suppress his amusement at Ed’s inane remark.
surfeit v. satiate; stuff; indulge to excess in anything. Every Thanksgiving we are surfeited with an over-abundance of holiday treats. also n.
surry adj. rude; cross. Because of his surly attitude, many people avoided his company.
surmise v. guess. I surmise that he will be late for this meeting. also n.
surmount v. overcome. I know you can surmount any difficulties that may stand in the way of your getting an education.
surpass v. exceed. Her SAT scores surpassed our expectations.
surreptitious adj. secret; furtive; sneaky; hidden. Hoping to discover where his mom had hidden the Christmas presents, Timmy took a surreptitious peek into the master bedroom closet.
surrogate n. substitute. For a fatherless child, a male teacher may become a father surrogate.
surveillance n. watching; guarding. The FBI kept the house under constant surveillance in the hope of capturing all the criminals at one time.
susceptible adj. impressionable; easily influenced; having little resistance, as to a disease; receptive to. Said the patent medicine man to his very susceptible customer: “Buy this new miracle drug, and you will never longer be susceptible to the common cold.” Susceptibility, n.
sustain v. experience; support; nourish. He sustained such a severe injury that the doctors feared he would be unable to work to sustain his growing family.
sustenance n. means of support, food, nourishment. In the tropics, the natives find sustenance easy to obtain because of all the fruit trees.
suture n. stitches sewn to hold the cut edges of a wound or incision; material used in sewing. We will remove the sutures as soon as the wound heals. also v.
swarthy adj. dark; dusky. Despite the stereotype, not all Italians are swarthy; many are fair and blond.
swathe v. wrap around; bandage. When I visited him in the hospital, I found him swathed in bandages.

swelter v. be oppressed by heat. I am going to buy an air conditioning unit for my apartment as I do not intend to swelter through another hot and humid summer.

swerve v. deviate; turn aside sharply. The car swerved wildly as the driver struggled to regain control of the wheel.

swill v. drink greedily. Singing "Yo, ho, ho, and a bottle of rum," Long John Silver and his fellow pirates swilled their grog.

swindler n. cheat. She was gullible and trusting, an easy victim for the first swindler who came along.

sybarite n. lover of luxury. Rich people are not always sybarites; some of them have little taste for a life of luxury.

sycophant n. servile flatterer; bootlicker; yes man. Fed up with the toadies and brownnosers who made up his entourage, the star cried, "Get out, all of you! I'm sick of sycophants!"

sycophantic adj.

syllogism n. logical formula consisting of a major premise, a minor premise and a conclusion; deceptive or specious argument. There must be a fallacy in this syllogism; I cannot accept its conclusion.

sylvan adj. pertaining to the woods; rustic. His paintings of nympha in sylvan backgrounds were criticized as oversentimental.

symbiosis n. interdependent relationship (between groups, species), often mutually beneficial. Both the crocodile bird and the crocodile derive benefit from their symbiosis; packing away at food particles embedded in the crocodile's teeth, the bird derives nourishment; the crocodile, meanwhile, derives proper dental hygiene.

symbiotic adj.

symmetry n. arrangement of parts so that balance is obtained; congruity. By definition, something lopsided lacks symmetry; symmetrical, adj.

synchronous adj. similarly timed; simultaneous with. We have many examples of scientists in different parts of the world who have made synchronous discoveries.

synoptic adj. providing a general overview; summary. The professor turned to the latest issue of Dissertation Abstracts for a synoptic account of what was new in the field. synopsis, n.

synthesis n. combining parts into a whole. Now that we have succeeded in isolating this drug, our next problem is to plan its synthesis in the laboratory. syntheses, pl.; synthesize, v.

synthetic adj. artificial; resulting from synthesis. During the twentieth century, many synthetic products have replaced their natural counterparts. Also N.

tact adj. understood; not put into words. We have a tactful agreement based on only a handshake.

tactful adj. habitually silent; talking little. The stereotypical cowboy is a taciturn soul, answering lengthy questions with a "Yea" or "Nope."

tactile adj. pertaining to the organs or sense of touch. His callused hands had lost their tactile sensitivity.

taint v. contaminate; cause to lose purity; modify with a trace of something bad. One speck of dirt on your utensils may contain enough germs to taint an entire batch of preserves. Also N.

talisman n. charm. She wore the talisman to ward off evil.

talon n. claw of bird. The falconer wore a leather gauntlet to avoid being clawed by the hawk's talons.

tangential adj. peripheral; only slightly connected; digressing. Despite Clark's attempts to distract her with tangential remarks, Lois kept on coming back to her main question: Why couldn't he come out to dinner with Superman and her?

tangible adj. able to be touched; real; palpable. Although Tom did not own a house, he had several tangible assets—a car, a television, a PC—that he could sell if he needed cash.

tanner n. person who turns animal hides into leather. Using a solution of tanbark, the tanner treated the cowhide, transforming it into supple leather.

tantalize v. tease; torture with disappointment. Tom loved to tantalize his younger brother with candy; he knew the boy was forbidden to have it.

tantamount adj. equivalent in effect or value. Because so few Southern blacks could afford to pay the poll tax, the imposition of this tax on prospective voters was tantamount to disenfranchisement for black voters.

Test

Word List 45 Synonyms and Antonyms

Each of the following questions consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar or opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

661. SUBLIMINAL (A) radiant (B) indifferent (C) obvious (D) domestnic (E) horizontal

662. SUPERANNUATED (A) senile (B) experienced (C) retired (D) attenuated (E) accepted

663. SUPERCILIOUS (A) haughty (B) highbrow (C) angry (D) inane (E) philosophic

664. SUPERFICIAL (A) abnormal (B) portentous (C) shallow (D) angry (E) tiny

665. SUPERNUMERARY (A) miser (B) extra (C) associate (D) astronomer (E) inferiority
666. SUPPLIANT (A) intolerant (B) swallowing (C) beseeching (D) finishing (E) flexible
667. SURFEIT (A) belittle (B) clay (C) drop (D) estimate (E) claim
668. SURREPTITIOUS (A) secret (B) snakelike (C) nightly (D) abstract (E) furnished
669. SUTURE (A) stitch (B) reflection (C) knitting (D) tailor (E) past
670. SWATHE (A) wrapped around (B) waved (C) gambled (D) rapt (E) mystified

671. SYCOPHANTIC (A) quiet (B) reclusive (C) servilely flattering (D) frolicsome (E) eagerly awaiting
672. SYNTHETIC (A) simplified (B) doubled (C) tuneful (D) artificial (E) fiscal
673. TACIT (A) spoken (B) allowed (C) neutral (D) impertinent (E) unwanted
674. TALISMAN (A) chief (B) juror (C) medicine man (D) amulet (E) gift
675. TANTALIZE (A) tease (B) wax (C) warrant (D) authorize (E) summarize

Word List 46  tantrum-tome

**tantrum** n. fit of petulance; caprice. The child learned that he could have almost anything if he went into tantrums.

taper n. candle. She lit the taper on the windowsill.

tarantula n. venomous spider. We need an antitoxin to counteract the bite of the tarantula.

tarry v. delay; dawdle. We can’t tarry if we want to get to the airport on time.

tatty adj. worn and shabby; bedraggled. Cinderella’s stepsisters sneered at her in her frayed apron and tatty old gown.

taut adj. tight; ready. The captain maintained that he ran a taut ship.

tautological adj. needlessly repetitious. In the sentence “It was visible to the eye,” the phrase “to the eye” is tautological: tautology, n.

tawdry adj. cheap and gaudy. He won a few tawdry trinkets at Coney Island.

taxonomist n. specialist in classifying (animals, etc.). Dental patterns often enable the taxonomist to distinguish members of one rodent species from those of another.

tedium n. boredom; weariness. We hope this new Game Boy will help you overcome the tedium of your stay in the hospital. tedious, adj.

taetotalism n. practice of abstaining totally from alcoholic drinks. Though the doctor warned Bert to cut down his booze intake, she didn’t insist that he practice teetotalism, teetotaler, n.

temperance n. boldness; rashness. Do you have the temperance to argue with me?

temper v. moderate; tone down or restrain; toughen (steel). Not even her supervisor’s grumpiness could temper Nancy’s enthusiasm for her new job.

temperament n. characteristic frame of mind; disposition; emotional excess. Although the twins look alike, they differ markedly in temperament: Tod is calm, but Rod is excitable.

temperate adj. restrained, self-controlled; moderate in respect to temperature. Try to be temperate in your eating this holiday season; if you control your appetite, you won’t gain too much weight. Goldilocks found San Francisco’s temperate climate neither too hot nor too cold but just right.

tempestuous adj. stormy; impassioned; violent. Packet-throwing tennis star John McEnroe was famed for his displays of tempestuous temperament.

tempo n. speed of music. I find the band’s tempo too slow for such a lively dance.

temporal adj. not lasting forever; limited by time; secular. At one time in our history, temporal rulers assumed that they had been given their thrones by divine right.

temporize v. act evasively to gain time; avoid committing oneself. Ordered by King John to drive Robin Hood out of Sherwood Forest, the sheriff temporized, hoping to put off any confrontation with the outlaw band.

tenacious adj. holding fast. I had to struggle to break his tenacious hold on my arm.

tenacity n. firmness; persistence. Jean Valjean could not believe the tenacity of Inspector Javert. Here all Valjean had done was to steal a loaf of bread, and the inspector had pursued him doggedly for 20 years.

tendentious adj. having an aim; biased; designed to further a cause. The editorials in this periodical are tendentious rather than truth-seeking.

tender v. offer; extend. Although no formal charges had been made against him, in the wake of the recent scandal the mayor felt he should tender his resignation.

tenet n. doctrine; dogma. The agnostic did not accept the tenets of their faith.

tensile adj. capable of being stretched. Mountain climbers must know the tensile strength of their ropes.

tentative adj. hesitant; not fully worked out or developed: experimental; not definite or positive. Unsure of his welcome at the Christmas party, Scrooge took a tentative step into his nephew’s drawing room.

**tenuous** adj. thin; rare; slim. The allegiance of our allies is held by such tenuous ties that we have little hope they will remain loyal.

tenure n. holding of an office; time during which such an office is held. A special recall election put an end to Gray Davis’s tenure in office as governor of California.
tepid adj. lukewarm. To avoid scalding the baby, make sure the bath water is tepid, not hot.
termination n. end. Though the time for termination of the project was near, we still had a lot of work to finish before we shut up shop. terminate, v.
terminology n. terms used in a science or art. The special terminology developed by some authorities in the field has done more to confuse laypersons than to enlighten them.
terminus n. last stop of railroad. After we reached the railroad terminus, we continued our journey into the wilderness on saddle horses.
terrestrial adj. on or relating to the earth. We have been able to explore the terrestrial regions much more thoroughly than the aquatic or celestial regions.
terse adj. concise; abrupt, pithy. There is a fine line between speech that is terse and to the point and speech that is too abrupt.
tertiary adj. third. He is so thorough that he analyzes tertiary causes where other writers are content with primary and secondary reasons.
tessellated adj. iridescent; mosaic. I recall seeing a table with a tessellated top of bits of stone and glass in a very interesting pattern.
testator n. maker of a will. The attorney called in his secretary and his partner to witness the signature of the testator.
testy adj. irritable; short-tempered. My advice is to avoid discussing this problem with her today as she is rather testy and may shout at you. testiness, n.
tether v. tie with a rope. Before we went to sleep, we tethered the horses to prevent their wandering off during the night.
thematically adj. relating to a unifying motif or idea. Those who think of Moby Dick as a simple adventure story about whaling miss its underlying thematically import.
thecocracy n. government run by religious leaders. Though some Pilgrims aboard the Mayflower favored the establishment of a theocracy in New England, many of their fellow voyagers preferred a nonreligious form of government.
thetical adj. not practical or applied; hypothetical. Bob was better at applied engineering and computer programming than he was at theatrical physics and math. While I can still think of some theoretical objections to your plan, you've convinced me of its basic soundness.
therapeutic adj. curative. Now better known for its race-track, Saratoga Springs first gained attention for the therapeutic qualities of its famous "healing waters."
thermal adj. pertaining to heat. The natives discovered that the hot springs gave excellent thermal baths and began to develop their community as a health resort. also n.
thespian adj. pertaining to drama. Her success in the school play convinced her she was destined for a thespian career. also n.
thrall n. slave; bondage. The captured soldier was held in thrall by the conquering army.
threadbare adj. worn through till the threads show; shabby and poor. The poorly paid adjunct professor hid the threadbare spots on his jacket by sewing leather patches on his sleeves.
thrift adj. careful about money; economical. A thrifty shopper compares prices before making major purchases.
thrive v. prosper; flourish. Despite the impact of the recession on the restaurant trade, Philip's cafe thrived.
throts n. violent anguish. The throes of despair can be as devastating as the spasms accompanying physical pain.
throng n. crowd. Throngs of shoppers jammed the aisles. also v.
throttle v. strangle. The criminal tried to throttle the old man with his bare hands.
thwart v. baffle; frustrate. He felt that everyone was trying to thwart his plans and prevent his success.
tighten v. excessively frugal person; miser. Jill called Jack a tighten because he never picked up the check. tighten n. handle used to move boat's rudder (to steer). Fearing the wind might shift suddenly and capsize the skiff, Tom kept one hand on the tiller at all times.
timbre n. quality of a musical tone produced by a musical instrument. We identify the instrument producing a musical sound by its timbre.
timid adj. lack of self-confidence or courage. If you are to succeed as a salesperson, you must first lose your timidity and fear of failure.
timorous adj. fearful; demonstrating fear. Her timorous manner betrayed the anxiety she felt at the moment.
tipple v. drink (alcoholic beverages) frequently. He found that his most enjoyable evenings occurred when he tipped with his friends at the local pub. n.
tirade n. extended scolding; denunciation; harangue. Every time the boss holds a meeting, he goes into a lengthy titrate, scolding us for everything from tardiness to padding our expenses.
titanic adj. gigantic. Titanic waves beat against the majestic S.S. Titanic, driving it against the concealed iceberg. titanic n.
tith n. tax of one-tenth. Because he was an agnostic, he refused to pay his tithe to the clergy. also v.
titillate v. tickle. I am here not to titillate my audience but to enlighten it.
title n. right or claim to possession; mark of rank; name (of a book, film, etc.). Though the penniless Duke of Ragwort no longer held title to the family estate, he still retained his title as head of one of England's oldest families.
titter n. nervous laugh. Her aunt's constant titter nearly drove her mad. also v.
titular adj. having the title of an office without the obligations. Although he was the titular head of the company, the real decisions were made by his general manager.
toady n. servile flatterer; yes man. never tell the boss anything he doesn't wish to hear; he doesn't want an independent adviser, he just wants a toady, also v.

toga n. roman outer robe. marc antony pointed to the slashes in caesar's toga.
tome n. large volume. she spent much time in the libraries poring over ancient tomas.

Test

Word List 46 Synonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

676. TARRY (A) polish (B) restrain (C) surpass (D) linger (E) disturb
677. TAUTOLOGY (A) memory (B) repetition (C) tension (D) simple (E) lack of logic
678. TAUDRY (A) orderly (B) meretricious (C) reclaimed (D) filtered (E) proper
679. TEMERITY (A) timidity (B) resourcefulness (C) boldness (D) tumultiousness (E) caution
680. TEMPORAL (A) priestly (B) scholarly (C) secular (D) sleepy (E) sporadic
681. TENACIOUS (A) fast running (B) intentional (C) obnoxious (D) holding fast (E) collecting
682. TENACITY (A) splendor (B) perseverance (C) tendency (D) ingratitude (E) decimation
683. TENDENTIOUS (A) biased (B) likely (C) absurd (D) festive (E) literary
684. TENTATIVE (A) prevalent (B) portable (C) mocking (D) wry (E) experimental
685. TENUOUS (A) vital (B) thin (C) careful (D) dangerous (E) necessary
686. TEPID (A) boiling (B) lukewarm (C) freezing (D) gaseous (E) cold
687. TERSE (A) brief in speech (B) bold in manner (C) under strain (D) without honor (E) beyond fear
688. TESSELLATED (A) striped (B) made of mosaics (C) piebald (D) uniform (E) trimmed
689. THESPISAN (A) foreigner (B) skeptic (C) daydreamer (D) magician (E) actor
690. TITILLATE (A) hasten (B) fasten (C) stimulate (D) incorporate (E) enlarge

Word List 47 tonsure-ubiquitous

tonsure n. shaving of the head, especially by person entering religious orders. his tonsure, even more than his monastic garb, indicated that he was a member of the religious order.
topography n. physical features of a region. before the generals gave the order to attack, they ordered a complete study of the topography of the region.
torpid n. lethargy; sluggishness; dormancy. throughout the winter, nothing aroused the bear from his torpor. he would not emerge from hibernation until spring, torpid, adj.
torque n. twisting force, force producing rotation. with her wrench she applied sufficient torque to the nut to loosen it.
torrent n. rushing stream; flood. day after day of heavy rain saturated the hillside until the water ran downhill in torrents, torrential, adj.
torrid adj. passionate; hot or scorching. the novels published by harlequin romances feature torrid love affairs, some set in torrid climates.
torso n. trunk of statue with head and limbs missing; human trunk. this torso, found in the ruins of pompeii, is now on exhibition in the museum in naples.

m tortuous adj. winding; full of curves. because this road is so tortuous, it is unwise to go faster than twenty miles an hour on it.
totter v. move unsteadily; sway, as if about to fall. on unsteady feet, the drunk tottered down the hill to the nearest bar.
touchstone n. stone used to test the fineness of gold alloys; criterion. what touchstone can be used to measure the character of a person?
touchy adj. sensitive; irascible. do not discuss his acne with archy; he is very touchy about it.
tout v. publicize; praise excessively. i lost confidence in my broker after he touted some junk bonds that turned out to be a bad investment.
toxic adj. poisonous. we must seek an antidote for whatever toxic substance he has eaten, toxicity, n.
tract n. pamphlet; a region of indefinite size. the king granted william penn a tract of land in the new world.
ttractable adj. docile; easily managed. although susan seemed a tractable young woman, she had a stubborn streak of independence that occasionally led her to defy the powers-that-be when she felt they were in the wrong, tractability, n.
trude v. expose to slander. His opponents tried to traduce the candidate’s reputation by spreading rumors about his past.

trajectory n. path taken by a projectile. The police tried to locate the spot from which the assassin had fired the fatal shot by tracing the trajectory of the bullet.

tranquility n. calmness; peace. After the commotion and excitement of the city, I appreciate the tranquility of these fields and forests.

transcendent adj. surpassing; excelling ordinary limits; superior. Standing on the hillside watching the sunset through the Golden Gate was a transcendent experience for Lisa: the sight was so beautiful it surpassed her wildest dreams. transcend, v. transcendency, n.

transcribe v. copy. When you transcribe your notes, please send a copy to Mr. Smith and keep the original for our files. transcription, n.

transfigure v. transform outwardly, usually for the better; change in form or aspect. Elizabeth Barrett’s love for Robert Browning transfigured her poetry as well as transforming her life. Bely’s poetic novel, Peterburg, is a travel fantasy set within a city that is both real and transfigured into a myth.

transgression n. violation of a law; sin. Although Widow Douglass was willing to overlook Huck’s minor transgressions, Miss Watson refused to forgive and forget.

transient adj. momentary; temporary; staying for a short time. Lexy’s joy at finding the perfect Christmas gift for Phil was transient; she still had to find presents for the cousins and Uncle Bob. Located near the airport, this hotel caters to the largely transient trade. also, n.

transition n. going from one state of action to another. During the period of transition from oil heat to gas heat, the furnace will have to be shut off.

transitory adj. impermanent; fleeting. Fame is transitory; today’s rising star is all too soon tomorrow’s washed-up has-been. transitoriness, n.

translucent adj. partly transparent. We could not recognize the people in the next room because of the translucent curtains that separated us.

transmute v. change; convert to something different. He was unable to transmute his dreams into actualities.

transparent adj. easily detected; permitting light to pass through freely. John’s pride in his son is transparent: no one who sees the two of them together can miss it. transparency, n.

transpire v. be revealed; happen. When Austen writes the sentence “It had just transpired that he had left gambling debts behind him,” her meaning is not that the debts had just been incurred, but that the shocking news had just leaked out.

transport n. strong emotion. Margo was a creature of extremes, at one moment in transports of joy over a vivid sunset, at another moment in transports of grief over a dying bird. also v.

trappings n. outward decorations; ornaments. He loved the trappings of success: the limousines, the stock options, the company jet.

traumatic adj. pertaining to an injury caused by violence. In his nightmares, he kept on recalling the traumatic experience of being wounded in battle.

trauma n.

travail n. painful physical or mental labor; drudgery; torment. Like every other recent law school graduate she knew, Shelby hated the seemingly endless travail of cramming for the bar exam.

traverse v. go through or across. When you traverse this field, be careful of the bull.

travesty n. harshly distorted imitation; parody; debased likeness. Phillips’s translation of Don Quixote is so inadequate and clumsy that it seems a travesty of the original.

treatise n. article treating a subject systematically and thoroughly. He is preparing a treatise on the Elizabethan playwrights for his graduate degree.

trek n. travel; journey. The tribe made their trek further north that summer in search of game. also v.

tremor n. trembling; slight quiver. She had a nervous tremor in her right hand.

tremulous adj. trembling; wavering. She was tremulous more from excitement than from fear.

trenchant adj. forceful and vigorous; cutting. With his trenchant wit, reviewer Frank Rich cut straight to the heart of the matter, panning a truly dreadful play.

trepidation n. fear; nervous apprehension. As she entered the office of the dean of admissions, Sharon felt some trepidation about how she would do in her interview.

tribulation n. distress; suffering. After all the trials and tribulations we have gone through, we need this rest.

tribunal n. court of justice. The decision of the tribunal was final and the prisoner was sentenced to death.

tribute n. tax levied by a ruler; mark of respect. The colonists refused to pay tribute to a foreign despot.

trident n. three-pronged spear. Neptune is usually depicted as rising from the sea, carrying his trident on his shoulder.

trilling adj. trivial; unimportant. Why bother going to see a doctor for such a trilling, everyday cold? trifle, n.

trigger v. set off. John is touchy today; say one word wrong and you’ll trigger an explosion.

trilogy n. group of three works. Having read the first two volumes of Philip Pullman’s trilogy, Alison could hardly wait to read volume three.

trinket n. knickknack; bauble. Whenever she traveled abroad, Ethel would pick up costume jewelry and other trinkets as souvenirs.

trite adj. hackneyed; commonplace. The trite and predictable situations in many television programs turn off many viewers, who, in turn, turn off their sets.

trivia n. trifles; unimportant matters. Too many magazines ignore newsworthy subjects and feature trivia.

troth n. pledge of good faith especially in betrothal. He gave her his troth and vowed to cherish her always.
tough N. container for feeding farm animals; lowest point (of a wave, business cycle, etc.). The hungry pigs struggled to get at the fresh swill in the trough. The surfer rode her board, coasting along in the trough between two waves.

truculence N. aggressiveness; ferocity. Tyrann’s reviews were noted for their caustic attacks and general tone of truculence. truculent, ADJ.

truisms N. self-evident truth. Many a truisms is summed up in a proverb; for example, “Marry in haste, repent at leisure.”

truncated v. cut the top off. The top of the cone that has been truncated in a plane parallel to its base is a circle.

tryst N. meeting. The lovers kept their tryst even though they realized their danger. also v.

tumid ADJ. swollen; pompous; bombastic. I especially dislike his tumid style; I prefer writing that is less swollen and bombastic.

tumult N. commotion; riot; raise. She could not make herself heard over the tumult of the mob.

tundra N. rolling, treeless plain in Siberia and arctic North America. Despite the cold, many geologists are trying to discover valuable mineral deposits in the tundra.

turbid ADJ. muddy; having the sediment disturbed. The water was turbid after the children had waded through it.

turbulence N. state of violent agitation. Warned of approaching turbulence in the atmosphere, the pilot told the passengers to fasten their seat belts.

tureen N. deep dish for serving soup. The waiters brought the soup to the tables in silver tureens.

turgid ADJ. swollen; distended. The turgid river threatened to overflow the levees and flood the countryside.

tumult N. great commotion and confusion. Lydia running off with a soldier! Mother fainting at the news! The Bennet household was in tumult.

tumultuous TRITE (A) correct (B) original (C) distinguished (D) premature (E) certain

tycoon N. wealthy leader. John D. Rockefeller was a prominent tycoon.

typhoon N. tropical hurricane or cyclone. If you liked Twister, you’ll love Typhoon!

tyranous N. oppression; cruel government. Frederick Douglass fought against the tyranny of slavery throughout his entire life.

tyro N. beginner; novice. For a mere tyro, you have produced some marvelous results.

ubiquitous ADJ. being everywhere; omnipresent. That Christmas “The Little Drummer Boy” seemed ubiquitous. Justin heard the tune everywhere he went. ubiquity, N.

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Test

Word List 47   Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

691. TRACTABLE (A) unmanageable (B) irreligious (C) mortal (D) incapable (E) unreal

692. TRADUCE (A) exhume (B) increase (C) purchase (D) exotil (E) donate

693. TRANQUILLITY (A) lack of sleep (B) lack of calm (C) emptiness (D) renewal (E) closeness

694. TRANSIENT (A) carried (B) close (C) permanent (D) removed (E) certain

695. TREMULOUS (A) steady (B) obese (C) young (D) healthy (E) unkempt

696. TRENCHEANT (A) lacking bite (B) imperious (C) inessential (D) unafrraid (E) narrow-minded

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697. TREPIDATION (A) slowness (B) amputation (C) fearlessness (D) adroitness (E) death

698. TRITE (A) correct (B) original (C) distinguished (D) premature (E) certain

699. TRUCULENT (A) juicy (B) overflowing (C) peaceful (D) determined (E) false

700. TUMULT (A) scarcity (B) defeat (C) Coolness (D) density (E) serenity

701. TURBID (A) clear (B) improbable (C) invariable (D) honest (E) turgid

702. TURBULENCE (A) reaction (B) approach (C) impropriety (D) cairn (E) hostility

703. TURBID (A) rancid (B) shrunken (C) cool (D) explosive (E) painful

704. TURPITUDE (A) amplitude (B) heat (C) wealth (D) virtue (E) quiet

705. TYRANT (A) infant (B) rubber (C) personnel (D) idiot (E) expert
ulterior ADJ. situated beyond; unstated and often questionable. You must have an ulterior motive for your behavior, since there is no obvious reason for it.

ultimate ADJ. final; not susceptible to further analysis. Scientists are searching for the ultimate truths.

ultimatum N. last demand; warning. Since they have ignored our ultimatum, our only recourse is to declare war.

umbrage N. resentment; anger; sense of injury or insult. She took umbrage at his remarks and stormed away in a huff.

unaccountable ADJ. inexplicable; unreasonable or mysterious. I have an unaccountable dislike to my doctor: "I do not love thee, Doctor Fell. The reason why, I cannot tell."

unanimity N. complete agreement. We were surprised by the unanimity with which our proposals were accepted by the different groups. unanimous, ADJ.

unassailable ADJ. not subject to question; not open to attack. Penelope’s virtue was unassailable; while she waited for her husband to come back from the war, no other guy had a chance.

unassuaged ADJ. unsatisfied; not soothed. Her anger is unassuaged by your apology.

unassuming ADJ. modest. He is so unassuming that some people fail to realize how great a man he really is.

unbridled ADJ. violent. She had a sudden fit of unbridled rage.

uncanny ADJ. strange; mysterious. You have the uncanny knack of reading my innermost thoughts.

unconscionable ADJ. unscrupulous; excessive. She found the loan shark’s demands unconscionable and impossible to meet.

uncouth ADJ. outlandish; clumsy; boorish. Most biographers portray Lincoln as an uncouth and ungainly young man.

unction N. the act of anointing with oil. The anointing with oil of a person near death is called extreme unction.

unctuous ADJ. oily; bland; insincerely suave. Uriah Heep disguised his nefarious actions by unctuous protestations of his "innocence."

underlying ADJ. fundamental; lying below. The underlying cause of the student riot was not the strict curfew rule but the moldy cafeteria food. Miss Maple seems a sweet little old lady at first, but an iron will underlies that soft and fluffy facade.

undermine v. weaken; sap. The recent corruption scandals have undermined many people’s faith in the city government.

underscore v. emphasize. Addressing the jogging class, Kim underscored the importance to runners of good nutrition.

undulating ADJ. moving with a wavelike motion. The Hilo Hula Festival featured an undulating sea of grass skirts.

unearth v. dig up. When they unearthed the city, the archeologists found many relics of an ancient civilization.

uneartly ADJ. not earthy; weird. There is an unearthly atmosphere in her work that amazes the casual observer.

unequivocal ADJ. plain; obvious. My answer to your proposal is an unequivocal and absolute "No."

unerringly ADJ. infallibly. My teacher unerringly pounced on the one typographical error in my essay.

unexceptionable ADJ. not offering any basis for criticism; entirely acceptable. Objecting to Jack’s lack of a respectable family background, Lady Bracknell declared that Cecily could marry only a man of unexceptionable lineage and character.

unfaltering ADJ. steadfast. She approached the guillotine with unfaltering steps.

unfeigned ADJ. genuine; real. She turned so pale that I am sure her surprise was unfeigned.

unfettered ADJ. liberated; freed from chains. Chained to the wall for months on end, the hostage despaired that he would ever be unfettered. unfetter, v.

unfledged ADJ. immature. It is hard for an unfledged writer to find a sympathetic publisher.

unfrock v. to strip a priest or minister of church authority. To disbar a lawyer, to unfrock a priest, to suspend a doctor’s license to practice—these are extreme steps that the authorities should take only after careful consideration.

ungainly ADJ. awkward; clumsy; unwieldy. "If you want to know whether Nick’s an ungainly dancer, check out my bruised feet," said Nora. Anyone who has ever tried to carry a bass fiddle knows it’s an ungainly instrument.

unguent N. ointment. Apply this unguent to the sore muscles before retiring.

uniformity N. sameness; monotony. At Persons magazine, we strive for uniformity of style; as a result, all our writers wind up sounding exactly alike. uniform, ADJ.

unilateral ADJ. one-sided. This legislation is unilateral since it binds only one party in the controversy.

unimpeachable ADJ. blameless and exemplary. Her conduct in office was unimpeachable and her record is spotless.

uninhibited ADJ. unrepressed. The congregation was shocked by her uninhibited laughter during the sermon.

unintimidating ADJ. unfrightening. Though Phil had expected to feel overawed when he met Joe Montana, he found the world-famous quarterback friendly and unintimidating.

unique ADJ. without an equal; single in kind. You have the unique distinction of being the first student whom I have had to fail in this course.

unison N. unity of pitch; complete accord. The choir sang in unison.
universal  adj. characterizing or affecting all; present everywhere. At first, no one shared Christopher’s opinions; his theory that the world was round was met with universal disdain.

unkempt  adj. disheveled, uncared for in appearance. Jeremy hated his neighbor’s unkempt lawn; he thought its neglected appearance had a detrimental effect on neighborhood property values.

unmitigated  adj. unrelieved or immoderate; absolute. After four days of unmitigated heat, I was ready to collapse from heat prostration. The congresswoman’s husband was an unmitigated jerk; not only did he abandon her, but also he took her campaign funds!

unobtrusive  adj. inconspicuous, not blatant. Unobtrusive to attract notice, the governess took a chair in a far corner of the room and tried to be as unobtrusive as possible.

unpalatable  adj. distasteful; disagreeable. “I refuse to swallow your conclusion,” she said, finding his logic unpalatable.

unprecedented  adj. novel; unparalleled. For a first novel, Margaret Mitchell’s book Gone with the Wind was an unprecedented success.

unprepossessing  adj. unattractive. During adolescence many attractive young people somehow acquire the false notion that their appearance is unprepossessing.

unravel  v. disentangle; solve. With equal ease Miss Marple unraveled tangled balls of yarn and baffling murder mysteries.

unrequited  adj. not reciprocated. Suffering the pangs of unrequited love, Olivia rebukes Cesario for his hardheartedness.

unruly  adj. disobedient; lawless. The only way to curb this unruly mob is to use tear gas.

unsavory  adj. distasteful; morally offensive. People with unsavory reputations should not be allowed to work with young children.

unscathed  adj. unharmed. They prayed he would come back from the war unscathed.

unseemly  adj. unbecoming; indecent; in poor taste. When Seymour put whoopee cushions on all the seats in the funeral parlor, his conduct was most unseemly.

unsightly  adj. ugly. Although James was an experienced emergency room nurse, he occasionally became queasy when faced with a particularly unsightly injury.

unsullied  adj. unmarred by guilt. I am happy that my reputation is unsullied.

untenable  adj. indefensible; not able to be maintained. Wayne is so contrary that the more untenable a position is, the harder he’ll try to defend it.

untoward  adj. unfortunate or unlucky; adverse; unexpected. Trying to sneak out of the house, Huck had a most untoward encounter with Miss Watson, who thwarted his escape.

untrammeled  adj. without limits or restrictions; unrestrained. The first principle of a free society is an untrammeled flow of words in an open forum. The free-spirited young radical led an unconventional life, untrammeled by rigid norms of ideological orthodoxy.

unwarranted  adj. unjustified; groundless; undeserved. Your assumption that I would accept your proposal is unwarranted, sir; I do not want to marry you at all. We could not understand Martin’s unwarranted rudeness to his mother’s guests.

unwieldy  adj. awkward; cumbersome; unmanageable. The large carton was so unwieldy that the movers had trouble getting it up the stairs.

unwitting  adj. unintentional; not knowing. She was the unwitting tool of the swindlers.

unwonted  adj. unaccustomed. He hesitated to assume the unwonted role of master of ceremonies at the dinner.

upbraid  v. severely scold; reprimand. Not only did Miss Minchin upbraid Ermenterde for disobedience, but also she hung her up by her braids from a coatrack in the classroom.

uproarious  adj. marked by commotion; extremely funny; very noisy. The uproarious comedy hit Ace Ventura: Pet Detective starred Jim Carrey, whose comic mugging provoked gales of uproarious laughter from audiences coast to coast.

upshot  n. outcome. The upshot of the rematch was that the former champion proved that he still possessed all the skills of his youth.

urbane  adj. suave; refined; elegant. The courtier was urbane and sophisticated, urbnity, n.

urchin  n. mischievous child (usually a boy). Get out! This store is no place for grubby urchins!

ursine  adj. bearlike; pertaining to a bear. Because of its ursine appearance, the great panda has been identified with the bears; actually, it is closely related to the raccoon.

usurp  v. seize another’s power or rank. The revolution ended when the victorious rebel general succeeded in his attempt to usurp the throne. usurpation, n.

usury  n. lending money at illegal rates of interest. The loan shark was found guilty of usury.

utopia  n. ideal place, state, or society. Fed up with this imperfect universe, Don would have liked to run off to Shangri-la or some other imaginary utopia. utopian, adj.

uxorious  adj. excessively devoted to one’s wife. His friends laughed at him because he was so uxorious and submissive to his wife’s desires.

vacillate  v. waver; fluctuate. Uncertain which suit she ought to marry, the princess vacillated, saying now one, now the other. vacillation, n.

vacuous  adj. empty; lacking in ideas; stupid. The candidate’s vacuous remarks annoyed the audience, who had hoped to hear more than empty platitudes. vacuity, n.

vagabond  n. wanderer; tramp. In summer, college students wander the roads of Europe like carefree vagabonds. also adj.

vagary  n. caprice; whim. She followed every vagary of fashion.
vagrant ADJ. stray; random. He tried to study, but could not collect his vagrant thoughts.

vagrant N. homeless wanderer. Because he was a stranger in town with no visible means of support, Martin feared he would be jailed as a vagrant. Vagrancy, N.

vainglorious ADJ. boastful; excessively conceited. She was a vainglorious and arrogant individual.

valedictory ADJ. pertaining to farewell. I found the valedictory address too long; leave-taking should be brief. Also N.

valid ADJ. logically convincing; sound; legally acceptable. You're going to have to come up with a better argument if you want to convince me that your reasoning is valid.

validate v. confirm; ratify. I will not publish my findings until I validate my results.

valor N. bravery. He received the Medal of Honor for his valor in battle.

vampire N. ghostly being that sucks the blood of the living. Children were afraid to go to sleep at night because of the many legends of vampires.

vanguard N. forerunners; advance forces. We are the vanguard of a tremendous army that is following us.

vantage N. position giving an advantage. They fired upon the enemy from behind trees, walls and any other point of vantage they could find.

vapid ADJ. dull and unimaginative; insipid and flavorless. “Boring!” said Cher, as she suffered through yet another vapid lecture about Dead White Male Poets.

vaporize v. turn into vapor (steam, gas, fog, etc.). “Zap!” went Super Mario’s atomic ray gun as he vaporized another deadly foe.

variegated ADJ. many-colored. Without her glasses, Gretchen saw the fields of tulips as a variegated blur.

vassal N. in feudalism, one who held land of a superior lord. The lord demanded that his vassals contribute more to his military campaign.

vaunted ADJ. boasted; bragged; highly publicized. This much vaunted project proved a disappointment when it collapsed.

veer v. change in direction. After what seemed an eternity, the wind veered to the east and the storm abated.

vegetate v. live in a monotonous way. I do not understand how you can vegetate in this quiet village after the adventurous life you have led.

vehement ADJ. forceful; intensely emotional; with marked vigor. Alfred became so vehement in describing what was wrong with the Internal Revenue Service that he began jumping up and down and gesticulating wildly. Vehemently, N.

Test

Word List 48 Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

706. UNEARTH (A) conceal (B) gnaw (C) clean (D) fling (E) react

707. UNFEIGN (A) pretended (B) fashionable (C) wary (D) switched (E) colonial

708. UNGAINLY (A) ignorant (B) graceful (C) detailed (D) dancing (E) pedantic

709. UNIMPEACHABLE (A) fruitful (B) rampaging (C) faulty (D) pensive (E) thorough

710. UNKEMPT (A) bombed (B) washed (C) neat (D) showy (E) tawdry

711. UNRULY (A) chatting (B) obedient (C) definite (D) lined (E) curious

712. UNSEEMLY (A) effortless (B) proper (C) conducive (D) pointed (E) informative

713. UNSULLIED (A) tarnished (B) countless (C) soggy (D) papered (E) homicidal

714. UNTENABLE (A) supportable (B) tender (C) sheepish (D) tremulous (E) adequate

715. UNWITTING (A) clever (B) intense (C) sensitive (D) freezing (E) intentional

716. VACCILLATION (A) remorse (B) relief (C) respect (D) steadfastness (E) inoculation

717. VALEDICTORY (A) sad (B) collegiate (C) derivative (D) salutatory (E) promising

718. VALOR (A) admonition (B) injustice (C) cowardice (D) generosity (E) repression

719. VANGUARD (A) regiment (B) rear (C) echelon (D) protection (E) loyalty

720. VAUNTED (A) unvanquished (B) fell (C) belittled (D) exacting (E) believed
velocity  N. speed. The train went by at considerable velocity.
venial  ADJ. capable of being bribed. The venial policeman accepted the bribe offered him by the speeding motorist whom he had stopped.
veneetia  N. blood feud. The rival mobs engaged in a bitter vendetta.
vendor  N. seller. The fruit vendor sold her wares from a stall on the sidewalk.
veneer  N. thin layer; cover. Casual acquaintances were deceived by his veneer of sophistication and failed to recognize his fundamental shallowness.
 venerable  ADJ. deserving high respect. We do not mean to be disrespectful when we refuse to follow the advice of our venerable leader.
 venerate  v. rever. In Tibet today, the common people still venerate their traditional spiritual leader, the Dalai Lama.
venial  ADJ. forgivable; trivial. When Jean Valjean stole a loaf of bread to feed his starving sister, he committed a venial offense.
venison  N. the meat of a deer. The hunters dined on venison.
venom  N. poison; hatred. Bitten on his ankle by a venomous snake, the cowboy contortionist curled up like a pretzel and sucked the venom out of the wound.
vent  N. small opening; outlet. The wine did not flow because the air vent in the barrel was clogged.
vent  v. express; utter. He vented his wrath on his class.
ventral  ADJ. abdominal. We shall now examine the ventral plates of this serpent, not the dorsal side.
ventriloquist  N. someone who can make his or her voice seem to come from another person or thing. This ventriloquist does an act in which she has a conversation with a wooden dummy.
venture  v. risk; dare; undertake a risk. Fearing to distress the actors, the timorous reviewer never ventured to criticize a performance in harsh terms. Also n.
venturesome  ADJ. bold. A group of venturesome women were the first to scale Mt. Annapurna.
venue  N. location. The attorney asked for a change of venue; he thought his client would do better if the trial were held in a less conservative county.
 veracious  ADJ. truthful. I can recommend him for this position because I have always found him veracious and reliable. Veracity, n.
veracity  N. truthfulness. Trying to prove Hill a liar, Senator Spector repeatedly questioned her veracity. Veracious, ADJ.
 verbalize  v. put into words. I know you don’t like to talk about these things, but please try to verbalize your feelings.
verbatim  ADV. word for word. He repeated the message verbatim. Also ADJ.
verbiage  N. pompous array of words. After we had waded through all of the verbiage, we discovered that the writer had said very little.
verbalize  v. wordy. We had to make some major cuts in Senator Foghorn’s speech because it was far too verbalize. Verbosity, N.
verdant  ADJ. green; lush in vegetation. Monet’s paintings of the verdant meadows were symphonies in green.
verdigris  N. green coating on copper that has been exposed to the weather. Despite all attempts to protect the statue from the elements, it became coated with verdigris.
verge  N. border; edge. Madame Curie knew she was on the verge of discovering the secrets of radioactive elements. Also v.
verisimilar  ADJ. probable or likely; having the appearance of truth. Something verisimilar is very similar to the truth, or at least seems to be.
verisimilitude  N. appearance of truth, likelihood. Critics praised her for the verisimilitude of her performance as Lady Macbeth. She was completely believable.
veritable  ADJ. actual; being truly so; not false or imaginary. At his computer, Pavel is a veritable wizard, creating graphic effects that seem magical to programmers less skilled than he.
verity  N. quality of being true; lasting truth or principle. Do you question the verity of Kato Kaen’s testimony about what he heard the night Nicole Brown Simpson was slain? To the skeptic, everything was relative; there were no eternal verities in which one could believe.
vernacular  n. living language; natural style. Cut out those old-fashioned "thee’s" and "thou’s" and write in the vernacular. Also ADJ.
vernal  ADJ. pertaining to spring. We may expect vernal showers all during the month of April.
versatile  ADJ. having many talents; capable of working in many fields. She was a versatile athlete, earning varsity letters in basketball, hockey, and track, versatility, n.
tvertex  N. summit. Let us drop a perpendicular line from the vertex of the triangle to the base, vertices, n.
vertigo  N. severe dizziness. When you test potential plane pilots for susceptibility to spells of vertigo, be sure to hand out airsick bags.
verve  N. enthusiasm; liveliness. She approached her studies with such verve that it was impossible for her to do poorly.
vestige  N. trace; remains. We discovered vestiges of early Indian life in the cave.
 vex  N. annoy; distress. Please try not to vex your mother; she is doing the best she can.
viable adj. practical or workable; capable of maintaining life. The plan to build a new baseball stadium, though missing a few details, is viable and stands a good chance of winning popular support.

viand n. food. There was a variety of viands at the feast.

vicarious adj. acting as a substitute; done by a deputy. Many people get a vicarious thrill at the movies by imagining they are the characters on the screen.

vicissitude n. change of fortune. Humbled by life's vicissitudes, the last emperor of China worked as a lowly gardener in the palace over which he had once ruled.

victuals n. food. I am very happy to be able to provide you with these victuals; I know you are hungry.

vie v. contend; compete. Politicians vie with one another, competing for donations and votes.

vigilant adj. watchfully awake; alert to spot danger. From the battlements, the vigilant sentry kept his eyes open for any sign of enemy troops approaching. Vigilance, n.

vigor n. active strength. Although he was over seventy years old, Jack had the vigor of a man in his prime. Vigorous, adj.

vignette n. picture; short literary sketch. The New Yorker published her latest vignette.

vilify v. slander. Waging a highly negative campaign, the candidate attempted to vilify his opponent's reputation. Vilification, n.

vindicate v. clear from blame; exonerate; justify or support. The lawyer's goal was to vindicate her client and prove him innocent on all charges. The critics' extremely favorable reviews vindicate my opinion that The Madness of King George is a brilliant movie.

vindictive adj. out for revenge; malicious. Divorce sometimes brings out a vindictive streak in people; when Tony told Tina he was getting a divorce, she poured green Jell-O into his aquarium and turned his tropical fish into dessert.

vintner n. winemaker; seller of wine. The poet wondered what the vintners could buy that would be half as precious as the wine they sold.

viper n. poisonous snake. The habitat of the horned viper, a particularly venomous snake, is in sandy regions like the Sahara or the Sinai peninsula.

virile adj. manly. I do not accept the premise that a man is virile only when he is belligerent.

virtual adj. in essence; for practical purposes. She is a virtual financial wizard when it comes to money matters.

virtue n. goodness; moral excellence; good quality. A virtue carried to extremes can turn into something resembling vice; humility, for example, can degenerate into servility and spinelessness.

virtuoso n. highly skilled artist. The child prodigy Yehudi Menuhin grew into a virtuoso whose virtuosity on the violin thrilled millions. Virtuosity, n.

virulent adj. extremely poisonous; hostile; bitter. Laid up with a virulent case of measles, Vera blamed her doctors because her recovery took so long. In fact, she became quite virulent on the subject of the quality of modern medical care. Virulence, n.

virus n. disease communicator. The doctors are looking for a specific medicine to control this virus.

visage n. face; appearance. The stern visage of the judge indicated that she had decided to impose a severe penalty.

visceral adj. felt in one's inner organs. She disliked the visceral sensations she had whenever she rode the roller coaster.

viscid adj. adhesive; gluey. The trunk of the maple tree was viscid with sap.

viscous adj. sticky; gluey. Melted tar is a viscous substance. Viscosity, n.

vise n. tool for holding work in place. Before filing its edges, the keysmith took the blank key and fixed it firmly between the jaws of a vise.

visionary adj. produced by imagination; fanciful; mystical. She was given to visionary schemes that never materialized. Also n.

vital adj. vibrant and lively; critical; living; breathing. The vital, highly energetic first aid instructor stressed that it was vital in examining accident victims to note their vital signs.

vitiate v. spoil the effect of; make inoperative. Fraud will viti ate the contract.

vitreous adj. pertaining to or resembling glass. Although this plastic has many vitreous qualities such as transparency, it is unbreakable.

vitriolic adj. corrosive; sarcastic. Such vitriolic criticism is uncalled for.

vilupervative adj. abusive; scolding. He became more vilupervative as he realized that we were not going to grant him his wish.

vivacious adj. lively or animated; sprightly. She had always been vivacious and sparkling.

vivisection n. act of dissecting living animals. The Society for the Prevention of Cruelty to Animals opposed vivisection and deplored the practice of using animals in scientific experiments.

vixen n. female fox; ill-tempered woman. Aware that she was right once again, he lost his temper and called her a shrew and a vixen.

vociferous adj. clamorous; noisy. The crowd grew vociferous in its anger and threatened to take the law into its own hands.

vogue n. popular fashion. Jeans became the vogue on many college campuses.
Test

Word List 49  Synonyms and Antonyms

Each of the questions below consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar or opposite in meaning to the word in capital letters and write the letter of your choice on your answer paper.

721. VENAL (A) springlike (B) honest (C) angry (D) indifferent (E) going
722. VENERATE (A) revere (B) age (C) reject (D) reverberate (E) degenerate
723. VENIAL (A) unforgivable (B) unforgettable (C) unmistakable (D) fearful (E) fragrant
724. VERACIOUS (A) worried (B) slight (C) alert (D) truthful (E) instrumental
725. VERDANT (A) poetic (B) green (C) red (D) autumnal (E) frequent
726. VERITY (A) sanctity (B) reverence (C) falsehood (D) rarity (E) household

727. VESTIGE (A) trek (B) trail (C) trace (D) trial (E) tract
728. VIABLE (A) moribund (B) salable (C) useful (D) foolish (E) inadequate
729. VIVAND (A) wand (B) gown (C) food (D) orchestra (E) tunic
730. VICARIOUS (A) substitutional (B) aggressive (C) sporadic (D) reverent (E) internal
731. VIGILANCE (A) bivouac (B) guide (C) watchfulness (D) rule (E) posse
732. VILIFY (A) erect (B) eulogize (C) better (D) magnify (E) horify
733. VINDICTIVE (A) revengeful (B) fearful (C) divided (D) literal (E) convincing
734. VIRULENT (A) sensuous (B) malignant (C) masculine (D) conforming (E) approaching
735. VISAGE (A) doubt (B) personality (C) hermitage (D) face (E) armor

Word List 50  volatile-zephyr

volatile  adj. changeable; explosive; evaporating rapidly. The political climate today is extremely volatile; no one can predict what the electorate will do next. Maria Callas's temper was extremely volatile: the only thing you could predict was that she would blow up. Acetone is an extremely volatile liquid; it evaporates instantly. volatility, n.
volution  n. act of making a conscious choice. She selected this dress of her own volition.
volatile  adj. fluent; glib; talkative. An excessively volatile speaker suffers from logorrhea: he continually runs off at the mouth. volatility, n.
voluminous  adj. bulky; large. A caftan is a voluminous garment; the average person wearing one looks as if he or she is draped in a small tent.
voracious  adj. ravenous. The wolf is a voracious animal, its hunger never satisfied.
vortex  n. whirlwind; whirlpool; center of turbulence; predicament into which one is inexorably plunged. Sucked into the vortex of the tornado. Dorothy and Toto were carried from Kansas to Oz.
vouchsafe  v. grant condescendingly; guarantee. I can safely vouchsafe you fair return on your investment.
voyeur  n. Peeping Tom. Jill called Jack a voyeur when she caught him aiming his binoculars at a bedroom window of the house next door.
vulnerable  adj. susceptible to wounds. His opponents could not harm Achilles, who was vulnerable only in his heel. vulnerability, n.
vulpine  adj. like a fox; crafty. She disliked his sly ways, but granted him a certain vulpine intelligence.
wafer  v. speak equivocally about an issue. When asked directly about the governor's involvement in the savings and loan scandal, the press secretary wafted, talking all around the issue.
waft  v. moved gently by wind or waves. Daydreaming, he gazed at the leaves that wafted past his window.
waggish  adj. mischievous; humorous; tricky. He was a prankster who, unfortunately, often overlooked the damage he could cause with his waggish tricks. wag, n.
wain  n. homeless child or animal. Although he already had eight cats, he could not resist adopting yet another feline wain.
waive  v. give up temporarily; yield. I will waive my rights in this matter in order to expedite our reaching a proper decision.
wake  n. trail of ship or other object; through water; path of something that has gone before. The wake of the swan gliding through the water glistened in the moonlight. Reporters and photographers converged on South Carolina in the wake of the hurricane that devastated much of the eastern seaboard.
wallow  v. roll in; indulge in; become helpless. The hippopotamus loves to wallow in the mud.
wan  adj. having a pale or sickly color; pallid. Suckling asked, "Why so pale and wan, fond lover?"
wanderlust n. strong longing to travel. Don’t set your heart on a travelling man. He’s got too much wanderlust to settle down.

wane v. decrease in size or strength; draw gradually to an end. To wane is the opposite of to wax or increase in size. When lit, does a wax candle wane?

wangle v. wibble out; fake. She tried to wangle an invitation to the party.

wanton adj. unrestrained; willfully malicious; unchaste. Pointing to the stack of bills, Sheldon criticized Sarah for her wanton expenditures. In response, Sara accused Sheldon of making an unflounced wanton attack.

wattle v. sing; babble. Every morning the birds wabbled outside her window. Also n.

warranted adj. justified, authorized. Before the judge issues the injunction, you must convince her this action is warranted.

warranty n. guarantee; assurance by seller. The purchaser of this automobile is protected by the manufacturer’s warranty that he will replace any defective part for fifty years or 50,000 miles.

warren n. tunnels in which rabbits live; crowded conditions in which people live. The tenement was a veritable warren packed with people too poor to live elsewhere.

wary adj. very cautious. The spies grew wary as they approached the sentry.

wastrel n. profligate. He was denounced as a wastrel who had dissipated his inheritance.

wax v. increase; grow. With proper handling, her fortunes waxed and she became rich.

waylay v. ambush; lie in wait. They agreed to waylay their victim as he passed through the dark alley going home.

wean v. accustom a baby not to nurse; give up a cherished activity. He decided he would wean himself away from eating junk food and stick to fruits and vegetables.

weather v. endure the effects of weather or other forces. He weathered the changes in his personal life with difficulty, as he had no one in whom to confide.

welt n. mark from a beating or whipping. The evidence of child abuse was very clear; Jennifer’s small body was covered with welts and bruises.

welter n. turmoil; bewildering jumble. The existing welter of overlapping federal and state proclaims cries out for immediate reform.

welter v. wallow. At the height of the battle, the casualties were so numerous that the victims weltered in their blood while waiting for medical attention.

wheel v. cajole; coax; deceive by flattery. She knows she can wheel almost anything she wants from her father.

whelk n. young wolf, dog, tiger, etc. This collie whelp won’t do for breeding, but he’d make a fine pet.

wheat v. sharpen; stimulate. The odors from the kitchen are whetting my appetite; I will be ravenous by the time the meal is served.

whiff n. puff or gust of air, scent, etc.; hint. The slightest whiff of Old Spice cologne brought memories of George to her mind.

whimsical adj. capricious; fanciful. In Mrs. Doubtfire, the hero is a playful whimsical man who takes a notion to dress up as a woman so that he can look after his children, who are in the custody of his ex-wife. whimsy, n.

whinny v. neigh like a horse. When he laughed through his nose, it sounded as if he whinned.

whit n. smallest speck; shred; tiny bit. There’s not one whit of truth in your allegations.

whittle v. pare; cut off bits. As a present for Aunt Polly, Tom whittled some clothespins out of a chunk of wood.

whorl n. ring of leaves around stem; ring. Identification by fingerprints is based on the difference in shape and number of the whorls on the fingers.

wilful adj. intentional; headstrong. Donald had planned to kill his wife for months; clearly, her death was a case of deliberate, wilful murder, not a crime of passion committed by a hasty, wilful youth unable to foresee the consequences of his deeds.

wily adj. cunning; artful. She is as wily as a fox in avoiding trouble.

wince v. shrink back; flinch. The screech of the chalk on the blackboard made her wince.

windfall n. fallen fruit; unexpected lucky event. This huge tax refund is quite a windfall.

winnow v. sift; separate good parts from bad. This test will winnow out the students who study from those who don’t bother.

winsome adj. agreeable; gracious; engaging. By her winsome manner, she made herself liked by everyone who met her.

wispy adj. thin; slight; barely discernible. Worried about preserving his few wispy tufts of hair, Walter carefully massaged his scalp and applied hair restorer every night.

wishful adj. vaguely longing; sadly pensive. With a last wishful glance at the happy couples dancing in the hall, Sue headed back to her room to study for her exam.

withdrawn adj. introverted; remote. Befuddled by his colleagues, the initially outgoing young researcher became increasingly withdrawn.

wither v. shrivel; decay. Cut flowers are beautiful for a day, but all too soon they wither.

withhold v. refuse to give; hold back. The tenants decided to withhold a portion of the rent until the landlord kept his promise to renovate the building.

w withstand v. stand up against; successfully resist. If you can withstand all the peer pressure in high school to cut classes and goof off, you should survive college in fine shape.

witless adj. foolish; idiotic. If Beavis is a half-wit, then Butthead is totally witless.

witticism n. witty saying; wisecrack. I don’t mean any criticism, but your last supposed witticism really hurt my feelings.
wizardry n. sorcery; magic. Merlin amazed the knights with his wizardry.

wizened adj. withered; shrunken. The wizened old man in the home for the aged was still active and energetic.

woe n. deep, inconsolable grief; affliction; suffering. Pale and wan with grief, Wanda was bowed down beneath the burden of her woes.

wont n. custom; habitual procedure. As was her wont, she jogged two miles every morning before going to work.

worldly adj. engrossed in matters of this earth; not spiritual. You must leave your worldly goods behind you when you go to meet your Maker.

wrangle v. quarrel; obtain through arguing; herd cattle. They wrangled over their inheritance.

wraith n. ghost; spirit. She turned to him, full of wraith, and said, "What makes you think I'll accept lower pay for this job than you get?"

wreak v. inflict. I am afraid he will wreak his vengeance on the innocent as well as the guilty.

wrench v. pull; strain; twist. She wrenched free of her attacker and landed a powerful kick to his kneecap.

wrest v. pull away; take by violence. With only ten seconds left to play, our team wrested victory from their grasp.

write n. written command issued by a court. The hero of Leonard's novel is a process server who invents unorthodox ways of serving writs on reluctant parties.

writhing adj. twisting in coils; contorted in pain. In Dances with Snakes, the snake dancer wiggled sinuously as her boa constrictor writhed around her torso.

wry adj. twisted; with a humorous twist. We enjoy Dorothy Parker's verse for its wry wit.

xenophobia n. fear or hatred of foreigners. When the refugee arrived in America, he was unprepared for the xenophobia he found there.

yen n. longing; urge. She had a yen to get away and live on her own for a while.

yeoman n. man owning small estate; middle-class farmer. It was not the aristocrat but the yeoman who determined the nation's policies.

yield n. amount produced; crop; income on investment. An experienced farmer can estimate the annual yield of his acres with surprising accuracy, also v.

yield v. give in; surrender. The wounded knight refused to yield to his foe.

yoke v. join together; unite. I don't wish to be yoked to him in marriage, as if we were cattle pulling a plow.

yoke adj. country bumpkin. Although her older sisters both had married farmers, Rita rejected the notion of marrying some uncultivated yoke.

yore n. time past. She dreamed of the elegant homes of yore, but gave no thought to their inelegant plumbing.

zany adj. crazy; comic. I can watch the Marx brothers' zany antics for hours.

zeal n. eager enthusiasm. Wang's zeal was contagious; soon his fellow students were busily making posters, inspired by his ardent enthusiasm for the cause.

zealous adj.

zealot n. fanatic; person who shows excessive zeal. Though Glenn was devout, he was no zealot; he never tried to force his religious beliefs on his friends.

zenith n. point directly overhead in the sky; summit. When the sun was at its zenith, the glare was not as strong as at sunrise and sunset.

zeephyr n. gentle breeze; west wind. When these zephyrs blow, it is good to be in an open boat under a full sail.

Test

Word List 50 Synonyms

Each of the following questions consists of a word in capital letters, followed by five lettered words or phrases. Choose the lettered word or phrase that is most nearly similar in meaning to the word in capital letters and write the letter of your choice on your answer paper.

736. VOLUBLE (A) worthwhile (B) serious (C) terminal (D) loquacious (E) circular

737. VORACIOUS (A) ravenous (B) spacious (C) truthful (D) pacific (E) tenacious

738. VOICESAFE (A) borrow (B) grani (C) punish (D) desire (E) qualify

739. WAIF (A) soldier (B) urchin (C) surrender (D) breeze (E) spouse

740. WANTON (A) needy (B) passive (C) rumored (D) oriental (E) unchaste

741. WARRANTY (A) threat (B) guarantee (C) order for arrest (D) issue (E) fund

742. WASTREL (A) refuse (B) spendthrift (C) mortal (D) tolerance (E) song

743. WAYLAY (A) ambush (B) journey (C) rest (D) road map (E) song

744. WELTER (A) heat (B) greeting (C) recovery (D) universe (E) tumult
745. WHINNY (A) complain (B) hurry (C) request (D) neigh (E) gallop
746. WINDFALL (A) unexpected gain (B) widespread destruction (C) calm (D) autumn (E) wait
747. WINSOME (A) victorious (B) gracious (C) married (D) permanent (E) pained
748. WIZENED (A) magical (B) clever (C) shriveled (D) swift (E) active
749. YEOMAN (A) masses (B) middle-class farmer (C) proletarian (D) indigent person (E) man of rank
750. ZEALOT (A) beginner (B) patron (C) fanatic (D) murderer (E) leper
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<th>Test—Word List 47</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Test—Word List 32</th>
<th>Test—Word List 40</th>
<th>Test—Word List 48</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Test—Word List 33</th>
<th>Test—Word List 41</th>
<th>Test—Word List 49</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Test—Word List 34</th>
<th>Test—Word List 42</th>
<th>Test—Word List 50</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Test—Word List 35</th>
<th>Test—Word List 43</th>
</tr>
</thead>
</table>
# Basic Word Parts

Words are made up of word parts: prefixes, suffixes, and roots. A knowledge of these word parts and their meanings can help you determine the meanings of unfamiliar words.

## Common Prefixes

A prefix is a syllable that precedes the root or stem and changes or refines its meaning.

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Meaning</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>ab, abs</td>
<td>from, away from</td>
<td>abduct lead away, kidnap abjure renounce</td>
</tr>
<tr>
<td>ad, ac, af, ag, an, ap, ar, as, at</td>
<td>to, forward</td>
<td>adit entrance accord agreement, harmony affection cause of distress aggregation collection annexation addition appease bring toward peace arraignment indictment assumption arrogance, taking for granted attendance presence, the persons present</td>
</tr>
<tr>
<td>ambi</td>
<td>both</td>
<td>ambiguous of double meaning ambivalent having two conflicting emotions</td>
</tr>
<tr>
<td>an, a</td>
<td>without</td>
<td>anarchy lack of government amoral without moral sense</td>
</tr>
<tr>
<td>ante</td>
<td>before</td>
<td>antecedent preceding event or word antediluvian ancient (before the flood)</td>
</tr>
<tr>
<td>anti</td>
<td>against, opposite</td>
<td>antipathy hatred antithetical exactly opposite</td>
</tr>
<tr>
<td>arch</td>
<td>chief, first</td>
<td>archetype original archbishop chief bishop</td>
</tr>
<tr>
<td>be</td>
<td>over, thoroughly</td>
<td>bedaub smear over befuddle confuse thoroughly</td>
</tr>
<tr>
<td>bi</td>
<td>two</td>
<td>bicameral composed of two houses (Congress) biennial every two years</td>
</tr>
<tr>
<td>cata</td>
<td>down</td>
<td>catastrophe disaster cataract waterfall catapult hurl (throw down)</td>
</tr>
<tr>
<td>circum</td>
<td>around</td>
<td>circumnavigate sail around (the globe) circumspect cautious (looking around) circumscribe limit (place a circle around)</td>
</tr>
<tr>
<td>com, co, col, con, cor</td>
<td>with, together</td>
<td>combine merge with coeditor joint editor collateral subordinate, connected conference meeting corroborate confirm</td>
</tr>
<tr>
<td>Prefix</td>
<td>Meaning</td>
<td>Illustration</td>
</tr>
<tr>
<td>--------</td>
<td>---------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>contra, contro</td>
<td>against</td>
<td>contravene conflict with controversy dispute</td>
</tr>
<tr>
<td>de</td>
<td>down, away</td>
<td>debase lower in value decadence deterioration</td>
</tr>
<tr>
<td>demi</td>
<td>partly, half</td>
<td>demigod partly divine being</td>
</tr>
<tr>
<td>di</td>
<td>two</td>
<td>dichotomy division into two parts dilemma choice between two bad alternatives</td>
</tr>
<tr>
<td>dia</td>
<td>across</td>
<td>diagonal across a figure diameter distance across a circle</td>
</tr>
<tr>
<td>dis, dif</td>
<td>not, apart</td>
<td>discord lack of harmony differ disagree (carry apart)</td>
</tr>
<tr>
<td>dys</td>
<td>faulty, bad</td>
<td>dyslexia faulty ability to read dyspepsia indigestion</td>
</tr>
<tr>
<td>ex, e</td>
<td>out</td>
<td>expel drive out eject throw out</td>
</tr>
<tr>
<td>extra, extro</td>
<td>beyond, outside</td>
<td>extracurricular beyond the curriculum extraterritorial beyond a nation's bounds extrovert person interested chiefly in external objects and actions</td>
</tr>
<tr>
<td>hyper</td>
<td>above; excessively</td>
<td>hyperbole exaggeration hyperventilate breathe at an excessive rate</td>
</tr>
<tr>
<td>hypo</td>
<td>beneath; lower</td>
<td>hypoglycemia low blood sugar</td>
</tr>
<tr>
<td>in, il, im, ir</td>
<td>not</td>
<td>inefficient not efficient inarticulate not clear or distinct illegible not readable impeccable not capable of sinning; flawless irrevocable not able to be called back</td>
</tr>
<tr>
<td>in, il, im, ir</td>
<td>in, on, upon</td>
<td>invite call in illustration something that makes clear impression effect upon mind or feelings irradiate shine upon</td>
</tr>
<tr>
<td>inter</td>
<td>between, among</td>
<td>intervene come between international between nations interjection a statement thrown in</td>
</tr>
<tr>
<td>intra, intro</td>
<td>within</td>
<td>intramural within a school introvert person who turns within himself</td>
</tr>
<tr>
<td>macro</td>
<td>large, long</td>
<td>macrobiotic tending to prolong life macrocosm the great world (the entire universe)</td>
</tr>
<tr>
<td>mega</td>
<td>great, million</td>
<td>megalomania delusions of grandeur megaton explosive force of a million tons of TNT</td>
</tr>
<tr>
<td>meta</td>
<td>involving change</td>
<td>metamorphosis change of form</td>
</tr>
<tr>
<td>micro</td>
<td>small</td>
<td>microcosm miniature universe microscopic extremely small</td>
</tr>
<tr>
<td>Prefix</td>
<td>Meaning</td>
<td>Illustration</td>
</tr>
<tr>
<td>--------</td>
<td>---------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>mis</td>
<td>bad, improper</td>
<td>misdemeanor minor crime; bad conduct</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mischance unfortunate accident</td>
</tr>
<tr>
<td>mis</td>
<td>hatred</td>
<td>misanthrope person who hates mankind</td>
</tr>
<tr>
<td></td>
<td></td>
<td>misogynist woman-hater</td>
</tr>
<tr>
<td>mono</td>
<td>one</td>
<td>monarchy government by one ruler</td>
</tr>
<tr>
<td></td>
<td></td>
<td>monotheism belief in one god</td>
</tr>
<tr>
<td>multi</td>
<td>many</td>
<td>multifarious having many parts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>multitudinous numerous</td>
</tr>
<tr>
<td>neo</td>
<td>new</td>
<td>neologism newly coined word</td>
</tr>
<tr>
<td></td>
<td></td>
<td>neophyte beginner; novice</td>
</tr>
<tr>
<td>non</td>
<td>not</td>
<td>noncommittal undecided</td>
</tr>
<tr>
<td>ob, oc, of, op</td>
<td>against</td>
<td>obloquy infamy; disgrace</td>
</tr>
<tr>
<td></td>
<td></td>
<td>occlude close; block out</td>
</tr>
<tr>
<td></td>
<td></td>
<td>offend insult</td>
</tr>
<tr>
<td></td>
<td></td>
<td>opponent someone who struggles against; foe</td>
</tr>
<tr>
<td>olig</td>
<td>few</td>
<td>oligarchy government by a few</td>
</tr>
<tr>
<td>pan</td>
<td>all, every</td>
<td>panacea cure-all</td>
</tr>
<tr>
<td></td>
<td></td>
<td>panorama unobstructed view in all directions</td>
</tr>
<tr>
<td>para</td>
<td>beyond, related</td>
<td>parallel similar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>paraphrase restate; translate</td>
</tr>
<tr>
<td>per</td>
<td>through, completely</td>
<td>permeable allowing passage through</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pervade spread throughout</td>
</tr>
<tr>
<td>peri</td>
<td>around, near</td>
<td>perimeter outer boundary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>periphery edge</td>
</tr>
<tr>
<td>poly</td>
<td>many</td>
<td>polyglot speaking several languages</td>
</tr>
<tr>
<td>post</td>
<td>after</td>
<td>posthumous after death</td>
</tr>
<tr>
<td>pre</td>
<td>before</td>
<td>preamble introductory statement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>premonition forewarning</td>
</tr>
<tr>
<td>prim</td>
<td>first</td>
<td>primordial existing at the dawn of time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>primogeniture state of being the first born</td>
</tr>
<tr>
<td>pro</td>
<td>forward, in favor of</td>
<td>propulsive driving forward</td>
</tr>
<tr>
<td></td>
<td></td>
<td>proponent supporter</td>
</tr>
<tr>
<td>proto</td>
<td>first</td>
<td>prototype first of its kind</td>
</tr>
<tr>
<td>pseudo</td>
<td>false</td>
<td>pseudonym pen name</td>
</tr>
<tr>
<td>re</td>
<td>again, back</td>
<td>reiterate repeat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>reimburse pay back</td>
</tr>
<tr>
<td>retro</td>
<td>backward</td>
<td>retrospect looking back</td>
</tr>
<tr>
<td></td>
<td></td>
<td>retroactive effective as of a past date</td>
</tr>
<tr>
<td>se</td>
<td>away, aside</td>
<td>secede withdraw</td>
</tr>
<tr>
<td></td>
<td></td>
<td>seclude shut away</td>
</tr>
<tr>
<td>semi</td>
<td>half, partly</td>
<td>semiconscious partly conscious</td>
</tr>
</tbody>
</table>
### Prefixes

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Meaning</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>sub, suc, suf, sug, sup, sus</td>
<td>under, less</td>
<td>subjugate bring under control; succumb yield; cease to resist; suffuse spread through; suggest hint; suppress put down by force; suspend delay; temporarily cease</td>
</tr>
<tr>
<td>super, sur</td>
<td>over, above</td>
<td>supernatural above natural things; surtax additional tax</td>
</tr>
<tr>
<td>syn, sym, syl, sys</td>
<td>with, together</td>
<td>synchronize time together; sympathize pity; identify with syllogism explanation of how ideas relate; system network</td>
</tr>
<tr>
<td>tele</td>
<td>far</td>
<td>telegraphic communicated over a distance</td>
</tr>
<tr>
<td>trans</td>
<td>across</td>
<td>transport carry across</td>
</tr>
<tr>
<td>ultra</td>
<td>beyond, excessive</td>
<td>ultracritical exceedingly critical</td>
</tr>
<tr>
<td>un</td>
<td>not</td>
<td>unkept not combed; disheveled</td>
</tr>
<tr>
<td>under</td>
<td>below</td>
<td>underling someone inferior</td>
</tr>
<tr>
<td>uni</td>
<td>one</td>
<td>unison oneness of pitch; complete accord</td>
</tr>
<tr>
<td>vice</td>
<td>in place of</td>
<td>viceroy governor acting in place of a king</td>
</tr>
<tr>
<td>with</td>
<td>away, against</td>
<td>withstand stand up against; resist</td>
</tr>
</tbody>
</table>

### Common Roots and Stems

*Roots* are basic words which have been carried over into English. *Stems* are variations of roots brought about by changes in declension or conjugation.

<table>
<thead>
<tr>
<th>Root or Stem</th>
<th>Meaning</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>ac, acr</td>
<td>sharp</td>
<td>acrimonious bitter; caustic; acerbity; bitterness of temper; acidulate make somewhat acid or sour</td>
</tr>
<tr>
<td>aev, ev</td>
<td>age, era</td>
<td>primeval of the age; coeval of the same age or era; medieval or mediaeval of the Middle Ages</td>
</tr>
<tr>
<td>ag, act</td>
<td>to do</td>
<td>act deed; agent doer</td>
</tr>
<tr>
<td>agog</td>
<td>leader</td>
<td>demagogue false leader of people; pedagogue teacher (leader of children)</td>
</tr>
<tr>
<td>agri, agrari</td>
<td>field</td>
<td>agrarian one who works in the field; agriculture cultivation of fields; peregrination wandering (through fields)</td>
</tr>
<tr>
<td>Root or Stem</td>
<td>Meaning</td>
<td>Illustration</td>
</tr>
<tr>
<td>--------------</td>
<td>---------</td>
<td>--------------</td>
</tr>
</tbody>
</table>
| ali          | another | alias assumed (another) name  
|              |         | alienate estrange (turn away from another) |
| alt          | high    | altitude height  
|              |         | altimeter instrument for measuring height |
| alter        | other   | altruistic unselfish, considering others  
|              |         | alter ego a second self |
| am           | love    | amorous loving, especially sexually  
|              |         | amity friendship  
|              |         | amicable friendly |
| anim         | mind, soul | animadvert cast criticism upon  
|              |         | unanimous of one mind  
|              |         | magnanimity greatness of mind or spirit |
| ann, enn     | year    | annuity yearly remittance  
|              |         | biennial every two years  
|              |         | perennial present all year; persisting for several years |
| anthrop      | human beings | anthropology study of human beings  
|              |         | misanthrope hater of humankind  
|              |         | philanthropy love of humankind; charity |
| apt          | fit     | aptitude skill  
|              |         | adapt make suitable or fit |
| aqua         | water   | aqueduct passageway for conducting water  
|              |         | aquatic living in water  
|              |         | aqua fortis nitric acid (strong water) |
| arch         | ruler, first | archaeology study of antiquities (study of first things)  
|              |         | monarch sole ruler  
|              |         | anarchy lack of government |
| aster        | star    | astronomy study of the stars  
|              |         | asterisk starlike type character (*)  
|              |         | disaster catastrophe (contrary star) |
| aud, audit   | to hear | audible able to be heard  
|              |         | auditorium place where people may be heard  
|              |         | audience hearers |
| auto         | self    | autocracy rule by one person (self)  
|              |         | automobile vehicle that moves by itself  
|              |         | autobiography story of one's own life |
| belli        | war     | bellicose inclined to fight  
|              |         | belligerent inclined to wage war  
|              |         | rebellious resisting authority |
| ben, bon     | good    | benefactor one who does good deeds  
|              |         | benevolence charity (wishing good)  
|              |         | bonus something extra above regular pay |
| biblio       | book    | bibliography list of books  
|              |         | bibliophile lover of books  
<p>|              |         | Bible The Book |</p>
<table>
<thead>
<tr>
<th>Root or Stem</th>
<th>Meaning</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| b/o         | life    | *biography* writing about a person's life  
|             |         | *biology* study of living things  
|             |         | *biochemist* student of the chemistry of living things  
| breve       | short   | *brevity* briefness  
|             |         | *abbreviate* shorten  
|             |         | *breviloquent* marked by brevity of speech  
| cad, cas    | to fall | *decadent* deteriorating  
|             |         | *cadence* intonation, musical movement  
|             |         | *cascade* waterfall  
| cap, capt, cept, cip | to take | *capture* seize  
|             |         | *participate* take part  
|             |         | *precept* wise saying (originally a command)  
| capit, capt | head    | *decapitate* remove (cut off) someone's head  
|             |         | *captain* chief  
| carn        | flesh   | *carnivorous* flesh-eating  
|             |         | *carnage* destruction of life  
|             |         | *carnal* fleshly  
| ced, cess   | to yield, to go | *recede* go back, withdraw  
|             |         | *antecedent* that which goes before  
|             |         | *process* go forward  
| celer       | swift   | *celerity* swiftness  
|             |         | *decelerate* reduce swiftness  
|             |         | *accelerate* increase swiftness  
| cent        | one hundred | *century* one hundred years  
|             |         | *centennial* one-hundredth anniversary  
|             |         | *centipede* many-footed, wingless animal  
| chron       | time    | *chronology* timetable of events  
|             |         | *anachronism* a thing out of time sequence  
|             |         | *chronicle* register events in order of time  
| cid, cis    | to cut, to kill | *incision* a cut (surgical)  
|             |         | *homicide* killing of a human being  
|             |         | *fratricide* killing of a brother  
| clit, citat | to call, to start | *incite* stir up, start up  
|             |         | *excite* stir up  
|             |         | *recitation* a recalling (or repeating) aloud  
| civi         | citizen | *civilization* society of citizens, culture  
|             |         | *civilian* member of community  
|             |         | *civil* courteous  
| clam, clamat | to cry out | *clamorous* loud  
|             |         | *declaration* speech  
|             |         | *acclamation* shouted approval  
| claud, claus, clos, claud | to close | *claustrophobia* fear of close places  
|             |         | *enclose* close in  
|             |         | *conclude* finish  

<table>
<thead>
<tr>
<th>Root or Stem</th>
<th>Meaning</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>cognosc., cognit</td>
<td>to learn</td>
<td>agnostic lacking knowledge, skeptical</td>
</tr>
<tr>
<td></td>
<td></td>
<td>incognito traveling under assumed name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cognition knowledge</td>
</tr>
<tr>
<td>compl</td>
<td>to fill</td>
<td>complete filled out</td>
</tr>
<tr>
<td></td>
<td></td>
<td>complement that which completes something</td>
</tr>
<tr>
<td></td>
<td></td>
<td>comply fulfill</td>
</tr>
<tr>
<td>cord</td>
<td>heart</td>
<td>accord agreement (from the heart)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cordial friendly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>discord lack of harmony</td>
</tr>
<tr>
<td>corpor</td>
<td>body</td>
<td>incorporate organize into a body</td>
</tr>
<tr>
<td></td>
<td></td>
<td>corporeal pertaining to the body, fleshly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>corpse dead body</td>
</tr>
<tr>
<td>cred, credit</td>
<td>to believe</td>
<td>incredulous not believing, skeptical</td>
</tr>
<tr>
<td></td>
<td></td>
<td>credulity gullibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>credence belief</td>
</tr>
<tr>
<td>cur</td>
<td>to care</td>
<td>curator person who has the care of something</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sinecure position without responsibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>secure safe</td>
</tr>
<tr>
<td>curr, curs</td>
<td>to run</td>
<td>excursion journey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cursory brief</td>
</tr>
<tr>
<td></td>
<td></td>
<td>precursor forerunner</td>
</tr>
<tr>
<td>da, dat</td>
<td>to give</td>
<td>data facts, statistics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mandate command</td>
</tr>
<tr>
<td></td>
<td></td>
<td>date given time</td>
</tr>
<tr>
<td>deb, debit</td>
<td>to owe</td>
<td>debt something owed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>indebtedness debt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>debenture bond</td>
</tr>
<tr>
<td>dem</td>
<td>people</td>
<td>democracy rule of the people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>demagogue (false) leader of the people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>epidemic widespread (among the people)</td>
</tr>
<tr>
<td>derm</td>
<td>skin</td>
<td>epidermis skin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pachyderm thick-skinned quadruped</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dermatology study of skin and its disorders</td>
</tr>
<tr>
<td>di, diurn</td>
<td>day</td>
<td>diary a daily record of activities, feelings, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>diurnal pertaining to daytime</td>
</tr>
<tr>
<td>dic, dict</td>
<td>to say</td>
<td>abdicate renounce</td>
</tr>
<tr>
<td></td>
<td></td>
<td>diction speech</td>
</tr>
<tr>
<td></td>
<td></td>
<td>verdict statement of jury</td>
</tr>
<tr>
<td>doc, doct</td>
<td>to teach</td>
<td>docile obedient; easily taught</td>
</tr>
<tr>
<td></td>
<td></td>
<td>document something that provides evidence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>doctor learned person (originally, teacher)</td>
</tr>
<tr>
<td>domin</td>
<td>to rule</td>
<td>dominate have power over</td>
</tr>
<tr>
<td></td>
<td></td>
<td>domain land under rule</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dominant prevailing</td>
</tr>
<tr>
<td>Root or Stem</td>
<td>Meaning</td>
<td>Illustration</td>
</tr>
<tr>
<td>-------------</td>
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<td>--------------</td>
</tr>
<tr>
<td>duc, duct</td>
<td>to lead</td>
<td>viaduct arched roadway&lt;br&gt;aqueduct artificial waterway</td>
</tr>
<tr>
<td>dynam</td>
<td>power, strength</td>
<td>dynamic powerful&lt;br&gt;dynamite powerful explosive&lt;br&gt;dynamo engine making electric power</td>
</tr>
<tr>
<td>ego</td>
<td>I</td>
<td>egotist person who is self-centered&lt;br&gt;egotistical selfish person&lt;br&gt;egocentric revolving about self</td>
</tr>
<tr>
<td>erg, urg</td>
<td>work</td>
<td>energy power&lt;br&gt;ergatocracy rule of the workers&lt;br&gt;metallurgy science and technology of metals</td>
</tr>
<tr>
<td>err</td>
<td>to wander</td>
<td>error mistake&lt;br&gt;erratic not reliable, wandering&lt;br&gt;knight-errant wandering knight</td>
</tr>
<tr>
<td>eu</td>
<td>good, well, beautiful</td>
<td>eupeptic having good digestion&lt;br&gt;eulogize praise&lt;br&gt;euphemism pleasant way of saying something blunt</td>
</tr>
<tr>
<td>fac, fic, fec, fect</td>
<td>to make, to do</td>
<td>factory place where things are made&lt;br&gt;fiction manufactured story&lt;br&gt;affect cause to change</td>
</tr>
<tr>
<td>fall, fals</td>
<td>to deceive</td>
<td>fallacious misleading&lt;br&gt;infalible not prone to error, perfect&lt;br&gt;falsify lie</td>
</tr>
<tr>
<td>fer, lat</td>
<td>to bring, to bear</td>
<td>transfer bring from one place to another&lt;br&gt;translate bring from one language to another&lt;br&gt;conifer bearing cones, as pine trees</td>
</tr>
<tr>
<td>fid</td>
<td>belief, faith</td>
<td>infidel nonbeliever, heathen&lt;br&gt;confidence assurance, belief</td>
</tr>
<tr>
<td>fin</td>
<td>end, limit</td>
<td>confine keep within limits&lt;br&gt;finite having definite limits</td>
</tr>
<tr>
<td>flect, flex</td>
<td>to bend</td>
<td>flexible able to bend&lt;br&gt;deflect bend away, turn aside</td>
</tr>
<tr>
<td>fort</td>
<td>luck, chance</td>
<td>fortuitous accidental, occurring by chance&lt;br&gt;fortunate lucky</td>
</tr>
<tr>
<td>fort</td>
<td>strong</td>
<td>fortitude strength, firmness of mind&lt;br&gt;fortification strengthening&lt;br&gt;fortress stronghold</td>
</tr>
<tr>
<td>frag, fract</td>
<td>to break</td>
<td>fragile easily broken&lt;br&gt;infraction breaking of a rule&lt;br&gt;fractious unruly, tending to break rules</td>
</tr>
<tr>
<td>fug</td>
<td>to flee</td>
<td>fugitive someone who flees&lt;br&gt;refuge shelter, home for someone fleeing</td>
</tr>
<tr>
<td>fus</td>
<td>to pour</td>
<td>effusive gushing, pouring out&lt;br&gt;diffuse widespread (poured in many directions)</td>
</tr>
<tr>
<td>Root or Stem</td>
<td>Meaning</td>
<td>Illustration</td>
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<tr>
<td>-------------</td>
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</tr>
</tbody>
</table>
| gam         | marriage | monogamy marriage to one person  
bigamy marriage to two people at the same time  
polygamy having many wives or husbands at the same time |
| gen, gener  | class, race | genus group of animals or plants with similar traits  
generic characteristic of a class  
gender class organized by sex |
| grad, gress | to go, to step | digress go astray (from the main point)  
regress go backward  
gradual step by step, by degrees |
| graph, gram | writing | epigram pithy statement  
telegram instantaneous message over great distance  
stenography shorthand (writing narrowly) |
| greg        | flock, herd | gregarious tending to group together as in a herd  
aggregate group, total  
egregious conspicuously bad; shocking |
| hello       | sun | heliotrope flower that faces the sun  
heliograph instrument that uses the sun’s rays to send signals |
| it, itiner   | journey, road | exit way out  
itinerary plan of journey |
| jac, jact, jec | to throw | projectile missile; something thrown forward  
trajectory path taken by thrown object  
ejaculatory casting or throwing out |
| jur, jurat  | to swear | perjure testify falsely  
jury group of men and women sworn to seek the truth  
adjudication solemn urging |
| labor, laborat | to work | laboratory place where work is done  
collaborate work together with others  
laborious difficult |
| leg, lect, lig | to choose, to read | election choice  
legible able to be read  
eligible able to be selected |
| leg         | law | legislature law-making body  
legitimate lawful  
legal lawful |
| liber, libr | book | library collection of books  
libretto the "book" of a musical play  
libel slander (originally found in a little book) |
| liber       | free | liberation the act of setting free  
liberal generous (giving freely); tolerant |
| log         | word, study | entomology study of insects  
etymology study of word parts and derivations  
monologue speech by one person |
<table>
<thead>
<tr>
<th>Root or Stem</th>
<th>Meaning</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>loqu, locut</td>
<td>to talk</td>
<td>soliloquy speech by one individual, loquacious talkative, elocution speech</td>
</tr>
<tr>
<td>luc</td>
<td>light</td>
<td>elucidate enlighten, lucid clear, translucent allowing some light to pass through</td>
</tr>
<tr>
<td>magn</td>
<td>great</td>
<td>magnify enlarge, magnanimity generosity, greatness of soul, magnitude greatness, extent</td>
</tr>
<tr>
<td>mal</td>
<td>bad</td>
<td>malevolent wishing evil, malediction curse, malefactor evil-doer</td>
</tr>
<tr>
<td>man</td>
<td>hand</td>
<td>manufacture create (make by hand), manuscript written by hand, emancipate free (let go from the hand)</td>
</tr>
<tr>
<td>mar</td>
<td>sea</td>
<td>maritime connected with seafaring, submarine undersea craft, mariner seafarer</td>
</tr>
<tr>
<td>mater, matr</td>
<td>mother</td>
<td>maternal pertaining to motherhood, matriarch female ruler of a family, group, or state, matrilineal descended on the mother’s side</td>
</tr>
<tr>
<td>mit, miss</td>
<td>to send</td>
<td>missile projectile, dismiss send away, transmit send across</td>
</tr>
<tr>
<td>mob, mot, mov</td>
<td>to move</td>
<td>mobilize cause to move, motility ability to move, immovable not able to be moved</td>
</tr>
<tr>
<td>mon, monit</td>
<td>to warn</td>
<td>admonish warn, premonition foreboding, monitor watcher (warner)</td>
</tr>
<tr>
<td>mori, mort</td>
<td>to die</td>
<td>mortuary funeral parlor, moribund dying, immortal not dying</td>
</tr>
<tr>
<td>morph</td>
<td>shape, form</td>
<td>amorphous formless, lacking shape, metamorphosis change of shape, anthropomorphic in human shape</td>
</tr>
<tr>
<td>mut</td>
<td>to change</td>
<td>immutable not able to be changed, mutate undergo a great change, mutability changeableness, inconstancy</td>
</tr>
<tr>
<td>nat</td>
<td>born</td>
<td>innate from birth, prenatal before birth, nativity birth</td>
</tr>
<tr>
<td>nav</td>
<td>ship</td>
<td>navigate sail a ship, circumnavigate sail around the world, naval pertaining to ships</td>
</tr>
<tr>
<td>Root or Stem</td>
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<tr>
<td>neg</td>
<td>to deny</td>
<td>negation denial, reneging deny, go back on one's word, renegade turncoat, traitor</td>
</tr>
<tr>
<td>nomen</td>
<td>name</td>
<td>nomenclature act of naming, terminology, nominal in name only (as opposed to actual), cognomen surname, distinguishing nickname</td>
</tr>
<tr>
<td>nov</td>
<td>new</td>
<td>novice beginner, renovate make new again, novelty newness</td>
</tr>
<tr>
<td>omni</td>
<td>all</td>
<td>omniscient all knowing, omnipotent all powerful, omnivorous eating everything</td>
</tr>
<tr>
<td>oper</td>
<td>to work</td>
<td>operate work, cooperation working together</td>
</tr>
<tr>
<td>pac</td>
<td>peace</td>
<td>pacify make peaceful, pacific peaceful, pacifist person opposed to war</td>
</tr>
<tr>
<td>pass</td>
<td>to feel</td>
<td>dispassionate free of emotion, impassioned emotion-filled, impasse showing no feeling</td>
</tr>
<tr>
<td>pater, patr</td>
<td>father</td>
<td>patriotism love of one's country (fatherland), patriarch male ruler of a family, group, or state, paternity fatherhood</td>
</tr>
<tr>
<td>path</td>
<td>disease, feeling</td>
<td>pathology study of diseased tissue, apathetic lacking feeling; indifferent, antipathy hostile feeling</td>
</tr>
<tr>
<td>ped, pod</td>
<td>foot</td>
<td>impediment stumbling-block, hindrance, tripod three-footed stand, quadruped four-footed animal</td>
</tr>
<tr>
<td>ped</td>
<td>child</td>
<td>pedagogue teacher of children, pediatrician children's doctor</td>
</tr>
<tr>
<td>pel, puls</td>
<td>to drive</td>
<td>compulsion a forcing to do, repel drive back, expel drive out, banish</td>
</tr>
<tr>
<td>pet, petit</td>
<td>to seek</td>
<td>petition request, appetite craving, desire, compete vie with others</td>
</tr>
<tr>
<td>phil</td>
<td>love</td>
<td>philanthropist benefactor, lover of humanity, Anglophile lover of everything English, philanderer one involved in brief love affairs</td>
</tr>
<tr>
<td>gon, posit</td>
<td>to place</td>
<td>postpone place after, positive definite, unquestioned (definitely placed)</td>
</tr>
<tr>
<td>port, portat</td>
<td>to carry</td>
<td>portable able to be carried, transport carry across</td>
</tr>
<tr>
<td>Root or Stem</td>
<td>Meaning</td>
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<tr>
<td>poten</td>
<td>able, powerful</td>
<td>omnipotent all-powerful</td>
</tr>
<tr>
<td>psych</td>
<td>mind</td>
<td>psychology study of the mind</td>
</tr>
<tr>
<td>put, putat</td>
<td>to trim, to calculate</td>
<td>computation calculation amputate cut off</td>
</tr>
<tr>
<td>quer, ques, quir, quis</td>
<td>to ask</td>
<td>inquiry investigation inquisitive questioning query question</td>
</tr>
<tr>
<td>reg, rect</td>
<td>to rule</td>
<td>regent ruler insurrection rebellion; overthrow of a ruler</td>
</tr>
<tr>
<td>rid, ris</td>
<td>to laugh</td>
<td>derision scorn ridiculous deserving to be laughed at</td>
</tr>
<tr>
<td>rog, rogat</td>
<td>to ask</td>
<td>interrogate question</td>
</tr>
<tr>
<td>rupt</td>
<td>to break</td>
<td>interrupt break into rupture a break</td>
</tr>
<tr>
<td>sacr</td>
<td>holy</td>
<td>sacrilegious impious, violating something holy sacrament religious act</td>
</tr>
<tr>
<td>sci</td>
<td>to know</td>
<td>omniscient knowing all conscious aware</td>
</tr>
<tr>
<td>scop</td>
<td>to watch, to see</td>
<td>periscope device for seeing around corners microscope device for seeing small objects</td>
</tr>
<tr>
<td>scrib, script</td>
<td>to write</td>
<td>transcribe make a written copy script written text</td>
</tr>
<tr>
<td>sect</td>
<td>cut</td>
<td>dissect cut apart bisect cut into two pieces</td>
</tr>
<tr>
<td>sed, sess</td>
<td>to sit</td>
<td>sedentary inactive (sitting)</td>
</tr>
<tr>
<td>sent, sens</td>
<td>to think, to feel</td>
<td>resent show indignation sensitive showing feeling</td>
</tr>
<tr>
<td>sequi, secut, sequ</td>
<td>to follow</td>
<td>consecutive following in order sequence arrangement sequel that which follows nonsequitur something that does not follow logically</td>
</tr>
<tr>
<td>solv, solut</td>
<td>to loosen</td>
<td>absolve free from blame dissolve morally lax</td>
</tr>
<tr>
<td>somn</td>
<td>sleep</td>
<td>insomnia inability to sleep</td>
</tr>
<tr>
<td>soph</td>
<td>wisdom</td>
<td>philosopher lover of wisdom</td>
</tr>
<tr>
<td>spec, spect, spic</td>
<td>to look at</td>
<td>spectator observer circumspect cautious (looking around) despicable detestable (deserving to be looked down on) perspicacity clear-sightedness</td>
</tr>
<tr>
<td>spir</td>
<td>to breathe</td>
<td>respiratory pertaining to breathing spirited full of life (breathe)</td>
</tr>
<tr>
<td>string, strict</td>
<td>bind</td>
<td>stringent strict stricture limit, something that restrains</td>
</tr>
<tr>
<td>Root or Stem</td>
<td>Meaning</td>
<td>Illustration</td>
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<tr>
<td>-------------</td>
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<td>--------------</td>
</tr>
<tr>
<td>stru, struct</td>
<td>to build</td>
<td>constructive helping to build; construe analyze (how something is built)</td>
</tr>
<tr>
<td>tang, tact, ting</td>
<td>to touch</td>
<td>tangent touching; contact touching with, meeting; contingent depending upon</td>
</tr>
<tr>
<td>tempor</td>
<td>time</td>
<td>contemporary at same time</td>
</tr>
<tr>
<td>ten, tent</td>
<td>to hold</td>
<td>tenable able to be held; retentive holding; having a good memory</td>
</tr>
<tr>
<td>term</td>
<td>end</td>
<td>interminable endless; terminate end</td>
</tr>
<tr>
<td>terr</td>
<td>land</td>
<td>terrestrial pertaining to earth; subterranean underground</td>
</tr>
<tr>
<td>therm</td>
<td>heat</td>
<td>thermostat instrument that regulates heat</td>
</tr>
<tr>
<td>tors, tort</td>
<td>to twist</td>
<td>distort twist out of true shape or meaning; torsion act of twisting</td>
</tr>
<tr>
<td>tract</td>
<td>to drag, to pull</td>
<td>distract pull (one's attention) away; intractable stubborn, unable to be dragged</td>
</tr>
<tr>
<td>trud, trus</td>
<td>to push, to shove</td>
<td>intrude push one's way in; protrusion something sticking out</td>
</tr>
<tr>
<td>urb</td>
<td>city</td>
<td>urban pertaining to a city</td>
</tr>
<tr>
<td>vac</td>
<td>empty</td>
<td>vacuous lacking content, empty-headed; evacuate compel to empty an area</td>
</tr>
<tr>
<td>vad, vas</td>
<td>to go</td>
<td>invade enter in a hostile fashion; evasive not frank; eluding</td>
</tr>
<tr>
<td>veni, vent, ven</td>
<td>to come</td>
<td>intervene come between; prevent stop; convention meeting</td>
</tr>
<tr>
<td>ver</td>
<td>true</td>
<td>veracious truthful; verisimilitude appearance of truth</td>
</tr>
<tr>
<td>verb</td>
<td>word</td>
<td>verbose wordy</td>
</tr>
<tr>
<td>vers, vert</td>
<td>to turn</td>
<td>vertigo turning dizzy; revert turn back (to an earlier state); diversion something causing one to turn aside</td>
</tr>
<tr>
<td>via</td>
<td>way</td>
<td>deviation departure from the way; viaduct roadway (arched)</td>
</tr>
<tr>
<td>vid, vis</td>
<td>to see</td>
<td>vision sight; evidence things seen</td>
</tr>
<tr>
<td>vinc, vict, vanq</td>
<td>to conquer</td>
<td>invincible unconquerable; victory winning; vanquish defeat</td>
</tr>
<tr>
<td>viv, vit</td>
<td>alive</td>
<td>vivacious full of life; vitality liveliness</td>
</tr>
</tbody>
</table>
Common Suffixes

A suffix is a syllable that is added to a word. Occasionally, it changes the meaning of the word; more frequently, it serves to change the grammatical form of the word (noun to adjective, adjective to noun, noun to verb).

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Meaning</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>able, ible</td>
<td>capable of (adjective suffix)</td>
<td>portable able to be carried</td>
</tr>
<tr>
<td>ac, ic</td>
<td>like, pertaining to (adjective suffix)</td>
<td>cardiac pertaining to the heart</td>
</tr>
<tr>
<td>acious, licious</td>
<td>full of (adjective suffix)</td>
<td>audacious full of daring</td>
</tr>
<tr>
<td>al</td>
<td>pertaining to (adjective or noun suffix)</td>
<td>maniacal insane</td>
</tr>
<tr>
<td>ant, ent</td>
<td>full of (adjective or noun suffix)</td>
<td>eloquent pertaining to fluid, effective speech</td>
</tr>
<tr>
<td>ary</td>
<td>like, connected with (adjective or noun suffix)</td>
<td>dictionary book connected with words</td>
</tr>
<tr>
<td>ate</td>
<td>to make (verb suffix)</td>
<td>consecrate to make holy</td>
</tr>
<tr>
<td>ation</td>
<td>that which is (noun suffix)</td>
<td>exasperation irritation</td>
</tr>
<tr>
<td>cy</td>
<td>state of being (noun suffix)</td>
<td>democracy government ruled by the people</td>
</tr>
<tr>
<td>eer, er, or</td>
<td>person who (noun suffix)</td>
<td>mutineer person who rebels</td>
</tr>
<tr>
<td>escent</td>
<td>becoming (adjective suffix)</td>
<td>evanescent tending to vanish</td>
</tr>
<tr>
<td>Suffix</td>
<td>Meaning</td>
<td>Illustration</td>
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<td>--------</td>
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<tr>
<td>lic</td>
<td>making, doing (adjective suffix)</td>
<td>terrific arousing great fear soporific causing sleep</td>
</tr>
<tr>
<td>ty</td>
<td>to make (verb suffix)</td>
<td>magnify enlarge petrify turn to stone</td>
</tr>
<tr>
<td>ferous</td>
<td>producing, bearing (adjective suffix)</td>
<td>pestiferous carrying disease vociferous bearing a loud voice</td>
</tr>
<tr>
<td>il, ile</td>
<td>pertaining to, capable of (adjective suffix)</td>
<td>puerile pertaining to a boy or child civil polite</td>
</tr>
<tr>
<td>ism</td>
<td>doctrine, belief (noun suffix)</td>
<td>monotheism belief in one god fanaticism excessive zeal; extreme belief</td>
</tr>
<tr>
<td>ist</td>
<td>dealer, doer (noun suffix)</td>
<td>realist one who is realistic artist one who deals with art</td>
</tr>
<tr>
<td>ity</td>
<td>state of being (noun suffix)</td>
<td>credulity state of being unduly willing to believe sagacity wisdom</td>
</tr>
<tr>
<td>ive</td>
<td>like (adjective suffix)</td>
<td>quantitative concerned with quantity effusive gushing</td>
</tr>
<tr>
<td>ize, ise</td>
<td>to make (verb suffix)</td>
<td>harmonize make harmonious enfranchise make free or set free</td>
</tr>
<tr>
<td>oid</td>
<td>resembling, like (adjective suffix)</td>
<td>avoid like an egg anthropoid resembling a human being spheroid resembling a sphere</td>
</tr>
<tr>
<td>ose</td>
<td>full of (adjective suffix)</td>
<td>verbose full of words</td>
</tr>
<tr>
<td>osis</td>
<td>condition (noun suffix)</td>
<td>psychosis diseased mental condition hypnosis condition of induced sleep</td>
</tr>
<tr>
<td>ous</td>
<td>full of (adjective suffix)</td>
<td>nauseous full of nausea ludicrous foolish</td>
</tr>
<tr>
<td>tude</td>
<td>state of (noun suffix)</td>
<td>fortitude state of strength certitude state of sureness</td>
</tr>
</tbody>
</table>
PART THREE

ANALYTICAL WRITING: TACTICS, STRATEGIES, AND PRACTICE
Introduction to Part Three

What sort of test is this new analytical writing test? First and foremost, it is not a multiple-choice test. It is a performance test—you have to write two analytical essays in an hour and fifteen minutes.

The new analytical writing section of the GRE is the longest of the three sections in terms of time allotted. This section is organized in two parts. In Part 1, "Present Your Perspective on an Issue," you have 45 minutes to write an essay expressing your point of view on a particular issue. You will be given your choice of two quotations, each of which states an opinion about an issue; you will probably write a better essay if you go for the quotation that "grabs" you, whose topic seems more appealing to you.

Your job is to take a stand and to support it, drawing on your own experiences and on your readings to come up with examples that reinforce your argument. It does not matter what stand you take; there is no "correct" position, no one true answer. Many different approaches can work. You can agree completely with the quotation's point of view or you can dispute it absolutely. You can disagree with some aspects of the quote, but agree with others. What matters is how you present your case.

Part 2 of the analytical writing section asks you to perform a different but complementary task. In Part 2, "Analyze an Argument," you have 30 minutes to write an essay critiquing the logical soundness of an argument. You will be given one short passage in which an author makes a claim and backs it up, giving reasons that may well be flawed. You get no choice of passages to analyze; you must work with whatever passage comes up on your screen.

This time your job is not to advocate a particular point of view. This is not the moment for you to agree or disagree with the author; it is the moment for you to weigh the validity of the author's reasoning. Your approach is analytical and expository, not argumentative or persuasive. It is your task to examine carefully what the author offers as evidence. You will find it helpful to note what the author claims explicitly, and also to note what she or he assumes (not necessarily justifiably!).

If you study the tactics and work through the practice exercises in the following chapter, and take full advantage of the study materials on the GRE's web site, www.gre.org, you will be well prepared for the analytical writing section of the GRE and should feel confident in your ability to write high-scoring essays.
Scoring Guidelines

Two readers will judge your GRE analytical essays, awarding each essay a grade ranging from 0 to 6, with 6 the highest possible score. The powers-that-be then calculate your analytical writing score by taking the average of your four grades, rounding up the result to the nearest half-point. If one reader awarded your issues essay a 5 and your argument essay a 4, while the other reader gave both your essays 4's, you'd come out with a score of 4.25, rounded up to 4.5.

You probably have a sense of what score you need to be accepted by the graduate school of your choice. If you're seeking admission to Harvard's Ph.D. program in history, you're clearly aiming for a 5.5 or 6. If you're aiming for a graduate program in a field that favors number-crunching over essay-writing—mathematics or electrical engineering, for instance—you clearly don't need to aim so high. But however high a score you're seeking, you want to come out of the essay-writing section looking good. And to do that, you have to know what the GRE readers are looking for.

What are the GRE readers looking for? In essence, fluency, organization, and a command of technical English. These are the skills they assess.

Fluency

Fluency is smoothness and ease in communicating. In this case, it is your ability to set down a given number of words on paper within a limited period of time. If you freeze on essay examinations, writing only a sentence or two when whole paragraphs are called for, then you need to practice letting your words and ideas flow.

Literary fluency, however, involves more than just the number of words you type. The readers tend to award their highest grades to test-takers who use language well, those who employ a variety of sentence types and demonstrate a command of vocabulary. If you invariably use short, simple sentences, you need to practice constructing more complex ones. If you have a limited vocabulary, you need to expand it, working with our Master Word List (page 110) and other tools to learn the precise meaning of each new word you employ.

Organization

Organization is coherent arrangement. In this case, it is your ability to arrange your thoughts in order, following a clear game plan. In The Elements of Style, William Strunk describes certain elementary principles of composition. The paragraph is the basic unit of composition; the beginning of each new paragraph serves to alert readers that they are coming to a new step in the development of the subject. One paragraph leads to the next, drawing readers on to the essay's conclusion.

Organization involves your ability to reason and to marshal evidence to support your viewpoint. If you jump from subject to subject within a single paragraph, if you leave out critical elements, if you disorder your points or never manage to state exactly what you mean, then you need to practice outlining your position briefly before you express it in essay form.

Technical English

Technical English is the part of English that most students hate—grammar, spelling, punctuation, word usage. In this case, it is your ability to produce grammatically correct sentences in standard written English. If your English compositions used to come back to you with the abbreviations "frag" or "agr" or "sp" scribbled all over the margins, then you need to practice reading through your papers to catch any technical mistakes.
There are literally hundreds of handbooks available that will help you handle the mechanics of writing essays. Strunk and White's manual, *The Elements of Style*, provides clear, concise advice, as does William Zinsser's *On Writing Well*. Other good reference tools are *The Harbrace College Handbook*, Edward Johnson's *Handbook of Good English*, and, for the complete grammarphobe, Patricia O'Connor's aptly named *Woe Is I*.

**NOTE:** Unless you are someone who can't type two words in a row without making a spelling error, do not worry about spelling and punctuation mistakes. The GRE readers generally ignore them. However, if you make so many errors that it becomes difficult for the readers to make sense of what you have written, they will lower your score accordingly.

**Essay-Writing: The 5-Step Approach**

**How to Handle the Issue-Writing Task**

You have 45 minutes to complete the issue-writing task. To earn a top score, you need to produce a smooth, 400-700-word essay with solid content, coherent organization, and few, if any, mechanical errors.

Each issue topic is presented as a 1-2 sentence statement commenting on a subject of general concern. This statement makes a claim. Your essay may support, refute, or qualify the views expressed in the statement. Whatever you write, however, must be relevant to the issue under discussion, and you must support your viewpoint with data—reasons and examples derived from your studies, experience, and reading.

GRE readers will evaluate your essay, grading it on the basis of your effectiveness in the following areas:

- Analysis of the statement's implications.
- Organization and articulation of your ideas.
- Use of relevant examples and arguments to support your case.
- Handling of the mechanics of standard written English.

Here is a 5-step plan you can use in writing your issue essay. Suggested times are approximate.

**Step One: Begin with Brainstorming (2 minutes).**

You do not lack ideas. What you may lack is a direct means of getting in touch with the ideas you already have. One useful technique to "prime the pump" and encourage fluency is *clustering*. Clustering is a method of brainstorming in which you start with a key word or short phrase and let that word or phrase act as a stimulus, triggering all sorts of associations that you jot down. In just a minute or two, you can come up with dozens of associations, some of which you may later be able to incorporate into your essay. (For a thought-provoking discussion of clustering and other brainstorming techniques, see *Writing the Natural Way* by Gabriele Rico.)

Let the issue statement or prompt trigger your brainstorming. As soon as you've clicked on your chosen topic, grab your pencil and sum up the claim the author is making. If, for example, the issue prompt is "Historians and other social scientists are as useful to society as are biochemists and engineers because society's ills cannot be cured by technological progress alone," your quick summation might be "Historians are as useful as scientists." Once you're clear about the author's point, start scribbling. Write down as many reasons that support or weaken the author's claim as you possibly can. Be sure to write both reasons for and reasons against. Don't worry right now if any of these reasons strike you as flimsy or implausible or clichéd; you can always cut them later or find ways to strengthen them, if you need to. Just note them down on your scratch paper, together with examples supporting both sides of the issue. Stay loose; this is your time for free associations, not self-censorship.

**Step Two: Organize Your Outline (3 minutes).**

According to British rhetorical theorist and philosopher Stephen Toulmin, a sound argument requires three elements: CLAIM, GROUNDS (or data), and WARRANT. 

Your claim is your thesis; it is an overall statement of the argument you hope to prove. The grounds for your argument are your evidence. Grounds for an argument can include statistics, examples, and even anecdotes. The warrant is the connection between the claim and the grounds. It is an explanation of how the grounds justify the claim.

**CLAIM (thesis):** Historians and other social scientists are as useful to society as are biochemists and engineers because society's ills cannot be cured by technological progress alone.

Once you have settled on your claim, look to your brainstorming for the arguments that support it. Each of these arguments requires its own claim, grounds, and warrant.

1. **CLAIM:** War is not prevented by technological progress. 
   **GROUNDS:** Invention of gunpowder, nuclear weapons. 
   **WARRANT:** Technological progress is driven by war; in fact, technology tends to make war more destructive.

2. **CLAIM:** Historians and social scientists can prevent, or at least discourage, war through their understanding of why wars have occurred in the past. 
   **GROUNDS:** Treaty of Versailles, Marshall Plan. 
   **WARRANT:** An understanding of history can allow us to design policies that encourage peace.

3. **CLAIM:** Technological progress does not prevent poverty.
4. CLAIM: Historians and social scientists can prevent poverty through economic policy.
WARRANT: Social programs prevent poverty.

Though not a necessary component of the argument, RESERVATIONS can strengthen a claim. A reservation is a rebuttal to the claim that is introduced and granted by the writer. Reservations strengthen arguments in several ways: First, they moderate the writer’s claim, thereby decreasing the level of proof required. Second, reservations make the writer appear more reliable by demonstrating that she is open-minded, and that her position is not extreme. Third, reservations allow the writer to defuse criticism before it is made. When you include a reservation in your argument, be sure to take the opportunity to weigh it against your other claims.

5. RESERVATION: Biochemists and engineers do contribute to society.
WEIGHING: Though technological progress can increase the food supply and cure disease, we will always need historians and social scientists to show us how to use technology without causing more harm than good.

Step Three: Write the Body of Your Essay
(20 minutes).

You already know your general line of reasoning, the direction you want your argument to take. You need to spend the bulk of your time writing the body of your essay. As rapidly as you can, type up your points, writing two to three sentences to flesh out each reason or example in your outline. Do not worry if time pressure doesn’t allow you to deal with every point you dreamed up. Start with a reason or example that you can easily put into words, preferably your best, most compelling reason or example. Given the 45-minute time limit you’re working under, you want to be sure to cover your best points right away, before you run out of time. During the revision period, you can always rearrange your paragraphs, putting the strongest paragraph immediately before the conclusion, so that your essay builds to a solid climax.

Step Four: Now Write Your Opening and Summary Paragraphs (10 minutes).

It may seem strange to write your introductory paragraph after you have written the body of your essay, but it is a useful technique. Many writers launch into writing the introduction, only to find, once they have finished the essay, that their conclusion is unrelated to, or even contradicts, what they had written in the introduction. By writing the introduction after you have composed the bulk of the essay, you will avoid having to rewrite the introduction to support the conclusion that you actually reached, rather than the conclusion that you expected to reach.

This is one area in which the technology of the new GRE will greatly assist you. If the GRE were a hard copy (paper) exam, you would need to save space on your page to insert your introduction, guessing exactly how much room you would need. Instead, because the GRE is computerized, you can simply go back to the top of the page and begin writing the introduction.

What then should your introduction include? Your introductory paragraph should both introduce the topic on which you are writing and clearly indicate your thesis or point. While in some situations it’s strategic (or simply more graceful) to reveal your thesis fully only in the conclusion, the GRE is not one of those situations. Clarity is key; you do not want to risk leaving your readers uncertain of your line of reasoning, or under the impression that you have strayed from the point.

For a top score, your introductory paragraph should also provide some context for the argument. The GRE readers appear to favor introductions that place the topic in an historical or social context, rather than simply discussing it in a contextual vacuum. The two introductory paragraphs below demonstrate the difference between these two types of introduction.

Introduction with Context

Western society tends to glorify the individual over the group. Our social and political philosophy, based on John Stuart Mill’s faith that progress is fostered by competition within the marketplace of ideas, encourages people, as the Apple computer commercial says, to “think different.” This cult of the individual overemphasizes the importance of being different and fails to recognize that a healthy person will be both a conformist and an individualist. Ironically, self-conscious dedication to nonconformity will ultimately result in extreme slavishness to custom.

Introduction without Context

A healthy individual is neither a conformist, nor an individualist; he is both a conformist and an individualist. Balancing conformity and individualism allows people to follow their interests and passions without wasting time on issues that do not interest them, while a self-conscious dedication to nonconformity ultimately results in an extreme slavishness to custom.
This does not mean that they favor essays with single-sentence introductions, only that they do not discriminate against them. If your introduction makes your thesis clear, it has done its job.

Your conclusion should, however, be longer than one sentence. It should restate your thesis and summarize the arguments that you make in its support. You should mention your supporting arguments in the same order in which they appear in the body of the essay. This technique underscores the organization of your essay, giving it a predictable and orderly appearance.

Step Five: Reread and Revise (10 minutes).

Expert writers often test their work by reading it aloud. In the exam room, you cannot read it aloud. However, while you are reading your essay silently, take your time and listen with your inner ear to how it sounds. Read to get a sense of your essay’s logic and rhythm. Does one sentence flow smoothly into the next? Would they flow more smoothly if you were to add a transition word or phrase (therefore, however, nevertheless, in contrast, similarly)? Do the sentences follow a logical order? Is any key idea or example missing? Does any sentence seem out of place? How would things sound if you cut out that awkward sentence or inserted that transition word?

Take a minute to act on your response to hearing your essay. If it sounded to you as if a transition word was needed, insert it. If it sounded as if a sentence should be cut, delete it. If it sounded as if a sentence was out of place, move it. Trust your inner ear, but do not attempt to do too much. Have faith in your basic outline for the essay. You have neither the need nor the time to revise everything.

Now think of yourself as an editor, not an auditor. Just as you need to have an ear for problems of logic and language, you also need to have an eye for errors that damage your text. Take a minute to look over your essay for problems in spelling and grammar. From your English classes you should know which words and grammatical constructions have given you trouble in the past. See whether you can spot any of these words or constructions in your essay. Correct any really glaring errors that you find. Do not worry if you fail to catch every mechanical error or awkward phrase. The readers understand that 45 minutes doesn’t give you enough time to produce polished, gemlike prose. They won’t penalize you for an occasional mechanical glitch.

How to Handle the Argument-Analysis Task

You have 30 minutes to complete the argument-analysis task. To earn a top score, you need to produce a smooth, 300–400 word critique with solid content, coherent organization, and few, if any, mechanical errors.

As you critique the argument, think about the writer’s underlying assumptions. Ask yourself whether any of them are questionable. Also evaluate any data or evidence the writer brings up. Ask yourself whether this evidence actually supports the writer’s conclusion.

In your analysis, you may suggest additional kinds of evidence to reinforce the writer’s argument. You may also suggest methods to refute the argument, or additional data that might be useful to you as you assess the soundness of the argument. You may not, however, present your personal views on the topic. Your job is to analyze the elements of an argument, not to support or contradict that argument.

GRE readers will evaluate your essay, grading it on the basis of your effectiveness in the following areas:

- Identification and assessment of the argument’s main elements.
- Organization and articulation of your thoughts.
- Use of relevant examples and arguments to support your analysis.
- Handling of the mechanics of standard written English.

Again, follow a 5-step approach in dealing with the argument-analysis task.

Step One: Identify the Claims (2 minutes).

Before you can identify the flaws in an argument essay prompt, you must have a clear understanding of the claims it makes. After reading the prompt once for general understanding, examine it more carefully, one sentence at a time. As you do this, use your scratch paper to write a list of the claims made in the prompt. List the claims in the order in which they are made. GRE argument prompts typically contain at least three flaws in the author’s reasoning or use of evidence.

Here is an example of the notes you might take if you were writing on the topic below.

Discuss how effective you find the reasoning in this argument.

The following appeared in an article in the Real Estate section of the Springfield Bugle.

Springfield is a great place to live. Every year, hundreds of former city dwellers move to Springfield, spurring the sophisticated cultural offerings of the urban setting for Springfield’s more relaxed atmosphere. Despite the attractions of big city life, Springfield’s new citizens choose their home for its rural setting and small town atmosphere. If Springfield wants to continue to attract these newcomers, it must adopt aggressive planning regulations to keep out chain stores, fast food establishments, bars, and other businesses more appropriate to an urban setting.
Overall Point: Springfield must control the growth of certain types of businesses in order for it to remain attractive to newcomers.

Claim One: People come to Springfield to get away from sophisticated city culture, and to have a relaxed atmosphere.

Claim Two: People come to Springfield for its rural, small-town atmosphere.

Claim Three: Keeping chain stores, bars, and fast food restaurants out of Springfield will maintain its attractiveness to newcomers.

Step Two: Question the Claims (3 minutes).

Once you have identified the claims made in the prompt, you need to assess the strength of those claims. In most cases, their shortcomings will be apparent to you. If, however, you are having trouble figuring out the flaws in a given claim, try applying a few handy questions to it.

1. GROUNDS: Is there any evidence to support the claim? The first two claims in the prompt above are assertions. Though the author might have survey data to support her claim that newcomers move to Springfield to escape urban culture and enjoy a more relaxed, rural, small-town atmosphere, she presents no such data in her argument.

2. WARRANT: Does the evidence provided support the claim? Could other factors cause the effect about which the author is writing? In the situation described in the prompt above, there are many possible reasons to choose to move to Springfield. The author gives no reason for readers to believe that she has correctly identified the cause of Springfield’s popularity.

Does the author assert a general rule based on an overly small sample? For example, if the author of the Springfield argument based her claims about why newcomers generally move to Springfield on the comments of a single new neighbor, her claims would lack adequate support. They would be unwarranted.

Does the author compare comparable groups? If, for example, the author of the Springfield argument attempted to support her claims about why newcomers move to Springfield with surveys of residents who moved to Springfield twenty years ago, she would have no basis to make claims about people who have moved to Springfield more recently.

Step Three: Write the Body of Your Critique, Following the Order of the Claims Made in the Prompt (15 minutes).

Organization is an important part of writing a clear and coherent essay. The simplest and best approach is to discuss the claims made in the prompt in the order in which they are presented. There is no reason to try anything tricky or fancy. The test-makers have given you an order. Use it. Using the structure of the prompt will save you time. It will also discourage you from writing a disparate essay that wanders unpredictably from one idea to another. High scores go to test-takers who write clear and well-reasoned essays. Creativity in this context is more likely to confuse your readers than to earn you extra points.

As we recommend in the previous section on the issue essay, spend the bulk of your time writing the body of your critique. Get those ideas onto the screen, allotting two to three sentences to each claim to flesh it out.

Step Four: Then Add Your Introductory and Summary Paragraphs (5 minutes).

While following the structure of the prompt is a handy way to organize the body of your critique, you still need to write an introduction and conclusion to your essay. Your introductory paragraph should provide a general overview of the criticisms you have made in the body of your essay. Do not give too much detail in the introduction; it is where you introduce, rather than explain, your analysis. Present your points in the introduction in the same order in which they appear in the body of the essay. By doing so, you will give your reader a clear idea of where you are going and what you intend to demonstrate. In your conclusion, briefly restate the main points you have made in the body of your critique, and suggest one or two ways the author could have made his or her argument more persuasive.

Step Five: Reread and Revise (5 minutes).

Once again, our recommendation is: First listen, then look. Begin by reading your essay silently, listening with your inner ear to how it sounds. Ask yourself whether one sentence flows smoothly into the next, and whether any transition words might help the flow. Consider whether any key idea or example might be missing or any sentence seems out of place. Do not make any major changes. Just tweak things slightly to improve your essay’s sound and sense.

Now cast an eye over your essay, looking for mechanical errors. You know the sorts of grammatical constructions and spelling words that create problems for you. See whether you can spot any of them in your essay. Correct any errors that jump out at you.

Here is an example of an argument critique that follows the organization of the prompt:

Discuss how effective you find the reasoning in this argument.

The following appeared in an article in the Real Estate section of the Springfield Bugle.
Springfield is a great place to live. Every year, hundreds of former city dwellers move to Springfield, spurring the sophisticated cultural offerings of the urban setting for Springfield’s more relaxed atmosphere. Despite the attractions of big city life, Springfield’s new citizens choose their home for its rural setting and small town atmosphere. If Springfield wants to continue to attract these newcomers, it must adopt aggressive planning regulations to keep out chain stores, fast food establishments, bars, and other businesses more appropriate to an urban setting.

**Response to the Argument**

Springfield may well be a great place to live, but the author of this article makes a number of unsubstantiated assumptions about the attributes that make Springfield an attractive home. Based on these assumptions, the author makes a bold proposal regarding zoning and city planning. Though this proposal is intended to maintain the positive attributes that bring new residents to Springfield, it may fail to achieve this goal or even have the perverse effect of worsening the quality of life in the town.

The author’s first mistake is to assume that she knows why hundreds of former city dwellers move to Springfield each year. She claims that in moving to Springfield, people are rejecting the culture of the city in favor of Springfield’s more relaxed suburban lifestyle. This is a classic case of confusing correlation with causation. While Springfield may in fact be more relaxed than the city, and while the city may have more sophisticated culture than Springfield, it does not follow that those who move from the city to Springfield are choosing relaxation over sophistication. Perhaps they are moving to Springfield for entirely different reasons. High urban property values, with their concomitant high urban property taxes, may be driving potential homeowners to less expensive suburban areas. People may also be moving to Springfield for better schools or a lower crime rate.

The claim that people move to Springfield for its small-town atmosphere and rural setting is similarly unsubstantiated. Yes, Springfield is a small, rural suburb. It does not follow, however, that this is why new residents move to Springfield. They could be moving to Springfield for any of the reasons mentioned above, or for any number of other reasons.

The conclusion that Springfield must keep out businesses that are common in urban areas if it is to remain an attractive community is unsupported. If new residents are really being drawn to Springfield by something other than the ways in which it is different from a big city, there is no reason to believe that keeping Springfield from growing city-like will make it more attractive. In fact, if people move to Springfield in spite of its lack of big-city amenities and because of its lower cost (or some other factor), the addition of big-city businesses may make Springfield more attractive to newcomers.

Ironically, if the author is correct that Springfield’s relaxed, small-town feel is what attracts new residents, making Springfield attractive to former city dwellers may, in the long run, destroy Springfield’s positive attributes. After all, for how long can Springfield maintain this small-town atmosphere, if hundreds of newcomers are encouraged to move there each year? Ultimately, the author of this article appears to seek the impossible—a quiet small town with sustained, robust population growth.

Despite the flaws in this author’s argument, she may be correct in her assessment of why newcomers move to Springfield. She could strengthen her argument by documenting its most important premise with data. If, for example, she provided survey results from newcomers, indicating that they did indeed come to Springfield to escape urban culture and to enjoy a more relaxed, rural, small-town atmosphere, her argument would be far more persuasive. Were this the case, her call for more restrictive zoning might be justified.

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**Tactics**

**Preparing for the Writing Test**

**Tactic 1** *Take Advantage of the GRE’s Free Study Aids*

When you sign up to take the GRE General Test, you will eventually be sent PowerPrep, a CD-ROM containing test preparation software for the General Test and Writing Assessment. (The GRE’s new analytical writing section is the same as the former Writing Assessment test, which you previously had to take separately. Don’t worry about the name change; it has no significance.)

However, you do not have to wait for your copy of PowerPrep to come in the mail. You can download it immediately from the GRE website, www.gre.org.

*PowerPrep* is helpful because it uses the same GRE word processing software that you will have to use to write your essays when you take your computer-based
Practice Taking Shortcuts to Maximize Your Typing Efficiency

Slow and steady is not the way to go, at least not when you’re taking the analytical writing test on the GRE. Fast typists have a decided advantage here. Unfortunately, you cannot turn yourself into a typing whiz overnight. However, you can use your time right now to practice some shortcuts to help you on the day of the test.

First, using the GRE’s own word processing program (which comes when you download PowerPrep), you can practice using the cut-and-paste function to copy phrases that you want to repeat in your essay. In an argument essay, for example, you might want to reuse such phrases as “the author makes the following assumption” or “another flaw in the author’s argument is that...” In an issues essay, if you are running out of time and still haven’t written your opening and summary paragraphs (which we advise you to compose after you’ve written the body of your text), you can write just your concluding paragraph, cutting and pasting it to both the beginning and end of the essay. Then, in a few seconds, you can change the wording of that initial paragraph so that it works as an introduction, not as a conclusion. How does that cliché about essay-writing go? “Tell them what you’re going to tell them, tell them it, then tell them what you’ve told them.” It’s easy to do so, using cut-and-paste.

One thing to note: The GRE word processor currently lacks a copy function. To copy a chunk of text, you must first cut it and then directly paste it back in its original spot; next, you must move the cursor to the place where you want to reproduce the text and paste it there. The process may feel cumbersome at first, but by practicing with the word processor you will quickly build up speed copying using cut-and-paste.

Second, you can also practice abbreviating multword names or titles. Consider the following argument topic or prompt:

Discuss how effective you find the reasoning in this argument.

The parent of a Collegiate High student included these remarks in a letter to the education page of the Oakville Bugle.

If you look closely at Oakville’s two leading private high schools—Collegiate Preparatory High School and Exover Academy—you must conclude that Collegiate is unmistakably superior to the Academy. Collegiate has a staff of 35 teachers, many of them with doctorates. In contrast, Exover has a staff of 22, several holding only a bachelor’s degree. Moreover, Collegiate’s average class size is 12, compared to Exover’s average class size of 20; Collegiate’s students receive much more individual attention than their peers do at the Academy. Students graduating from Collegiate High also are accepted by better universities than Exover graduates are: 40% of last year’s Collegiate senior class went on to Ivy League colleges, compared to only 15% of Exover’s senior class. Thus, if you want your children to get individual attention from their high school teachers and would like them to get in to good colleges, you should send them to Collegiate Prep.

In critiquing this argument, you can follow the letter writer’s example and refer to Exover Academy and Collegiate Preparatory High School simply as Exover and Collegiate. You can also refer to Collegiate by its initials. Be sure, however, to identify the institution fully when you first mention it, inserting its initials in parentheses: Collegiate Preparatory High School (CPHS). Then your readers will know what you mean by future references to CPHS. Similarly, instead of typing out “for example,” you can substitute the abbreviation “e.g.”
Acquaint Yourself with the Actual Essay Topics You Will Face

The GRE has posted its entire selection of potential essay topics on its web site. The pool of issue topics can be found at www.gre.org/issue/issue.html. The pool of argument topics can be found at www.gre.org/argu/argu.html. There is no point in trying to memorize these topics or in trying to write an essay for each one. There are well over 200 items in the pool of issue topics alone. There is, however, a real point to exploring these potential topics and to noting their common themes.

We suggest that you print out both topic pools so that you can go through their contents at leisure. When you do so, you will see that the issue topics fall naturally into groups with common themes. Some of these themes involve contrasts:

- Tradition versus innovation and modernization.
- Competition versus cooperation.
- Present social needs versus future social needs.
- Conformity versus individualism.
- Imagination versus knowledge.
- Pragmatism versus idealism.

Many of the issue topics pose a simple question:

- What makes an effective leader?
- What are education's proper goals?

- How does technology affect our society?
- Why should we study history (or art, literature)?
- What is government's proper role (in education, art, wilderness preservation, and so on)?
- How do we define progress?

Others ask you to question conventional wisdom:

- Is loyalty always a virtue?
- Is "moderation in all things" truly good advice?
- Does conformity always have a negative impact?

Go over these recurrent questions and themes. They relate to all the areas of the college curriculum: political science, sociology, anthropology, economics, history, law, philosophy, psychology, the physical sciences, the fine arts, literature, even media studies. Whether or not you have any special knowledge of a suggested topic's subject area, you most likely have opinions about it. You probably have class notes on it as well.

If you have old notebooks from your general education courses, skim through them to refresh your memory of classroom discussions of typical GRE issues. In the course of flipping through these old notes, you're very likely to come across examples that you might want to note for possible use in writing the issue essay.

Writing the Issue Essay

Break Down the Topic Statement into Separate Areas to Consider

Here is an example of an issue topic, modeled on actual topics found in the GRE pool.

"The end does justify the means, if the end is truly meritorious."

Break down the statements into its component elements. Look for key words and phrases. First, consider ends or goals. These can be divided into personal goals—taking a trip to a foreign country, for example, or providing for one's family—and societal goals—preserving endangered species, for example, or protecting the health of the elderly.

Next, consider what means you might use to reach these goals. If you have to spend your savings and take a leave of absence from college to travel abroad, thereby postponing or potentially jeopardizing your eventual graduation, then perhaps your goal is insufficiently meritorious to justify the means. If, however, your goal is not simply to take a pleasure trip but to use the time abroad working in a refugee camp, the worthiness of the cause you are serving might well outweigh the expense and the risk of your not graduating. Similarly, while most people would agree that preserving an endangered species is a worthwhile societal goal, the cost to society of doing so can occasionally outweigh the benefits: think about the societal cost in ruined crops and lost income to Klamath Basin farmers when the government cut off water to their farms in an effort to preserve endangered coho salmon and sucker fish, an
action later criticized as unnecessary by the National Academy of Sciences.

Finally, consider the phrase truly meritorious. The author is begging the question, qualifying his assertion to make it appear incontrovertible. But what makes an action meritorious? Have you ever seen a really good brand of shoes? What makes a good brand of shoes? How do you measure merit? Whose standards do you use?

Breaking down the topic statement into its component helps start you thinking analytically about the subject. It's a good way to begin composing your issue essay.

**Tactic 5**

**Adopt a Balanced Approach**

Consider your readers. Who are they? Academics, junior members of college faculties. What are they looking for? They are looking for articulate and persuasive arguments expressed in scholarly, well-reasoned prose. In other words, they are looking for the sort of essay they might write themselves.

How do you go about writing for an academic audience? First, avoid extremes. You want to come across as a mature, evenhanded writer, someone who can take a strong stand on an issue, but who can see others' positions as well. Restrain yourself: don't get too carried away by the "rightness" of your argument that you wind up sounding fanatical or shrill. Second, be sure to acknowledge that other viewpoints exist. Cite them; you'll win points for scholarly objectivity.

Draw examples to support your position from "the great world" and from the academic realm. In writing about teaching methods, for example, you'll win more points citing current newspaper articles about magnet schools or relevant passages from John Dewey and Maria Montessori than telling anecdotes about your favorite gym teacher in junior high school. While it is certainly acceptable for you to offer an occasional example from personal experience, for the most part your object is to show the readers the breadth of your knowledge (without showing off by quoting the most obscure sources you can find!).

One additional point: Do not try to second-guess your readers. Yes, they want you to come up with a scholarly, convincing essay. But there is no "one true answer" that they are looking for. You can argue for the position. You can argue against the position. You can strike a middle ground, arguing both for and against the position, hedging your bet. The readers don't care what position you adopt. Don't waste your time trying to psych them out.

**Tactic 6**

**Make Use of Transitions or Signal Words to Point the Way**

Assume that typical GRE readers must read hundreds of issue essays in a day. You want to make the readers' job as easy as possible, so that when they come to your essay they breathe a sigh of relief, saying, "Ah! Someone who knows how to write!"

One way to make the readers' job easy is to lead them by the hand from one idea to the next, using signal words to point the way. The GRE readers like it when test-takers use signal words (transitions); in their analyses of sample essays scoring a 5 or 6, they particularly mention the writers' use of transitions as a good thing.

Here are a few helpful transitions. Practice using them precisely: you earn no points for sticking them in at random!

**Support Signal Words**

Use the following words or abbreviations to signal the reader that you are going to support your claim with an illustration or example:

- e.g., (short for Latin exempli gratia, for the sake of an example)
- for example
- for instance
- let me illustrate
- such as

Use these words to signal the reader that you are about to add an additional reason or example to support your claim:

- additionally
- also
furthermore
in addition
likewise
moreover
Contrast Signal Words
Use the following words to signal a switch of direction in your argument.
although
but
despite
even though
except
however
in contrast
in spite of
instead of
nevertheless
not
on the contrary
on the other hand
rather than
still
unlike
yet

Cause and Effect Signal Words
Use the following words to signal the next step in your line of reasoning or the conclusion of your argument.
accordingly
consequently
for this reason
hence
in conclusion
in short
in summary
so . . . that
therefore
thus
when . . . then

See Tactic 10 for a discussion of how signal words can be helpful to you in the second of your two writing tasks, the argument critique.

Writing the Argument Critique

Learn to Spot Common Logical Fallacies

You may remember studying a list of logical fallacies during your undergraduate education. It probably included Latin terms such as "post hoc ergo quodlibet" and "argumentum ad hominem." Fortunately, you do not need to memorize these terms to perform well on the GRE argument essay. The GRE's essay readers are not concerned with whether you know the name of a given logical fallacy; they are more concerned with whether you can recognize and explain fallacies as they occur in simulated real-world situations. Labeling a claim a "post hoc" fallacy will not win you a 6 (the top score) unless you can explain the flaw in the argument. And a straightforward logical explanation of the argument's flaw can get you a 6, whether or not you use the fancy Latin terminology.

This does not mean, however, that brushing up on the common logical fallacies is a waste of your time. A decent understanding of the ways in which arguments can be wrong will help you write a better essay by enabling you to identify more flaws in the assigned argument (GRE argument statements generally include more than one logical error), and by giving you a clearer understanding of the nature of those flaws. Our advice is, therefore, to review the common logical fallacies without spending too much time trying to memorize their names.

Here are two examples of arguments, or prompts, similar to those in the GRE pool. Read them. The discussion following will point out what common logical fallacies they embody.

Discuss how effective you find the reasoning in this argument.

Argument 1

The school board of the Shadow Valley Unified School District included these remarks in a letter sent to the families of all students attending school in the district.

Over the past few years, an increase in disciplinary problems and a high drop out rate have plagued District schools. The Ash Lake School District to our north adopted a mandatory uniform policy three years ago. Since that time, suspensions and expulsions in Ash Lake have fallen by 40 percent, while the mean grade point average of Ash Lake students has risen from 2.3 (C+) to 2.7 (B−). In order to improve the discipline and academic performance of Shadow Valley students, we have adopted a mandatory uniform policy effective on the first day of the new school year.
Discuss how effective you find the reasoning in this argument.

**Argument 2**

The following is excerpted from a letter to the editor in the Chillington Gazette.

The recent residential property tax increase to improve park maintenance in Chillington is a waste of money. There is no need to improve Chillington’s parks because the people of Chillington do not enjoy outdoor recreation. I live across the street from Green Park in South Chillington, and I’ve noticed that there is never anyone in the park. Park use did not increase in Warm Springs last year when they implemented a similar tax. There is no reason to improve parks that will not be used.

**Common Logical Fallacies**

**Causal Fallacies**

The classic fallacy of causation is often known by a Latin phrase, “post hoc ergo propter hoc,” or its nickname, “the post hoc fallacy.” The Latin phrase translates to, “after this, therefore because of this.” The post hoc fallacy confuses correlation with causation, assuming that when one event follows another, the second event must have been caused by the first. It is as if you were to say that because your birthday precedes your husband’s by one month, your birth must have caused him to be born. The Shadow Valley School District argument presents an excellent example of a post hoc fallacy. The author of this argument assumes that because suspensions and expulsions in Ash Lake have fallen by 40 percent, while the mean grade point average of Ash Lake students has risen from 2.3 (C+) to 2.7 (B−), since Ash Lake’s adoption of a mandatory uniform policy, the uniform policy has caused the improved student performance. Despite this correlation, it is possible that other factors are responsible for Ash Lake’s progress. Perhaps the school uniform policy coincided with a significant decrease in average class size, or the arrival of a new superintendent of schools. Or perhaps the recent improvements were brought about by an increase in federal aid for at-risk students. School uniforms may have been a partial cause of Ash Lake’s improvements, or they may have played no role at all. Without further information, no reliable conclusion can be reached.

**Inductive Fallacies**

Fallacies of induction involve the drawing of general rules from specific examples. They are among the most common fallacies found in the GRE argument essay topics. To induce a general rule correctly from specific examples, it is crucial that the specific examples be representative of the larger group. All too often, this is not the case.

The hasty generalization (too small sample) is the most common inductive fallacy. A hasty generalization is a general conclusion that is based on too small a sample set. If, for example, you wanted to learn the most popular flavor of ice cream in Italy, you would need to interview a substantial number of Italians. Drawing a conclusion based on the taste of the three Italian tourists you met last week would not be justified. The Chillington Gazette argument provides another good example of the hasty generalization. The author of this argument concludes that “the people of Chillington do not enjoy outdoor recreation,” but he draws this general conclusion from the lack of visitors to the park across the street from his home. Readers are never told just how many parks there are in Chillington. There could be dozens of parks, all possibly overflowing with happy visitors, despite the unpopularity of the one park viewed by the author.

Small sample size is a problem because it increases the risk of drawing a general conclusion from an unrepresentative sample. If, for example, you wanted to learn who was most likely to be elected president of the United States, you could not draw a reliable conclusion based on the preferences of the citizens of a single city, or even a single state. The views of the citizens of Salt Lake City are not necessarily the views of the citizens of the nation as a whole, nor are the views of Californians representative of those of the entire nation. This is why pollsters go to such great lengths to ensure that they interview a representative sample of the entire population.

Unrepresentative samples do not, however, always result from too small a sample. The Chillington Gazette argument concludes that the citizens of Chillington will not use improved parks because “Park use did not increase in Warm Springs last year when they implemented a similar tax.” The author gives no reason to believe, however, that the two towns’ situations are similar. Perhaps park use did not increase in Warm Springs because its parks were already extremely popular, unlike those of Chillington. Or perhaps Warm Springs is an industrial city with little housing, while Chillington is a bedroom community with a large number of school-aged children. Should we conclude that the experiences of one city will be mirrored by the other?

(To learn more about common logical fallacies, consult standard works on rhetoric and critical reasoning. Two currently popular texts are James Herrick’s *Argumentation* and T. Edward Damer’s *Attacking Faulty Reasoning.*)
Tactic 8
Remember That Your Purpose Is to Analyze, Not to Persuade

You are not asked to agree or disagree with the argument in the prompt. Do not be distracted by your feelings on the subject of the prompt, and do not give in to the temptation to write your own argument. Be especially vigilant against this temptation if the topic is on a subject that you know very well. If, for example, the prompt argues that class size reduction is a poor idea because it did not improve test scores in one city, do not answer this argument with data you happen to know about another city in which test scores improved after class sizes were reduced. Instead, point out that one city is not a large enough sample on which to base a general conclusion. Go on to identify other factors that could have caused test scores to remain the same, despite lower class size. (Perhaps test scores in the sample city were already nearly as high as they could go, or the student population in that city was changing at the time class sizes were reduced.) Remember, the readers are not interested in how much you know about the subject of the prompt; they want to know how well you think.

Tactic 9
Examine the Argument for Unstated Assumptions and Missing Information

An argument is based upon certain assumptions made by its author. If an argument's basic premises are sound, the argument is strengthened. If the argument's basic premises are flawed, the argument is weakened.

Pinpoint what the argument assumes but never states. Then consider the validity of these unstated assumptions. For example, the Shadow Valley argument assumes that the populations of Shadow Valley and Ash Lake are analogous. Is this unstated assumption warranted? Not necessarily. The two towns might well have distinctly dissimilar populations—one might be a working-class suburb with high unemployment, while the other might be a suburb populated by wealthy professionals. If that were so, there would be no reason to believe that the same factors would cause poor student performance in both towns.

Ask yourself what additional evidence would strengthen or weaken the claim. Generally, GRE argument prompts are flawed but could be true under some circumstances. Only rarely will you find an argument that is absolutely untrue. Instead, you will find plausible arguments for which support (grounds and warrant) is lacking.

Put yourself in the place of the argument's author. If you were trying to prove this argument, what evidence would you need? What missing data should you assemble to support your claim? Use your concluding paragraph to list this evidence and explain how its presence would solve the shortcomings that you identified earlier in your essay.

Tactic 10
Pay Particular Attention to Signal Words in the Argument

In analyzing arguments, be on the lookout for transitions or signal words that can clarify the structure of the argument. These words are like road signs, pointing out the direction the author wants you to take, showing you the connection between one logical step and the next. When you spot such a word linking elements in the author's argument, ask yourself whether this connection is logically watertight. Does A unquestionably lead to B? These signal words can indicate vulnerable areas in the argument, points you can attack.

In particular, be alert for:

Cause and Effect Signal Words

The following words often signal the conclusion of an argument:

accordingly
consequently
for this reason
hence
in conclusion
Discuss how effective you find the reasoning in this argument.

**Argument 3**

The following is from a letter to the state Department of Education.

Despite the fact that the River City School District increased the average size by more than 15% in all grades two years ago, this year’s average SAT scores for the junior class were the highest ever. This shows that class size is not a good determinant of student performance. Consequently, other school districts should follow River City’s lead and save money by increasing the size of their classes.

Think about each link in the chain of reasoning signaled by the three transition words. These words should act like a red flag, alerting you that danger (flawed logic) may lie ahead. Did the average SAT score for the junior class increase *despite* the increase in class size? Maybe. Then again, maybe not; the average score for that year’s junior class may have increased because that year’s juniors were unusually bright. Do this year’s extra-high SAT scores show that class size is *not* a good determinant of student performance? Not necessarily. Many factors could have contributed to the junior class’s high scores. Finally, consider the implications of *consequently*. Even if class size were not a good determinant of student performance, does it necessarily follow *as a consequence* that school districts should increase the size of their classes? In the words of the old song, “It ain’t necessarily so.”

**Practice Exercises**

**Practice for the Issue Task**

1. Brainstorm for 5 minutes, jotting down any words and phrases that are triggered by one of the following questions:
   - What should the goals of higher education be?
   - Why should we study history?
   - How does technology affect our society?
   - What is the proper role of art?
   - Which poses the greater threat to society, individualism or conformity?
   - Which is more socially valuable, preserving tradition or promoting innovation?
   - Is it better to be a specialist or a generalist?
   - Can a politician be both honest and effective?

2. In a brief paragraph, define one of the following words:
   - Freedom
   - Originality
   - Honesty
   - Progress

3. To improve your ear for language, read aloud short selections of good prose: editorials from *The New York Times* or *The Christian Science Monitor*, as well as columns or brief essays by prose stylists like Annie Dillard, M. F. K. Fisher, or E. B. White. Listen for the ways in which these authors vary their sentence structure. Note the precision with which they choose their words. The more good prose you hear, the better able you’ll be to improve your writing style.
4. Selecting three or four issue topics from the GRE’s published pool of topics (www.gre.org/issuetop.html), break down the topic statements in terms of Toulmin’s three elements: claim, grounds, and warrant. Ask yourself the following questions. What claims are made in each topic statement? What grounds or data are given to support each of these claims? Is the claim warranted or unwarranted? Why? In what way do the grounds logically justify the claim?

5. Choosing another issue topic from the GRE’s published pool of topics, write an essay giving your viewpoint concerning the particular issue raised. Set no time limit; take as long as you want to complete this task, then choose a second issue topic from the pool. In only 45 minutes, write an essay presenting your perspective on this second issue. Compare your two essays. Ask yourself how working under time pressure affected your second essay. Did its major problems stem from a lack of fluency? A lack of organization? A lack of familiarity with the subject matter under discussion? A lack of knowledge of the mechanics of formal written English? Depending on what problems you spot, review the appropriate sections of this chapter, as well as any style manuals or other texts we suggest.

Practice for the Argument Task

1. Choosing a sample of argument topics from the GRE’s published pool of topics (www.gre.org/argutop.html), practice applying the list of logical fallacies to the published prompts. See how many fallacies you can find for each argument. If you have time, write practice essays for some of these arguments. If you are short of time, or would simply like to move more quickly, get together with a friend and explain the fallacies you have found in the argument essay prompts. This will be especially rewarding if you can work with a friend who is also preparing to take the GRE.

2. Write an “original” argument topic, modeling it on one of the argument prompts in the GRE’s published pool. Your job is to change the details of the situation (names, figures, and so on) without changing the types of logical fallacies involved. By doing this, you will learn to spot the same old fallacies whenever they crop up in a new guise.

3. Choosing an argument prompt from the GRE’s published pool of topics (www.gre.org/argutop.html), write an essay critiquing the particular argument expressed. Set no time limit; take as long as you want to complete this task, then choose a second argument prompt from the pool. In only 30 minutes, write an essay critiquing this second argument. Compare your two critiques. Ask yourself how working under time pressure affected your second critique. Would more familiarity with the common logical fallacies have helped you? Depending on what problems you spot, review the appropriate sections of this chapter, as well as any other materials we suggest.
PART FOUR

QUANTITATIVE ABILITY: TACTICS, STRATEGIES, PRACTICE, AND REVIEW
Introduction to Part Four

PART FOUR consists of five chapters. Chapter 10 presents several important strategies that can be used on any mathematics questions that appear on the GRE. In Chapters 11, 12, and 13 you will find tactics that are specific to one of the three different types of questions: discrete quantitative questions, quantitative comparison questions, and data interpretation questions, respectively. Chapter 14 contains a complete review of all the mathematics you need to know in order to do well on the GRE, as well as hundreds of sample problems patterned on actual test questions.

Five Types of Tactics

Five different types of tactics are discussed in this book.

1. In Chapters 1 and 2, you learned many basic tactics used by all good test-takers, such as read each question carefully, pace yourself, don’t get bogged down on any one question, and never waste time reading the directions. You also learned the specific tactics required to excel on a computer-adaptive test. These tactics apply to both the verbal and quantitative sections of the GRE.

2. In Chapters 4, 5, 6, and 7 you learned the important tactics needed for handling each of the four types of verbal questions.

3. In Chapter 9 you learned the strategies for planning and writing the two essays that constitute the analytical writing section of the GRE.

4. In Chapters 10–13 you will find all of the tactics that apply to the quantitative sections of the GRE. Chapter 10 contains those techniques that can be applied to all types of mathematics questions; Chapters 11, 12, and 13 present specific strategies to deal with each of the three kinds of quantitative questions found on the GRE: discrete quantitative questions, quantitative comparison questions, and data interpretation questions.

5. In Chapter 14 you will learn or review all of the mathematics that is needed for the GRE, and you will master the specific tactics and key facts that apply to each of the different mathematical topics.

Using these tactics will enable you to answer more quickly many questions that you already know how to do. But the greatest value of these tactics is that they will allow you to correctly answer or make educated guesses on problems that you do not know how to do.

An Important Symbol

Throughout the rest of this book, the symbol “⇒” is used to indicate that one step in the solution of a problem follows immediately from the preceding one, and no explanation is necessary. You should read

3x = 12 ⇒ x = 4

as

3x = 12 implies that x = 4

or

3x = 12, which implies that x = 4

or

since 3x = 12, then x = 4.

Here is a sample solution to the following problem using ⇒:

What is the value of \(2x^2 - 5\) when \(x = -4\)?

\[
x = -4 \Rightarrow x^2 = (-4)^2 = 16 \Rightarrow
\]

\[
2x^2 = 2(16) = 32 \Rightarrow
\]

\[
2x^2 - 5 = 32 - 5 = 27
\]

When the reason for a step is not obvious, ⇒ is not used; rather, an explanation is given, often including a reference to a KEY FACT from Chapter 14. In many solutions, some steps are explained, while others are linked by the ⇒ symbol, as in the following example.

In the diagram at the right, if \(w = 10\), what is the value of \(x\)?

- By KEY FACT J1, \(w + x + y = 180\).
- Since \(\triangle ABC\) is isosceles, \(x = y\) (KEY FACT J5).
- Therefore, \(w + 2y = 180 \Rightarrow 10 + 2y = 180 \Rightarrow y = 170 \Rightarrow y = 85\).
- Finally, since \(y + z = 180\) (KEY FACT I3), \(85 + z = 180 \Rightarrow z = 95\).
In Chapters 11 and 12, you will learn tactics that are specifically applicable to multiple-choice questions and quantitative comparison questions, respectively. In this chapter you will learn several important general math strategies that can be used on both of these types of questions.

The directions that appear on the screen at the beginning of the quantitative section include the following cautionary information:

Figures that accompany questions are intended to provide information useful in answering the questions.

However, unless a note states that a figure is drawn to scale, you should solve these problems NOT by estimating sizes by sight or measurement, but by using your knowledge of mathematics.

Despite the fact that they are telling you that you cannot totally rely on their diagrams, if you learn how to draw diagrams accurately, you can trust the ones you draw. Knowing the best ways of handling diagrams on the GRE is critically important. Consequently, the first five tactics all deal with diagrams.

**TACTIC 1.** Draw a diagram.

**TACTIC 2.** Trust a diagram that has been drawn to scale.

**TACTIC 3.** Exaggerate or change a diagram.

**TACTIC 4.** Add a line to a diagram.

**TACTIC 5.** Subtract to find shaded regions.

To implement these tactics, you need to be able to draw line segments and angles accurately, and you need to be able to look at segments and angles and accurately estimate their measures. Let’s look at three variations of the same problem.

1. If the diagonal of a rectangle is twice as long as the shorter side, what is the degree measure of the angle it makes with the longer side?

2. In the rectangle at the right, what is the value of $x$?

3. In the rectangle at the right, what is the value of $x$?

For the moment, let’s ignore the correct mathematical way of solving this problem. In the diagram in (3), the side labeled 2 appears to be half as long as the diagonal, which is labeled 4; consequently, you should assume that the diagram has been drawn to scale, and you should see that $x$ is about 30, certainly between 25 and 35. In (1) you aren’t given a diagram, and in (2) the diagram is useless because you can see that it has not been drawn to scale (the side labeled 2 is nearly as long as the diagonal, which is labeled 4). However, if while taking the GRE, you see a question such as (1) or (2), you should be able to quickly draw on your scrap paper a diagram that looks just like the one in (3), and then look at your diagram and see that the measure of $x$ is just about 30. If the answer choices for these questions were

(A) 15    (B) 30    (C) 45    (D) 60    (E) 75

you would, of course, choose 30, B. If the choices were

(A) 20    (B) 25    (C) 30    (D) 35    (E) 40

you might not be quite as confident, but you should still choose 30, here C.

When you take the GRE, even though you are not allowed to use rulers or protractors, you should be able to draw your diagrams very accurately. For example, in (1) above, you should draw a horizontal line, and then, either freehand or by tracing the corner of a piece of scrap paper, draw a right angle on the line. The vertical line segment will be the width of the rectangle; label it 2.

2
Mark off that distance twice on a piece of scrap paper and use that to draw the diagonal.

Finally, to draw an obtuse angle, add an acute angle to a right angle.

Now, to estimate the measure of a given angle, just draw in some lines.

To test yourself, find the measure of each angle shown. The answers are found below.

(a) (b) (c) (d)

To draw other acute angles, just divide the two 45° angles in the above diagram with as many lines as necessary.
Testing Tactics

Tactic 1

Draw a Diagram

On any geometry question for which a figure is not provided, draw one (as accurately as possible) on your scrap paper—never attempt a geometry problem without first drawing a diagram.

Example 1.
What is the area of a rectangle whose length is twice its width and whose perimeter is equal to that of a square whose area is 16?
(A) 1 (B) 6 (C) $\frac{2}{3}$ (D) $\frac{4}{3}$ (E) $\frac{8}{9}$

SOLUTION. Don't even think of answering this question until you have drawn a square and a rectangle and labeled each of them: each side of the square is 1, and if the width of the rectangle is $w$, its length ($l$) is $2w$.

Now write the required equation and solve it:

$6w = 4 \Rightarrow w = \frac{6}{4} = \frac{2}{3} \Rightarrow 2w = \frac{4}{3}$

The area of the rectangle = $lw = \left(\frac{4}{3}\right)\left(\frac{2}{3}\right) = \frac{8}{9}$. E.

Example 2.
Betty drove 8 miles west, 6 miles north, 3 miles east, and 6 more miles north. How many miles was Betty from her starting place?
(A) 13 (B) 17 (C) 19 (D) 21 (E) 23

SOLUTION. Draw a diagram. Now, extend line segment $ED$ until it intersects $AB$ at $F$. Then, $AFE$ is a right triangle, whose legs are 5 and 12, and, therefore, whose hypotenuse is 13, A.

Example 3.
What is the difference in the degree measures of the angles formed by the hour hand and the minute hand of a clock at 12:35 and 12:36?
(A) 1°  (B) 5°  (C) 5.5°  (D) 6°  (E) 30°

SOLUTION. Draw a simple picture of a clock. The hour hand makes a complete revolution, 360°, once every 12 hours. So, in 1 hour it goes through $360° ÷ 12 = 30°$, and in one minute it advances through $30° ÷ 60 = 0.5°$. The minute hand moves through 30° every 5 minutes or 6° per minute. So, in the minute from 12:35 to 12:36 (or any other minute), the difference between the hands increased by $6° - 0.5° = 5.5°$, C.

NOTE: It was not necessary, and would have been more time-consuming, to determine the angle between the hands at either 12:35 or 12:36. (See TACTIC 6: Don't do more than you have to.)

Example 4.
A jar contains 10 red marbles and 30 green ones. How many red marbles must be added to the jar so that 60% of the marbles will be red?
(A) 25 (B) 30 (C) 35 (D) 40 (E) 60

SOLUTION. First, draw a diagram and label it. From the diagram it is clear that there are now 40 + $x$ marbles in the jar, of which $10 + x$ are red. Since we want the fraction of red marbles to be 60%, we have

$$\frac{10 + x}{40 + x} = 0.60 = \frac{3}{5}$$

Red

Green

$$x = 30$$

Red

$$\frac{10}{x}$$
Cross-multiplying, we get:

\[ 50 + 5x = 120 + 3x \Rightarrow 2x = 70 \Rightarrow x = 35. \]

Of course, you could have set up the equation and solved it without the diagram, but the diagram makes the solution easier and you are less likely to make a careless mistake.

### Tactic 2

**Trust a Diagram That Has Been Drawn to Scale**

Whenever diagrams have been drawn to scale, they can be trusted. This means that you can look at the diagram and use your eyes to accurately estimate the sizes of angles and line segments. For example, in the first problem discussed at the beginning of this chapter, you could "see" that the measure of the angle was about 30°.

To take advantage of this situation:

- If a diagram is given that appears to be drawn to scale, trust it.
- If a diagram is given that has not been drawn to scale, try to draw it to scale on your scrap paper, and then trust it.
- When no diagram is provided, and you draw one on your scrap paper, try to draw it to scale.

In Example 5, below, we are told that \( ABCD \) is a square and that diagonal \( BD \) is 3. In the diagram provided, quadrilateral \( ABCD \) does indeed look like a square, and \( BD = 3 \) does not contradict any other information. We can, therefore, assume that the diagram has been drawn to scale.

#### Example 5.

In the figure at the right, diagonal \( BD \) of square \( ABCD \) is 3. What is the perimeter of the square?

\[
\begin{align*}
(A) & \ 4.5 & (B) & \ 12 & (C) & \ 3\sqrt{2} \\
& \ 6\sqrt{2} & & \ & \ (E) & \ 12\sqrt{2}
\end{align*}
\]

**Solution.** Since this diagram has been drawn to scale, you can trust it. The sides of the square appear to be about two thirds as long as the diagonal, so assume that each side is 2. Then the perimeter is 8. Which of the choices is approximately 8? Certainly not A or B. Since \( \sqrt{2} \approx 1.4 \), Choices C, D, and E are approximately 4.2, 8.4, and 12.6, respectively. Clearly, the answer must be D.

**Direct mathematical solution.** Let \( s \) be a side of the square. Then since \( \triangle BCD \) is a 45-45-90 right triangle,

\[
\frac{3}{\sqrt{2}} = \frac{3\sqrt{2}}{2},
\]

and the perimeter of the square is

\[
4s = 4 \left( \frac{3\sqrt{2}}{2} \right) = 6\sqrt{2}.
\]

Remember the goal of this book is to help you get credit for all the problems you know how to do, and, by using the **TACTICS**, to get credit for many that you don't know how to do. Example 5 is typical. Many students would miss this question. You, however, can now answer it correctly, even though you may not remember how to solve it directly.

#### Example 6.

In \( \triangle ABC \), what is the value of \( x \)?

\[
\begin{align*}
(A) & \ 75 & (B) & \ 60 & (C) & \ 45 & (D) & \ 30 & (E) & \ 15
\end{align*}
\]

**Solution.** If you don't see the correct mathematical solution, you should use **TACTIC 2** and trust the diagram; but to do that you must be careful that when you copy it onto your scrap paper you fix it. What's wrong with the way it is drawn now? \( AB = 8 \) and \( BC = 4 \), but in the figure, \( AB \) and \( BC \) are almost the same length. Redraw it so that \( AB \) is twice as long as \( BC \). Now, just look: \( x \) is about 60°. B.

In fact, \( x \) is exactly 60°. If the hypotenuse of a right triangle is twice the length of one of the legs, then it's a 30-60-90 triangle, and the angle formed by the hypotenuse and that leg is 60° (see Section 14-J).

**TACTIC 2** is equally effective on quantitative comparison questions that have diagrams.

#### Example 7.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>10</td>
</tr>
</tbody>
</table>
SOLUTION. There are two things wrong with the given diagram: \( \angle C \) is labeled 40°, but looks much more like 60° or 70°, and \( AC \) and \( BC \) are each labeled 10, but \( BC \) is drawn much longer. When you copy the diagram onto your scrap paper, be sure to correct these two mistakes: draw a triangle that has a 40° angle and two sides of the same length.

Now, it's clear: \( AB < 10 \). The answer is \( B \).

SOLUTION. In the diagram at the left, the value of \( x \) is at least 60, so if the diagram has been drawn to scale, the answer must be \( A \). If, on the other hand, the diagram has not been drawn to scale, we can't trust it. Which is it? The diagram is not OK—\( PQ \) is drawn almost as long as \( OR \), even though \( OR \) is twice as long. Correct the diagram:

Now you can see that \( x \) is less than 45. The answer is \( B \).

**Column A**

**Column B**

**Exaggerate or Otherwise Change a Diagram**

Sometimes it is appropriate to take a diagram that appears to be drawn to scale and intentionally exaggerate it. Why would we do this? Consider the following example.

**Column A**

**Column B**

**Example 9.**

\[ \begin{array}{c}
A \\
B
\end{array} \]

\[ \begin{array}{c}
C \\
D
\end{array} \]

\[ \begin{array}{c}
l \\
k
\end{array} \]

Line \( l \) is parallel to line \( k \).

The answer is \( B \).

When you copy a diagram onto your scrap paper, you can change anything you like as long as your diagram is consistent with all the given data.

**Column A**

**Column B**

**Example 10.**

\[ \begin{array}{c}
P \\
Q
\end{array} \]

\[ \begin{array}{c}
x \\
y
\end{array} \]

SOLUTION. In the diagram, which appears to be drawn correctly, \( AB \) and \( CD \) look as though they are the same length. However, there might be an imperceptible difference due to the fact that angle \( C \) is slightly smaller than angle \( A \). So exaggerate the diagram:
SOLUTION. You may redraw this diagram any way you like, as long as the two angles that are marked 45° remain 45°. If \( PQ = PR \) are equal, as they appear to be in the given diagram, then \( x \) would equal \( y \). Since the given information does not state that \( PQ = PR \), draw a diagram in which \( PR \) and \( QR \) are clearly unequal. In the diagram at the right, \( PR \) is much longer than \( PQ \), and \( x \) and \( y \) are clearly unequal. The answer is D.

**Add a Line to a Diagram**

Occasionally, after staring at a diagram, you still have no idea how to solve the problem to which it applies. It looks as though not enough information has been given. When this happens, it often helps to draw another line in the diagram.

**Example 11.**

In the figure at the right, \( Q \) is a point on the circle whose center is \( O \) and whose radius is \( r \), and \( OPQR \) is a rectangle. What is the length of diagonal \( PR \)?

\[
(A) \ r \quad (B) \ r^2 \quad (C) \ \frac{r^2}{\pi} \quad (D) \ \frac{r\sqrt{2}}{\pi} \\
(E) \text{It cannot be determined from the information given.}
\]

SOLUTION. If after staring at the diagram and thinking about rectangles, circles, and the Pythagorean theorem, you’re still lost, don’t give up. Ask yourself, “Can I add another line to this diagram?” As soon as you think to draw in \( OQ \), the other diagonal, the problem becomes easy: the two diagonals are equal and, since \( OQ \) is a radius, it is equal to \( r \). A.

**Example 12.**

What is the area of quadrilateral \( ABCD \)?

\[
(A) \ 24 \quad (B) \ 28 \quad (C) \ 30 \quad (D) \ 38 \quad (E) \ 60
\]

SOLUTION. Since the quadrilateral is irregular, there isn’t a formula to find the area. However, if you draw in \( AC \), you will divide \( ABCD \) into two triangles, each of whose areas can be determined. If you then draw in the height of each triangle, you see that the area of \( \triangle ACD \) is \( \frac{1}{2}(4)(4) = 8 \), and the area of \( \triangle BAC \) is \( \frac{1}{2}(6)(10) = 30 \), so the area of \( ABCD \) is \( 30 + 8 = 38 \). D.

Note that this problem could also have been solved by drawing in lines to create rectangle \( ABEF \), and subtracting the areas of \( \triangle BEC \) and \( \triangle CFD \) from the area of the rectangle.
Subtract to Find Shaded Regions

Whenever part of a figure is shaded, the straightforward way to find the area of the shaded portion is to find the area of the entire figure and subtract from it the area of the unshaded region. Of course, if you are asked for the area of the unshaded region, you can, instead, subtract the shaded area from the total area. Occasionally, you may see an easy way to calculate the shaded area directly, but usually you should subtract.

Example 13.
In the figure below, $ABCD$ is a rectangle, and $BE$ and $CF$ are arcs of circles centered at $A$ and $D$. What is the area of the striped region?

(A) $10 - \pi$ (B) $2(5 - \pi)$ (C) $2(5 - 2\pi)$
(D) $6 + 2\pi$ (E) $5(2 - \pi)$

SOLUTION. The entire region is a $2 \times 5$ rectangle whose area is 10. Since the white region consists of two quarter-circles of radius 2, the total white area is that of a semicircle of radius $2\pi(2)^2 = 2\pi$. Therefore, the area of the striped region is $10 - 2\pi = 2(5 - \pi)$, B.

Don’t Do More Than You Have To

Very often a problem can be solved in more than one way. You should always try to do it in the easiest way possible. Consider the following examples.

Example 15.
If $5(3x - 7) = 20$, what is $3x - 8$?

(A) $\frac{11}{3}$ (B) 0 (C) 3 (D) 14 (E) 19

It is not difficult to solve for $x$:

$5(3x - 7) = 20 \Rightarrow 15x - 35 = 20 \Rightarrow 15x = 55 \Rightarrow x = \frac{55}{15} = \frac{11}{3}$.

But it's too much work. Besides, once you find that $x = \frac{11}{3}$, you still have to multiply to get $3x$: $3\left(\frac{11}{3}\right) = 11$, and then subtract to get $3x - 8$: $11 - 8 = 3$.

SOLUTION. The key is to recognize that you don’t need to find $x$. Finding $3x - 7$ is easy (just divide the original equation by 5), and $3x - 8$ is just 1 less:

$5(3x - 7) = 20 \Rightarrow 3x - 7 = 4 \Rightarrow 3x - 8 = 3$, C.
Example 16.
If \(7x + 3y = 17\) and \(3x + 7y = 19\), what is the average (arithmetic mean) of \(x\) and \(y\)?

- (A) \(\frac{31}{20}\)
- (B) \(\frac{41}{20}\)
- (C) 1.8
- (D) 3.6
- (E) 36

The obvious way to do this is to first find \(x\) and \(y\) by solving the two equations simultaneously and then to take their average. If you know how to do this, try it now, before reading further. If you worked carefully, you should have found that \(x = \frac{31}{20}\) and \(y = \frac{41}{20}\), and their average is

\[
\frac{\frac{31}{20} + \frac{41}{20}}{2} = \frac{9}{5}.
\]

This is not too difficult, but it is quite time-consuming, and questions on the GRE never require you to do that much work. Look for a shortcut. Is there a way to find the average without first finding \(x\) and \(y\)? Absolutely! Here’s the best way to do this.

SOLUTION. Add the two equations:

\[
\begin{align*}
7x + 3y &= 17 \\
3x + 7y &= 19 \\
10x + 10y &= 36
\end{align*}
\]

Divide each side by 10:

\[
\frac{x + y}{2} = \frac{3.6}{2} = 1.8
\]

The answer is (C).

---

**Tactic 7**

**Pay Attention to Units**

Often the answer to a question must be in units different from the data given in the question. As you read the question, write on your scratch paper exactly what you are being asked and circle it or put an asterisk next to it. Do they want hours or minutes or seconds, dollars or cents, feet or inches, meters or centimeters? On multiple-choice questions, an answer using the wrong units is almost always one of the choices.

Example 18.

Driving at 48 miles per hour, how many minutes will it take to drive 32 miles?

- (A) \(\frac{2}{3}\)
- (B) \(\frac{3}{2}\)
- (C) 40
- (D) 45
- (E) 2400

SOLUTION. This is a relatively easy question. Just be attentive. Divide the distance, 32, by the rate, \(\frac{32}{48} = \frac{2}{3}\), so it will take \(\frac{2}{3}\) of an hour to drive 32 miles. Choice A is \(\frac{2}{3}\), but that is not the correct answer, because you are asked how many minutes it will take. To convert hours to minutes, multiply by 60: it will take \(\frac{2}{3}(60) = 40\) minutes, (C).

---

Example 17.

Benjamin worked from 9:47 A.M. until 12:11 P.M. Jeremy worked from 9:11 A.M. until 12:47 P.M.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of minutes Benjamin worked</td>
<td>The number of minutes Jeremy worked</td>
</tr>
</tbody>
</table>

Do not spend any time calculating how many minutes either of them worked. You only need to know which column is greater, and since Jeremy started earlier and finished later, he clearly worked longer. The answer is (B).

---

Example 19.

At Nat’s Nuts a \(2\frac{1}{4}\)-pound bag of pistachio nuts costs $6.00. At this rate, what is the cost in cents of a bag weighing 9 ounces?

- (A) 1.5
- (B) 24
- (C) 150
- (D) 1350
- (E) 2400

SOLUTION. This is a relatively simple ratio, but make sure you get the units right. To do this you need to know that there are 100 cents in a dollar and 16 ounces in a pound.

\[
\text{price} : 6 \text{ dollars} = 600 \text{ cents} \quad x \text{ cents}
\]

\[
\text{weight} : 2.25 \text{ pounds} = 36 \text{ ounces} = 9 \text{ ounces}
\]

Cross-multiply and solve: \(36x = 5400 \Rightarrow x = 150\), (C).
Tactic 8

Systematically Make Lists

When a question asks "how many," often the best strategy is to make a list of all the possibilities. If you do this it is important that you make the list in a systematic fashion so that you don't inadvertently leave something out. Usually, this means listing the possibilities in numerical or alphabetical order. Often, shortly after starting the list, you can see a pattern developing and you can figure out how many more entries there will be without writing them all down. Even if the question does not specifically ask "how many," you may need to count something to answer it; in this case, as well, the best plan may be to write out a list.

Example 20.
A palindrome is a number, such as 93539, that reads the same forward and backward. How many palindromes are there between 100 and 1,000?
(A) 10 (B) 81 (C) 90 (D) 100 (E) 200

SOLUTION. First, write down the numbers that begin and end in 1:
101, 111, 121, 131, 141, 151, 161, 171, 181, 191

Next write the numbers that begin and end in 2:
202, 212, 222, 232, 242, 252, 262, 272, 282, 292

By now you should see the pattern: there are 10 numbers beginning with 1, 10 beginning with 2, and there will be 10 beginning with 3, 4, ..., 9 for a total of $9 \times 10 = 90$ palindromes, C.

Example 21.
The product of three positive integers is 300. If one of them is 5, what is the least possible value of the sum of the other two?
(A) 16 (B) 17 (C) 19 (D) 23 (E) 32

SOLUTION. Since one of the integers is 5, the product of the other two is 60. Systematically, list all possible pairs, (a, b), of positive integers whose product is 60 and check their sums. First let a = 1, then 2, and so on.

\[
\begin{array}{ccc}
  a & b & a + b \\
  1 & 60 & 61 \\
  2 & 30 & 32 \\
  3 & 20 & 23 \\
  4 & 15 & 19 \\
  5 & 12 & 17 \\
  6 & 10 & 16 \\
\end{array}
\]

The answer is 16, A.

Practice Exercises

General Math Strategies

1. At Leo's Lumberyard, an 8-foot long wooden pole costs $3.00. At this rate, what is the cost, in cents, of a pole that is 16 inches long?
   (A) 0.5 (B) 48 (C) 50 (D) 64 (E) 96

2. In the figure below, vertex Q of square OPQR is on a circle with center O. If the area of the square is 8, what is the area of the circle?

   \[
   \text{Area of square} = 8 \Rightarrow \text{Side of square} = 2 \Rightarrow \text{Radius of circle} = 2
   \]
   \[
   \text{Area of circle} = \pi \times (2)^2 = 4\pi
   \]
   (A) 8\pi (B) 8\pi \sqrt{2} (C) 16\pi (D) 32\pi (E) 64\pi

3. In 1999, Diana read 10 English books and 7 French books. In 2000, she read twice as many French books as English books. If 60% of the books that she read during the two years were French, how many books did she read in 2000?
   (A) 16 (B) 26 (C) 32 (D) 39 (E) 48

4. In the figure below, if the radius of circle O is 10, what is the length of diagonal AC of rectangle OABC?

   \[
   \text{Diagonal AC} = \sqrt{10^2 + 10^2} = \sqrt{200} = 10\sqrt{2}
   \]
   (A) $\sqrt{2}$ (B) $\sqrt{10}$ (C) $5\sqrt{2}$ (D) 10 (E) $10\sqrt{2}$

5. In writing all of the integers from 1 to 300, how many times is the digit 1 used?
   (A) 60 (B) 120 (C) 150 (D) 160 (E) 180
6. In the figure at the right, $ABCD$ is a square and $AED$ is an equilateral triangle. If $AB = 2$, what is the area of the shaded region?

(A) $\sqrt{3}$  (B) 2  (C) 3  (D) $4 - 2\sqrt{3}$  (E) $4 - \sqrt{3}$

7. If $5x + 13 = 31$, what is the value of $\sqrt{5x + 31}$?

(A) $\sqrt{13}$  (B) $\frac{173}{5}$  (C) 7  (D) 13  (E) 169

8. If $a + 2b = 14$ and $3a + 4b = 16$, what is the average (arithmetic mean) of $a$ and $b$?

(A) 1.5  (B) 2  (C) 2.5  (D) 3  (E) 3.5

9. In the figure below, equilateral triangle $ABC$ is inscribed in circle $O$, whose radius is 4. Altitude $BD$ is extended until it intersects the circle at $E$. What is the length of $DE$?

(A) 1  (B) $\sqrt{3}$  (C) 2  (D) $2\sqrt{3}$  (E) $4\sqrt{3}$

10. In the figure below, three circles of radius 1 are tangent to one another. What is the area of the shaded region between them?

(A) $\frac{\pi}{2} - \sqrt{3}$  (B) 1.5  (C) $\pi - \sqrt{3}$  
(D) $\sqrt{3} - \frac{\pi}{2}$  (E) $2 - \frac{\pi}{2}$

---

### Answer Key

Answer Explanations

Two asterisks (***) indicate an alternative method of solving.

1. C. This is a relatively simple ratio problem, but use TACTIC 7 and make sure you get the units right. To do this you need to know that there are 100 cents in a dollar and 12 inches in a foot.

\[
\frac{\text{price}}{\text{weight}} = \frac{3\text{ dollars}}{8\text{ feet}} = \frac{300\text{ cents}}{96\text{ inches}} = \frac{x\text{ cents}}{16\text{ inches}}
\]

Now cross-multiply and solve: \(96x = 4800 \Rightarrow x = 50\).

2. C. Use TACTICS 2 and 4. On your scrap paper, extend line segments \(OP\) and \(OR\).

\[\text{Square } OPQR, \text{ whose area is } 8, \text{ takes up most of quarter-circle OXY. So the area of the quarter-circle is certainly between 11 and 13. The area of the whole circle is 4 times as great: between 44 and 52. Check the five choices: they are approximately 25, 36, 50, 100, 200. The answer is clearly C. **Another way to use TACTIC 4 is to draw in line segment } OQ.\]

\[\text{Since the area of the square is } 8, \text{ each side is } \sqrt{8}, \text{ and diagonal } OQ \text{ is } \sqrt{8} \times \sqrt{2} = \sqrt{16} = 4. \text{ But } OQ \text{ is also a radius, so the area of the circle is } 16\pi.\]

3. E. Use TACTIC 1: draw a picture representing a pile of books or a bookshelf.

<table>
<thead>
<tr>
<th>Year</th>
<th>French</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>2x</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>x</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Eng.</th>
<th>Fr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>2000</td>
<td>x</td>
<td>2x</td>
</tr>
</tbody>
</table>

In the two years the number of French books Diana read was \(7 + 2x\) and the total number of books was \(17 + 3x\). Then 60\% or \(\frac{3}{5} = \frac{7+2x}{17+3x}\). To solve, cross-multiply:

\[35 + 10x = 51 + 9x \Rightarrow x = 16.\]

In 2000, Diana read 16 English books and 32 French books, a total of 48 books.

4. D. Use TACTIC 2. Trust the diagram: \(AC\), which is clearly longer than \(OC\), is approximately as long as radius \(OE\).

Therefore, \(AC\) must be about 10. Check the choices. They are approximately 1.4, 3.1, 7, 10, and 14. The answer must be 10.

**The answer is 10. Use TACTIC 4: copy the diagram on your scrap paper and draw in diagonal \(OB\).

\[\text{Since the two diagonals of a rectangle are equal, and diagonal } OB \text{ is a radius, } OA = OB = 10.\]

5. D. Use TACTIC 8. Systematically list the numbers that contain the digit 1, writing as many as you need to see the pattern. Between 1 and 99 the digit 1 is used 10 times as the units digit (1, 11, 21, ... , 91) and 10 times as the tens digit (10, 11, 12, ... , 19) for a total of 20 times. From 200 to 299, there are 20 more (the same 20 preceded by a 2). From 100 to 199 there are 30 more plus 100 numbers where the digit 1 is used in the hundreds place. So the total is \(20 + 20 + 20 + 100 = 160\).

6. E. Use TACTIC 5: subtract to find the shaded area. The area of the square is 4. The area of the equilateral triangle (see Section 14-J) is \(\frac{2^2 \sqrt{3}}{4} = \frac{4 \sqrt{3}}{4} = \sqrt{3}\). So the area of the shaded region is \(4 - \sqrt{3}\).

7. C. Use TACTIC 6: don't do more than you have to. In particular, don't solve for \(x\).

\[5x + 13 = 31 \Rightarrow 5x = 18 \Rightarrow 5x + 31 = 18 + 31 = 49 \Rightarrow \sqrt{5x + 31} = \sqrt{49} = 7.\]
8. C. Use TACTIC 6: don’t do more than is necessary. You do not need to solve this system of equations; we don’t need to know the values of \(a\) and \(b\), only their average. Adding the two equations, we get:  
\[6a + 6b = 30 \Rightarrow a + b = 5 \Rightarrow \frac{a + b}{2} = \frac{5}{2} = 2.5.\]

9. C. Use TACTIC 5: to get \(DE\), subtract \(OD\) from radius \(OE\), which is 4. Draw \(AO\) (TACTIC 4). Since \(\triangle AOD\) is a 30-60-90 right triangle, \(OD\) is 2 (one half of \(OA\)). So, \(DE = 4 - 2 = 2\).

11. B. If you don’t see how to do this, use TACTIC 2: trust the diagram. Estimate the measure of each angle: for example, \(a = 45\), \(b = 70\), \(c = 30\), and \(d = 120\). So \(c + d\) (150) is considerably greater than \(a + b\) (115). Choose B.

12. B. From the figure, it appears that \(x\) and \(y\) are equal, or nearly so. However, the given information states that \(BC > CD\), but this is not clear from the diagram. Use TACTIC 3: when you draw the figure on your scrap paper, exaggerate it. Draw it with \(BC\) much greater than \(CD\). Now it is clear that \(y\) is greater.

13. C. Use TACTIC 8. Systematically list all the factors of 30, either individually or in pairs: 1, 30; 2, 15; 3, 10; 5, 6. Of the 8 factors, 4 are even and 4 are odd.

14. A. Column A: When \(10^3 (1000)\) is divided by 3, the quotient is 333 and the remainder is 1. Column B: \(10^2\) is divisible by 5, so the remainder is 0. Column A is greater.

15. A. Column A: since \(c < d\), the quotient when \(c\) is divided by \(d\) is 0, and the remainder is \(c\). Column B: when \(d\) is divided by \(c\) the remainder must be less than \(c\). So Column A is greater.
11

Discrete Quantitative Questions

Tactics
Practice Exercises
Answer Key and Explanations

Of the 28 questions in the quantitative section, 10 are called discrete quantitative questions, which is just a fancy name for standard multiple-choice questions, similar to those that you have encountered on many other standardized tests, such as the PSAT and SAT I.

In this chapter you will learn all of the important strategies to help you answer multiple-choice questions on the GRE. However, as invaluable as these tactics are, use them only when you need them. If you know how to do a problem and are confident that you can do it accurately and reasonably quickly, JUST DO IT!

Before the first discrete quantitative question appears on the screen, you will see the following instructions:

Select the best of the answer choices given.

This one-sentence set of directions is quite simple. Unfortunately, it is also quite useless. First of all, it is misleading. It is never the case that two of the answers are bad and three are good, and you then need to choose the best answer from among the three good ones. Every quantitative multiple-choice question has exactly one correct answer and four incorrect ones. Second, the implication is that you should just solve each problem and then look at the five choices to see which one is best (i.e., correct). As you will learn in this chapter, that is not always the best strategy.

Helpful Hint
When you take the GRE, dismiss the instructions for these questions instantly — do not spend even one second reading them — and certainly never accept their offer of clicking on “HELP” to return to them during the test.

As we have done throughout this book, we will continue to label the five answer choices A, B, C, D, and E and to refer to them as such. Of course, when you take the GRE, these letters will not appear—there will simply be a blank oval in front of each of the answer choices. When we refer to Choice C—as we do, for example, in TACTIC 1 below—we are simply referring to the third answer choice among the five presented.

Testing Tactics

TACTIC 1, often called back-solving, is useful when you are asked to solve for an unknown and you understand what needs to be done to answer the question, but you want to avoid doing the algebra. The idea is simple: test the various choices to see which one is correct.

NOTE: On the GRE the answers to virtually all numerical multiple-choice questions are listed in either increasing or decreasing order. Consequently, C is the middle value, and in applying TACTIC 1, you should always start with C. For example, assume that choices A, B, C,
D, and E are given in increasing order. Try C. If it works, you've found the answer. If C doesn't work, you should know whether you need to test a larger number or a smaller one, and that permits you to eliminate two more choices. If C is too small, you need a larger number, and so A and E are out; if C is too large, eliminate D and E, which are even larger.

Examples 1 and 2 illustrate the proper use of TACTIC 1.

**Example 1.**
If the average (arithmetic mean) of 5, 6, 7, and $w$ is 10, what is the value of $w$?

(A) 8  (B) 13  (C) 18  (D) 22  (E) 28

**SOLUTION.** Use TACTIC 1. Test Choice C: $w = 18$.

- Is the average of 5, 6, 7, and 18 equal to 10?

- No: \[
\frac{5 + 6 + 7 + 18}{4} = \frac{36}{4} = 9, \text{ which is too small.}
\]
- Eliminate C, and, since for the average to be 10, $w$ must be greater than 18, eliminate A and B, as well.
- Try D: $w = 22$. Is the average of 5, 6, 7, and 22 equal to 10?

- Yes: \[
\frac{5 + 6 + 7 + 22}{4} = \frac{40}{4} = 10. \text{ The answer is D.}
\]

Every problem that can be solved using TACTIC 1 can be solved directly, usually in less time. So we stress: if you are confident that you can solve a problem quickly and accurately, just do so.

Here are two direct methods for solving Example 1, each of which is faster than backsolving. (See Section 14-E on averages.) If you know either method you should use it, and save TACTIC 1 for those problems which you can't easily solve directly.

**Direct Solution 1.** If the average of four numbers is 10, their sum is 40. So,

\[
5 + 6 + 7 + w = 40 \Rightarrow 18 + w = 40 \Rightarrow w = 22.
\]

**Direct Solution 2.** Since 5 is 5 less than 10, 6 is 4 less than 10, and 7 is 3 less than 10, to compensate, $w$ must be $5 + 4 + 3 = 12$ more than 10. So, $w = 10 + 12 = 22$.

**Example 2.**
Judy is now twice as old as Adam, but 6 years ago, she was 5 times as old as he was. How old is Judy now?

(A) 10  (B) 16  (C) 20  (D) 24  (E) 32

**SOLUTION.** Use TACTIC 1: backsolve starting with C. If Judy is now 20, Adam is 10, and 6 years ago, they would have been 14 and 4. Since Judy would have been less than 5 times as old as Adam, eliminate C, D, and E, and try a smaller value. If Judy is now 16, Adam is 8; 6 years ago, they would have been 10 and 2. That's it; 10 is 5 times 2. The answer is B.

(See Section 14-H on word problems for the correct algebraic solution.)

Some tactics allow you to eliminate a few choices so you can make an educated guess. On those problems where it can be used, TACTIC 1 always gets you the right answer. The only reason not to use it on a particular problem is that you can easily solve the problem directly.

---

**Helpful Hint**

Don't start with C if some of the other choices are much easier to work with. If you start with B and it is too small, you may only get to eliminate two choices (A and B), instead of three, but it will save time if plugging in Choice C would be messy.

---

**Example 3.**
If $3x = 2(5 - 2x)$, then $x =$

(A) $-\frac{10}{7}$  (B) 0  (C) $\frac{3}{7}$  (D) 1  (E) $\frac{10}{7}$

**SOLUTION.** Since plugging in 0 is so much easier than plugging in $\frac{3}{7}$, start with B: then the left-hand side of the equation is 0 and the right-hand side is 10. The left-hand side is much too small. Eliminate A and B and try something bigger—D, of course: it will be much easier to deal with 1 than with $\frac{3}{7}$ or $\frac{10}{7}$. Now the left-hand side is 3 and the right-hand side is 6. We're closer, but not there. The answer must be E. Notice that we got the right answer without even plugging in one of those unpleasant fractions. Are you uncomfortable choosing E without checking it? Don't be. If you know that the answer is greater than 1, and only one choice is greater than 1, that choice has to be right.

Again, we emphasize that, no matter what the choices are, you backsolve only if you can't easily do the algebra. Most students would probably do this problem directly:

\[3x = 2(5 - 2x) \Rightarrow 3x = 10 - 4x \Rightarrow 7x = 10 \Rightarrow x = \frac{10}{7}\]

and save backsolving for a harder problem. You have to determine which method is best for you.
Replace Variables with Numbers

Mastery of TACTIC 2 is critical for anyone developing good test-taking skills. This tactic can be used whenever the five choices involve the variables in the question. There are three steps:

1. Replace each letter with an easy-to-use number.
2. Solve the problem using those numbers.
3. Evaluate each of the five choices with the numbers you picked to see which choice is equal to the answer you obtained.

Examples 4 and 5 illustrate the proper use of TACTIC 2.

Example 4.
If \( a \) is equal to the sum of \( b \) and \( c \), which of the following is equal to the difference of \( b \) and \( c \)?
(A) \( a - b - c \)  (B) \( a - b + c \)  (C) \( a - c \)  
(D) \( a - 2c \)  (E) \( a - b - 2c \)

SOLUTION.

* Pick three easy-to-use numbers which satisfy \( a = b + c \); for example, \( a = 5 \), \( b = 3 \), \( c = 2 \).

* Then, solve the problem with these numbers: the difference of \( b \) and \( c \) is \( 3 - 2 = 1 \).

* Finally, check each of the five choices to see which one is equal to 1:
  (A) Does \( a - b - c = 1 \)? NO. \( 5 - 3 - 2 = 0 \)
  (B) Does \( a - b + c = 1 \)? NO. \( 5 - 3 + 2 = 4 \)
  (C) Does \( a - c = 1 \)? NO. \( 5 - 2 = 3 \)
  (D) Does \( a - 2c = 1 \)? YES! \( 5 - 2(2) = 5 - 4 = 1 \)
  (E) Does \( a - b - 2c = 1 \)? NO. \( 5 - 3 - 2(2) = 2 - 4 = -2 \)

* The answer is D.

Example 5.
If the sum of five consecutive even integers is \( t \), then, in terms of \( t \), what is the greatest of these integers?
(A) \( \frac{t - 20}{5} \)  (B) \( \frac{t - 10}{5} \)  (C) \( \frac{t}{5} \)  
(D) \( \frac{t + 10}{5} \)  (E) \( \frac{t + 20}{5} \)

SOLUTION.

* Pick five easy-to-use consecutive even integers: say, 2, 4, 6, 8, 10. Then \( t \), their sum, is 30.

* Solve the problem with these numbers: the greatest of these integers is 10.

* When \( t = 30 \), the five choices are \( \frac{12}{5}, \frac{20}{5}, \frac{30}{5}, \frac{40}{5}, \frac{50}{5} \).

* Only \( \frac{50}{5} \). Choice E, is equal to 10.

Of course, Examples 4 and 5 can be solved without using TACTIC 3 if your algebra skills are good. Here are the solutions.

Solution 4. \( a = b + c \Rightarrow b = a - c \Rightarrow b - c = (a - c) - c = a - 2c \).

Solution 5. Let \( n \), \( n + 2 \), \( n + 4 \), \( n + 6 \), and \( n + 8 \) be five consecutive even integers, and let \( t \) be their sum. Then,

\[
t = n + (n + 2) + (n + 4) + (n + 6) + (n + 8) = 5n + 20
\]

So, \( n = \frac{t - 20}{5} \Rightarrow n + 8 = \frac{t - 20}{5} + 8 = \frac{t - 20 + 40}{5} = \frac{t + 20}{5} \).

The important point is that if you can't do the algebra, you can still use TACTIC 2 and always get the right answer. Of course, you should use TACTIC 2 even if you can do the algebra, if you think that by using this tactic you will solve the problem faster or will be less likely to make a mistake. This is a good example of what we mean when we say that with the proper use of these tactics, you can correctly answer many questions for which you may not know the correct mathematical solution.

Examples 6 and 7 are somewhat different. You are asked to reason through word problems involving only variables. Most students find problems like these mind-boggling. Here, the use of TACTIC 2 is essential. Without it, Example 6 is difficult and Example 7 is nearly impossible. This is not an easy tactic to master, but with practice you will catch on.

Helpful Hint

Replace the letters with numbers that are easy to use, not necessarily ones that make sense. It is perfectly OK to ignore reality. A school can have 5 students, apples can cost 10 dollars each, trains can go 5 miles per hour or 1000 miles per hour—it doesn't matter.
Example 6.
If a school cafeteria needs $c$ cans of soup each week for each student, and if there are $s$ students in the school, for how many weeks will $x$ cans of soup last?

(A) $\frac{csx}{c}$  (B) $\frac{x}{cs}$  (C) $\frac{x}{s}$  (D) $\frac{cx}{s}$  (E) $\frac{csx}{s}$

SOLUTION.

• Replace $c$, $s$, and $x$ with three easy-to-use numbers. If a school cafeteria needs 2 cans of soup each week for each student, and if there are 5 students in the school, how many weeks will 20 cans of soup last?

• Since the cafeteria needs $2 \times 5 = 10$ cans of soup per week, 20 cans will last 2 weeks.

• Which of the choices equals 2 when $c = 2$, $s = 5$, and $x = 20$?

• $csx = 200$, $\frac{x}{s} = 50$, $\frac{csx}{c} = \frac{200}{2} = 100$, $\frac{x}{cs} = 2$; and $\frac{cx}{s} = 8$.

The answer is $\frac{x}{cs}$, D.

NOTE: You do not need to get the exact value of each choice. As soon as you see that a choice does not equal the value you are looking for, stop—eliminate that choice and move on. For example, in the preceding problem, it is clear that $csx$ is much greater than 2, so eliminate it immediately; you do not need to multiply it out to determine that the value is 200.

CAUTION: In this type of problem it is not a good idea to replace any of the variables by 1. Since multiplying and dividing by 1 give the same result, you would not be able to distinguish between $\frac{csx}{s}$ and $\frac{x}{cs}$, both of which are equal to 4 when $c = 1$, $s = 5$, and $x = 20$. It is also not a good idea to use the same number for different variables: $\frac{csx}{s}$ and $\frac{x}{cs}$ are each equal to $x$ when $c$ and $s$ are equal.

Example 7.
A vendor sells $h$ hot dogs and $s$ sodas. If a hot dog costs twice as much as a soda, and if the vendor takes in a total of $d$ dollars, how many cents does a soda cost?

(A) $\frac{100d}{s+2h}$  (B) $\frac{s+2h}{100d}$  (C) $\frac{d(s+2h)}{100}$

(D) $\frac{100d(s+2h)}{d}$  (E) $\frac{d}{100(s+2h)}$

Solution.

• Replace $h$, $s$, and $d$ with three easy-to-use numbers. Suppose a soda costs 50¢ and a hot dog $1.00. Then, if he sold 2 sodas and 3 hot dogs, he took in 4 dollars.

• Which of the choices equals 50 when $s = 2$, $h = 3$, and $d = 4$?

• Only $\frac{100d}{s+2h}$ (A): $\frac{100(4)}{2+2(3)} = \frac{400}{8} = 50$.

Now, practice TACTIC 3 on the following problems.

Example 8.
Yann will be $x$ years old $y$ years from now. How old was he $z$ years ago?

(A) $x + y + z$  (B) $x + y - z$  (C) $x - y - z$

(D) $y - x - z$  (E) $z - y - x$

Example 9.
Stan drove for $h$ hours at a constant rate of $r$ miles per hour. How many miles did he go during the final 20 minutes of his drive?

(A) $20r$  (B) $\frac{hr}{3}$  (C) $3rh$

(D) $\frac{hr}{20}$  (E) $\frac{r}{3}$

Solution 8. Assume that Yann will be 10 in 2 years. How old was he 3 years ago? If he will be 10 in 2 years, he is 8 now and 3 years ago he was 5. Which of the choices equals 5 when $x = 10$, $y = 2$, and $z = 3$? Only $x - y - z$, C.

Solution 9. If Stan drove at 60 miles per hour for 2 hours, how far did he go in the last 20 minutes? Since 20 minutes is $\frac{1}{3}$ of an hour, he went $20 \cdot \frac{1}{3}$ of 60 miles. Only $\frac{r}{3}$ is 20 when $r = 60$ and $h = 2$. Notice that $h$ is irrelevant. Whether he had been driving for 2 hours or 20 hours, the distance he covered in the last 20 minutes would be the same.
Choose an Appropriate Number

TACTIC 3 is similar to TACTIC 2, in that we pick convenient numbers. However, here no variable is given in the problem. TACTIC 3 is especially useful in problems involving fractions, ratios, and percents.

Helpful Hint
In problems involving fractions, the best number to use is the least common denominator of all the fractions. In problems involving percents, the easiest number to use is 100. (See Sections 14-B and 14-C.)

Example 10.
At Madison High School each student studies exactly one foreign language. Three-fifths of the students take Spanish, and one-fourth of the remaining students take German. If all of the others take French, what percent of the students take French?
(A) 10 (B) 15 (C) 20 (D) 25 (E) 30

SOLUTION. The least common denominator of \(\frac{3}{5}\) and \(\frac{1}{4}\) is 20, so assume that there are 20 students at Madison High. (Remember the numbers don’t have to be realistic.) The number of students taking Spanish is \(12 (\frac{3}{5} of 20)\). Of the remaining 8 students, 2 of them \(\left(\frac{1}{4}\right)\) take German. The other 6 take French. Finally, 6 is 30% of 20. The answer is E.

Example 11.
From 1994 to 1995 the sales of a book decreased by 80%. If the sales in 1996 were the same as in 1994, by what percent did they increase from 1995 to 1996?
(A) 80% (B) 100% (C) 120% (D) 400% (E) 500%

SOLUTION. Since this problem involves percents, assume that 100 copies of the book were sold in 1994 (and 1996). Sales dropped by 80 (80% of 100) to 20 in 1995 and then increased by 80, from 20 back to 100, in 1996. The percent increase was the actual increase \(\times 100\% = \frac{80}{20}\times 100\% = 400\%, D\).

Eliminate Absurd Choices and Guess

When you have no idea how to solve a problem, you are forced to guess since you can’t get to the next question until you answer and confirm the one on the screen; but first eliminate all the absurd choices. Then guess from among the remaining ones.

During the course of a GRE, you will probably find at least a few multiple-choice questions that you have no idea how to solve. Since you can’t omit them, you have to guess. But take a moment to look at the answer choices. Often two or three of them are absurd. Eliminate those and then guess one of the others. Occasionally, four of the choices are absurd. When this occurs, your answer is no longer a guess.

What makes a choice absurd? Lots of things. Here are a few. Even if you don’t know how to solve a problem you may realize that

- the answer must be positive, but some of the choices are negative;
- the answer must be even, but some of the choices are odd;
- the answer must be less than 100, but some choices exceed 100;
- a ratio must be less than 1, but some choices are greater than 1.

Let’s look at several examples. In a few of them the information given is intentionally insufficient to solve the problem; but you will still be able to determine that some of the answers are absurd. In each case the “solution” will indicate which choices you should have eliminated. At that point you would simply guess. Remember, on the GRE when you have to guess, don’t agonize. Just guess and move on.
Example 12.
A region inside a semicircle of radius \( r \) is shaded and you are asked for its area.

(A) \( \frac{1}{4} \pi r^2 \) (B) \( \frac{1}{3} \pi r^2 \) (C) \( \frac{1}{2} \pi r^2 \)
(D) \( \frac{2}{3} \pi r^2 \) (E) \( \pi r^2 \)

SOLUTION. You may have no idea how to find the area of the shaded region, but you should know that since the area of a circle is \( \pi r^2 \), the area of a semicircle is \( \frac{1}{2} \pi r^2 \). Therefore, the area of the shaded region must be less than \( \frac{1}{2} \pi r^2 \), so eliminate C, D, and E. On an actual GRE problem, you may be able to make an educated guess between A and B. If so, terrific; if not, just choose one or the other.

Example 16.
In a certain club, the ratio of the number of boys to girls is 5:3. What percent of the members of the club are girls?

(A) 37.5%  (B) 50%  (C) 60%  (D) 62.5%  (E) 80%

SOLUTION. Since there are 5 boys for every 3 girls, there are fewer girls than boys. Therefore, fewer than half (50%) of the members are girls. Eliminate B, C, D, and E. The answer is A.

Example 13.
The average (arithmetic mean) of 5, 10, 15, and \( z \) is 20. What is \( z \)?

(A) 0  (B) 20  (C) 25  (D) 45  (E) 50

SOLUTION. If the average of four numbers is 20, and three of them are less than 20, the other one must be greater than 20. Eliminate A and B and guess. If you further realize that since 5 and 10 are a lot less than 20, \( z \) will probably be a lot more than 20; eliminate C, as well.

Example 14.
If 25% of 260 equals 6.5% of \( a \), what is \( a \)?

(A) 10  (B) 65  (C) 100  (D) 130  (E) 1000

SOLUTION. Since 6.5% of \( a \) equals 25% of 260, which is surely greater than 6.5% of 260, \( a \) must be greater than 260. Eliminate A, B, C, and D. The answer must be E!

Example 14 illustrates an important point. Even if you know how to solve a problem, if you immediately see that four of the five choices are absurd, just pick the fifth choice and move on.

Example 15.
A jackpot of $39,000 is to be divided into some ratio among three people. What is the value of the largest share?

(A) $23,400  (B) $19,500  (C) $11,700  
(D) $7800  (E) $3900

SOLUTION. If the prize were divided equally, each of the three shares would be worth $13,000. If it is divided unequally, the largest share is surely worth more than $13,000. Eliminate C, D, and E. In an actual question, you would be told what the ratio is, and that might enable you to eliminate A or B. If not, you just guess.

Example 17.
In the figure at the right, four semicircles are drawn, each one centered at the midpoint of one of the sides of square \( ABCD \). Each of the four shaded “petals” is the intersection of two of the semicircles. If \( AB = 4 \), what is the total area of the shaded region?

(A) \( 8\pi - 32 \)  (B) \( 32 - 8\pi \)  (C) \( 16 - 8\pi \)  (D) \( 8\pi - 32 \)  (E) \( 8\pi - 16 \)

SOLUTION. Since the diagram is drawn to scale, you may trust it in making your estimate (TACTIC 2, Chapter 10).

• Since the shaded area appears to take up a little more than half of the square, it does.

• The area of the square is 16, and so the area of the shaded region must be about 9.

• Check each choice. Since \( \pi \) is slightly more than 3 (\( \pi \approx 3.14 \)), \( 8\pi \) is somewhat greater than 24, approximately 25.

• (A) \( 8\pi \approx 25 \). More than the area of the whole square: way too big.

• (B) \( 32 - 8\pi \approx 32 - 25 = 7 \). Too small (but close enough to consider if nothing is closer).

• (C) \( 16 - 8\pi \) is negative. Clearly impossible!

• (D) \( 8\pi - 32 \) is also negative.

• (E) \( 8\pi - 16 = 25 - 16 = 9 \). Finally! The answer is E.

NOTE: Three of the choices are absurd: A is more than the area of the entire square and C and D are negative; they can be eliminated immediately. No matter what your estimate was, at worst you had to guess between two choices.
Now use TACTIC 5 on each of the following problems. Even if you know how to solve them, don't. Practice this technique and see how many choices you can eliminate without actually solving.

Example 18.
In the figure at the right, diagonal $EG$ of square $EFGH$ is $\frac{1}{2}$ of diagonal $AC$ of the square $ABCD$. What is the ratio of the area of the shaded region to the area of $ABCD$?
(A) $\sqrt{2} : 1$ (B) $3 : 4$ (C) $\sqrt{2} : 2$
(D) $1 : 2$ (E) $1 : \sqrt{2}$

Solution 18. Obviously, the shaded region is smaller than square $ABCD$, so the ratio must be less than 1. Eliminate A. Also, from the diagram, it is clear that the shaded region is more than half of square $ABCD$, so the ratio is greater than 0.5. Eliminate D and E. Since $3:4 = 0.75$ and $\sqrt{2} : 2 = 0.71$, B and C are too close to tell which is correct just by looking, so guess. The answer is B.

Example 19.
Shari receives a commission of 25¢ for every $20.00 worth of merchandise she sells. What percent is her commission?
(A) $\frac{1}{4}$ % (B) $\frac{2}{5}$ % (C) 5%
(D) 25% (E) 125%

Solution 19. Clearly, a commission of 25¢ on $20 is quite small. Eliminate D and E and guess one of the small percents. If you realize that 1% of $20 is 20c, then you know the answer is a little more than 1%, and you should guess A (maybe B, but definitely not C). The answer is A.

Example 20.
From 1980 to 1990, Lior's weight increased by 25%. If his weight was $k$ kilograms in 1990, what was it in 1980?
(A) 1.75$k$ (B) 1.25$k$ (C) 1.20$k$
(D) 0.80$k$ (E) 0.75$k$

Solution 20. Since Lior's weight increased, his weight in 1980 was less than $k$. Eliminate A, B, and C and guess. The answer is D.

Solution 21. Since the average of all 10 numbers is negative, so is their sum. But the sum of the first 6 is positive, so the sum (and the average) of the others must be negative. Eliminate C, D, and E. B is correct.

Practice Exercises

Discrete Quantitative Questions

1. Evan has 4 times as many books as David and 5 times as many as Jason. If Jason has more than 40 books, what is the least number of books that Evan could have?
(A) 200 (B) 205 (C) 210 (D) 220 (E) 240

2. Judy plans to visit the National Gallery once each month in 2001 except in July and August when she plans to go three times each. A single admission costs $3.50, a pass valid for unlimited visits in any 3-month period can be purchased for $18, and an annual pass costs $60.00. What is the least amount, in dollars, that Judy can spend for her intended number of visits?
(A) 72 (B) 60 (C) 56 (D) 49.5 (E) 48

3. Alison is now three times as old as Jeremy, but 5 years ago, she was 5 times as old as he was. How old is Alison now?
(A) 10 (B) 12 (C) 24 (D) 30 (E) 36

4. What is the largest prime factor of 255?
(A) 5 (B) 15 (C) 17 (D) 31 (E) 255

5. If $c$ is the product of $a$ and $b$, which of the following is the quotient of $a$ and $b$?
(A) $\frac{b}{c}$ (B) $\frac{c}{b}$ (C) $\frac{b}{c}$ (D) $\frac{c}{b}$ (E) $b^2c$

6. If $w$ widgets cost $c$ cents, how many widgets can you get for $d$ dollars?
(A) $\frac{100dw}{c}$ (B) $\frac{dw}{100c}$ (C) $100cdw$
(D) $\frac{dw}{c}$ (E) $cdw$
7. If 120% of $a$ is equal to 80% of $b$, which of the following is equal to $a + b$?
   (A) 1.5$a$ (B) 2$a$ (C) 2.5$a$ (D) 3$a$ (E) 5$a$

8. In the figure at the right, $WXYZ$ is a square whose sides are 12. $AB$, $CD$, $EF$, and $GH$ are each 8, and are the diameters of the four semicircles. What is the area of the shaded region?
   (A) $144 - 128\pi$ (B) $144 - 64\pi$ (C) $144 - 32\pi$
   (D) $144 - 16\pi$ (E) $16\pi$

9. If $x$ and $y$ are integers such that $x^3 = y^3$, which of the following could not be the value of $y$?
   (A) $-1$ (B) $1$ (C) $8$ (D) $16$ (E) $27$

10. What is $a$ divided by $a\%$ of $a$?
    (A) $\frac{a}{100}$ (B) $\frac{100}{a}$ (C) $\frac{a^2}{100}$ (D) $\frac{100}{a^2}$

   \[
   Answer Key
   
   
   Answer Explanations

   Two asterisks (***) indicate an alternative method of solving.

   1. D. Test the answer choices starting with the smallest value. If Evan had 200 books, Jason would have 40. But Jason has more than 40, so 200 is too small. Trying 205 and 210, we see that neither is a multiple of 4, so David wouldn’t have a whole number of books. Finally, 220 works. (So does 240, but we shouldn’t even test it since we want the least value.)

   **Since Jason has at least 41 books, Evan has at least $41 \times 5 = 205$. But Evan’s total must be a multiple of 4 and 5, hence of 20. The smallest multiple of 20 greater than 205 is 220.

   2. D. Judy intends to go to the Gallery 16 times during the year. Buying a single admission each time would cost $16 \times \$3.50 = \$56$, which is less than the annual pass. If she bought a 3-month pass for June, July, and August, she would pay $18 plus $31.50 for 9 single admissions ($9 \times \$3.50$), for a total expense of $49.50$, which is the least expensive option.

   3. D. Use TACTIC 1: backsolve starting with C. If Alison is now 24, Jeremy is 8, and 5 years ago, they would have been 19 and 3, which is more than 5 times as much. Eliminate A, B, and C, and try a bigger value. If Alison is now 30, Jeremy is 10, and 5 years ago, they would have been 25 and 5. That’s it; 25 is 5 times 5.

   **If Jeremy is now x, Alison is 3x, and 5 years ago they were x - 5 and 3x - 5, respectively. Now, solve:
   \[
   3x - 5 = 5(x - 5) \Rightarrow 3x - 5 = 5x - 25 \Rightarrow 2x = 20 \Rightarrow x = 10 \Rightarrow 3x = 30.
   
   4. C. Test the choices starting with C: 255 is divisible by 17 ($255 = 17 \times 15$), so this is a possible answer. Does 255 have a larger prime factor? Neither Choice D nor E is prime, so the answer must be Choice C.
5. B. Use TACTIC 2. Pick simple values for \( a, b, \) and \( c. \) Let \( a = 3, b = 2, \) and \( c = 6. \) Then \( a + b = 3/2. \) Without these values of \( a, b, \) and \( c, \) only B is equal to \( 3/2. \)

** \( c - ab \Rightarrow a = c/b \Rightarrow a + b = c/b + b = c/b \cdot 1/b = c/b^2. \)**

6. A. Use TACTIC 2. If 2 widgets cost 10 cents, then widgets cost 5 cents each, and for 3 dollars, you can get 60. Which of the choices equals 60 when \( w = 2, \) \( c = 10, \) and \( d = 3? \)

Only A.

**widgets \( = \frac{w}{c} = \frac{x}{100d} \Rightarrow x = 100dhw. \)**

7. C. Since 120% of 80 = 80% of 120, let \( a = 80 \) and \( b = 120. \) Then \( a + b = 200, \) and \( 200 + 80 = 280. \)

8. C. If you don't know how to solve this, you must use TACTIC 4 and guess after eliminating the absurd choices. Which choices are absurd? Certainly, A and B, both of which are negative. Also, since Choice D is about 94, which is much more than half the area of the square, it is much too big. 

Guess between Choice C (about 43) and Choice E (about 50). If you remember that the way to find shaded areas is to subtract, guess C.

**The area of the square is \( 12^2 = 144. \) The area of each semicircle is \( \pi, \) one-half the area of a circle of radius \( 4. \) So together the areas of the semicircles is \( 32\pi. \)**

9. D. Test each choice until you find the correct answer. Could \( y = -1? \) Is there an integer \( x \) such that \( x^2 = (-1)^2 = 1? \) Yes, \( x = 1. \) Similarly, if \( y = 1, x = 1. \) Could \( y = 8? \) Is there an integer \( x \) such that \( x^2 = (8)^2 = 64? \) Yes, \( x = 4. \) Could \( y = 16? \) Is there an integer \( x \) such that \( x^2 = 16^2 = 256? \) No, \( 6^2 = 216, \) which is too small; and \( 7^2 = 343, \) which is too big. The answer is D.

10. B. \( a \div (a\% \text{ of } a) = a \div \left( \frac{a}{100} \times a \right) = a \times \frac{100}{a^2} = \frac{100}{a}. \)

**Use TACTICS 2 and 3: replace \( a \) by a number, and use 100 since the problem involves percents. \( 100 \div (100\% \text{ of } 100) = 100 \div 100 = 1. \) Test each choice; which one equals \( 1 \) when \( a = 100. \) Both A and B:\n
\[
\frac{100}{100} = 1.
\]

Eliminate Choices C, D, and E, and test A and B with another value for \( a. \)

\[
50 \div (50\% \text{ of } 50) = 50 \div (25) = 2. \text{ Now, only } B \text{ works } \left( \frac{100}{50} = 2, \text{ whereas } \frac{50}{100} = \frac{1}{2} \right).
\]

11. A. Set up a ratio:

- \( \text{distance} = \frac{36 \text{ kilometers}}{1 \text{ hour}} = \frac{36,000 \text{ meters}}{60 \text{ minutes}} = \frac{36,000 \text{ meters}}{3600 \text{ seconds}} = 10 \text{ meters/second}. \)

**Use TACTIC 1: Test choices starting with C:**

- \( 100 \text{ meters/second} = \frac{6000 \text{ meters}}{60 \text{ minutes}} = \frac{360,000 \text{ meters}}{60 \text{ minutes}} = 360 \text{ kilometers/hour}. \)

Not only is that too big, it is too big by a factor of 10. The answer is 10.

12. A. Use TACTIC 3. The LCM of all the denominators is 120, so assume that the committee has 120 members. Then there are \( 2 \times 120 = 80 \text{ men and 40 women}. \) Of the

- 80 men \( 30 \times \left( \frac{3}{8} \times 80 \right) \) are American. Since
- 72 \( \times \left( \frac{3}{5} \times 120 \right) \) French members, there are 120 - 72 = 48 Americans, of whom 30 are men, so the other 18 are women. Finally, the fraction of American \( \frac{18}{120} = \frac{3}{20}. \)

This is illustrated in the Venn diagram below.

```
Americans
18
30
50

Men
22
```

13. D. Use the laws of exponents to simplify the equation, and then solve it: \( 8^{3x-4} = 16^x \Rightarrow (2^3)^{3x-4} = (2^4)^x \Rightarrow 3(2x - 4) = 4x \Rightarrow 6x - 12 = 4x \Rightarrow 2x = 12 \Rightarrow x = 6. \)

14. B. Add the two equations:

\[
10a + 10b = 10 \Leftrightarrow a + b = 1 \Rightarrow \frac{a + b}{2} = \frac{1}{2}.
\]

Do not waste time solving for \( a \) and \( b. \)

15. C. Pick easy-to-use numbers. Since 100% of 10 is 10, let \( x = 100 \) and \( y = 10. \) When \( x = 100, \) Choices C and E are each 10. Eliminate Choices A, B, and D, and try some other numbers: 50% of 20 is 10. Of Choices C and E, only C = 20 when \( x = 50. \)
One half of the 28 questions on the quantitative section of the GRE are quantitative comparisons. It is very likely that the only time you ever encountered questions of this type before was when you were preparing for the PSAT or SAT I, in your junior or senior year of high school. Therefore, it may be at least four years since you last answered a quantitative comparison question. Even if you knew all the various strategies for answering them at the time, and it is likely that you didn't, you are probably no longer familiar with them. In this chapter you will learn all of the necessary tactics. If you master them, you will quickly realize that quantitative comparisons are the easiest mathematics questions on the GRE and will wish that there were more than 14 of them.

Before the first quantitative comparison question appears on the screen, you will see these instructions.

**Directions:** This question consists of two quantities, one in Column A and one in Column B. You are to compare the two quantities and decide whether

- the quantity in Column A is greater;
- the quantity in Column B is greater;
- the two quantities are equal;
- the relationship cannot be determined from the information given.

**Common information:** Information concerning one or both of the quantities to be compared is centered above the two columns. A symbol that appears in both columns represents the same thing in Column A as it does in Column B.

Before learning the different strategies for solving this type of question, let's clarify these instructions. In quantitative comparison questions there are two quantities, one in Column A and one in Column B, and it is your job to compare them.

<table>
<thead>
<tr>
<th>You should click on the oval in front of</th>
<th>if</th>
</tr>
</thead>
<tbody>
<tr>
<td>The quantity in Column A is greater.</td>
<td>The quantity in Column A is greater <em>all the time, no matter what.</em></td>
</tr>
<tr>
<td>The quantity in Column B is greater.</td>
<td>The quantity in Column B is greater <em>all the time, no matter what.</em></td>
</tr>
<tr>
<td>The two quantities are equal.</td>
<td>The two quantities are equal <em>all the time, no matter what.</em></td>
</tr>
<tr>
<td>The relationship cannot be determined from the information given.</td>
<td>The answer is not one of the first three choices.</td>
</tr>
</tbody>
</table>

This means, for example, that if you can find a single instance when the quantity in Column A is greater than the quantity in Column B, then you can immediately eliminate two choices: the answer cannot be "The quantity in Column B is greater," and the answer cannot be "The two quantities are equal." In order for the answer to be "The quantity in Column B is greater," the quantity in Column B would have to be greater *all the time*; but you know of one instance when it isn't. Similarly, since the quantities are not equal *all the time*, the answer can't be "The two quantities are equal." The correct answer, therefore, is either "The quantity in Column A is greater" or "The relationship cannot be determined from the information given." If it turns out that the quantity in Column A is greater all the time, then that is the answer; if, however, you can find a single instance where the quantity in Column A is not greater, the answer is "The relationship cannot be determined from the information given."
By applying the tactics that you will learn in this chapter, you will probably be able to determine which of the choices is correct; if, however, after eliminating two of the choices, you still cannot determine which answer is correct, quickly guess between the two remaining choices and move on.

**Helpful Hint**
Right now, memorize the instructions for answering quantitative comparison questions. When you take the GRE, dismiss the instructions for these questions immediately—do not spend even one second reading the directions (or looking at the sample problems).

Before learning the most important tactics for handling quantitative comparison questions, let’s look at two examples to illustrate the preceding instructions.

### Example 1.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1 &lt; x &lt; 3$</td>
<td>$x^2$ 2x</td>
</tr>
</tbody>
</table>

- The quantity in Column A is greater.
- The quantity in Column B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

**SOLUTION.** In each column, $x$ represents the same thing—a number between 1 and 3. If $x$ is 2, then $x^2$ and 2x are each 4, and in this case the two quantities are equal. We can, therefore, eliminate the first two choices: neither Column A nor Column B is greater all the time. However, in order for the correct answer to be “The two quantities are equal,” the columns would have to be equal all the time. Are they? Note that although 2 is the only integer between 1 and 3, it is not the only number between 2 and 3: $x$ could be 1.1 or 2.5 or any of infinitely many other numbers. And in those cases the quantities are not equal (For example, $2.5^2 = 6.25$, whereas $2(2.5) = 5$). The columns are not always equal, and so the correct answer is the fourth choice: “The relationship cannot be determined from the information given.”

### Example 2.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>$p$ and $q$ are primes</td>
<td>$p + q = 12$</td>
</tr>
</tbody>
</table>

- The quantity in Column A is greater.
- The quantity in Column B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

**SOLUTION.** Since 5 and 7 are the only primes whose sum is 12, $p$ could be 5 or 7. In either case, $p$ is less than 8, and so the quantity in Column B is greater, all the time. Note that although 1 + 11 = 12, $p$ cannot be 11, because 1 is not a prime [See Section 14-A].

**NOTE:** To simplify the discussion, throughout the rest of this chapter, in the explanations of the answers to all sample questions and the Model Tests, the four answer choices will be referred to as A, B, C, and D, respectively. For example, we will write

The correct answer is **B**.

rather than

The correct answer is “The quantity in Column B is greater.”

### Testing Tactics

**Tactic 1: Replace Variables with Numbers**

Many problems that are hard to analyze because they contain variables become easy to solve when the variables are replaced by simple numbers.

**TACTIC 1** is the most important tactic in this chapter. Using it properly will earn you more points on the quantitative comparison questions of the GRE than you can gain by applying any of the others. **Be sure to master it!**

Most quantitative comparison questions contain variables. When those variables are replaced by simple numbers such as 0 or 1, the quantities in the two columns become much easier to compare.

The reason that **TACTIC 1** is so important is that it guarantees that on any quantitative comparison question that involve variables, you will be able to
immediately eliminate two of the four choices, and very often a third choice as well, leaving you with at least a 50% chance of guessing correctly, and often a certainty. Try the following example, and then read the explanation very carefully.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example 3.</td>
<td></td>
</tr>
<tr>
<td>$a &lt; b &lt; c &lt; d$</td>
<td></td>
</tr>
<tr>
<td>$ab$</td>
<td>$cd$</td>
</tr>
</tbody>
</table>

**SOLUTION.**

- Replace $a$, $b$, $c$, and $d$ with easy-to-use numbers which satisfy the condition $a < b < c < d$; for example, $a = 1$, $b = 3$, $c = 5$, $d = 10$. [See the guidelines that follow to learn why 1, 2, 3, 4 is not the best choice.]

- Evaluate the two columns: $ab = (1)(3) = 3$, and $cd = (5)(10) = 60$.

- So in this case, the quantity in Column B is greater.

- Does that mean that B is the correct answer? Not necessarily. The quantity in Column B is greater this time, but will it be greater *every single time, no matter what*?

- What it does mean is that neither A nor C could possibly be the correct answer: Column A can’t be greater *every single time, no matter what* because it isn’t greater this time; and the quantities aren’t equal *every single time, no matter what* because they aren’t equal this time.

So in the few seconds that it took you to plug in 1, 3, 6, and 10 for $a$, $b$, $c$, and $d$, you were able to eliminate two of the four choices. You now know that the correct answer is either B or D, and if you could do nothing else, you would now guess with a 50% chance of being correct.

But, of course, you will do something else. You will try some other numbers. But which numbers? Since the first numbers you chose were positive, try some negative numbers this time.

- Let $a = -5$, $b = -3$, $c = -2$, and $d = -1$.

- Evaluate: $ab = (-5)(-3) = 15$ and $cd = (-2)(-1) = 2$.

- So in this case, the quantity in Column A is greater.

- Column B is *not* greater all the time. B is *not* the correct answer.

- The correct answer is D: The relationship cannot be determined from the information given.

**NOTES:**

1. If for your second substitution you had chosen 3, 7, 8, 10 or 2, 10, 20, 35 or *any* four positive numbers, Column B would have been bigger. No matter how many substitutions you made, Column B would have been bigger each time, and you would have incorrectly concluded that B was the answer. In fact, if the given condition had been $0 < a < b < c < d$, then B *would have been* the correct answer.

2. Therefore, knowing which numbers to plug in when you are using TACTIC 1 is critical. As long as you comply with the conditions written above the columns, you have complete freedom in choosing the numbers. Some choices, however, are much better than others.

Here are some guidelines for deciding which numbers to use when applying TACTIC 1.

1. **The very best numbers to use first are:** 1, 0, and -1.

2. Often, *fractions* between 0 and 1 are useful.

3. Occasionally, "large" numbers such as 10 or 100% can be used.

4. If there is more than one letter, it is permissible to replace each with the same number.

5. Do *not* impose any conditions not specifically stated. In particular, do not assume that variables must be integers. For example, 3 is not the only number that satisfies $2 < x < 4$ (2.1, 3.95, and $\pi$ all work). The expression $a < b < c < d$ does not mean that $a$, $b$, $c$, $d$ are *integers*, let alone *consecutive* integers (which is why we didn’t choose 1, 2, 3, and 4 in Example 3), nor does it mean that any or all of them are *positive*.

When you replace the variables in a quantitative comparison question with numbers, remember:

- If the value in Column A is ever greater: eliminate B and C — the answer must be A or D.
- If the value in Column B is ever greater: eliminate A and C — the answer must be B or D.
- If the two columns are ever equal: eliminate A and B — the answer must be C or D.

You have learned that, no matter how hard a quantitative comparison is, as soon as you replace the variables, two choices can *immediately* be eliminated; and if you can’t decide between the other two, just guess. This guarantees that in addition to correctly answering all the questions that you know how to solve, you will be able to answer correctly at least half, and probably many more, of the questions that you don’t know how to do.

Practice applying TACTIC 1 on these examples.
**Example 4.**

\[ m > 0 \text{ and } m \neq 1 \]

\[ m^2 \quad m^3 \]

**Example 5.**

\[ 13y \quad 15y \]

**Example 6.**

\[ w + 11 \quad w - 11 \]

**Example 7.**

The perimeter of a rectangle whose area is 18

The perimeter of a rectangle whose area is 28

**Example 8.**

\[ a = \frac{2}{3} t \quad b = \frac{5}{6} t \quad c = \frac{3}{5} b \]

\[ 3a \quad 4c \]

**SOLUTION 4.** Use TACTIC 1. Replace \( m \) with numbers satisfying \( m > 0 \) and \( m \neq 1 \).

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
<th>Compare</th>
<th>Eliminate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Let ( w = 1 )</td>
<td>1 + 11 = 12</td>
<td>1 - 11 = -10</td>
<td>A is greater</td>
</tr>
<tr>
<td>Let ( w = 0 )</td>
<td>0 + 11 = 11</td>
<td>0 - 11 = -11</td>
<td>A is greater</td>
</tr>
<tr>
<td>Let ( w = -1 )</td>
<td>-1 + 11 = 10</td>
<td>-1 - 11 = -12</td>
<td>A is greater</td>
</tr>
</tbody>
</table>

Guess A. We let \( w \) be a positive number, a negative number, and 0. Each time, Column A was greater. That's not proof, but it justifies an educated guess. [The answer is A. Clearly, 11 > -11 and if we add \( w \) to each side, we get: \( w + 11 > w - 11 \).]

**SOLUTION 7.** What's this question doing here? How can we use TACTIC 1? Where are the variables that we're supposed to replace? Well, in each column there are rectangles, and the variables are their lengths and widths.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
<th>Compare</th>
<th>Eliminate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose a rectangle whose area is 18:</td>
<td>Choose a rectangle whose area is 28:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ \boxed{9} ]</td>
<td>[ \boxed{4} ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The perimeter here is</td>
<td>The perimeter here is</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ 9 + 2 + 9 + 2 = 22 ]</td>
<td>[ 7 + 4 + 7 + 4 = 22 ]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Columns A and B are equal

A and B

Keep Column B, but take a different rectangle of area 18 in Column A:

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
<th>Compare</th>
<th>Eliminate</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ \boxed{6} ]</td>
<td>[ \boxed{3} ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perimeter = 3 + 6 + 3 + 6 = 18</td>
<td>Perimeter = 22</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The answer is D.

**SOLUTION 5.** Use TACTIC 1. There are no restrictions on \( y \), so use the best numbers: 1, 0, -1.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
<th>Compare</th>
<th>Eliminate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Let ( y = 1 )</td>
<td>13(1) = 13</td>
<td>15(1) = 15</td>
<td>A is greater</td>
</tr>
<tr>
<td>Let ( y = 0 )</td>
<td>13(0) = 0</td>
<td>15(0) = 0</td>
<td>They're equal</td>
</tr>
</tbody>
</table>

The answer is D.

**SOLUTION 6.** Use TACTIC 1. There are no restrictions on \( w \), so use the best numbers: 1, 0, -1.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
<th>Compare</th>
<th>Eliminate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Let ( t = 0 )</td>
<td>Then ( a, b, ) and ( c ) are each 0, and in this case, the columns are equal—they're both 0. Eliminate A and B. Now, try another number for ( t ). The obvious choice is 1, but then ( a, b, ) and ( c ) will all be fractions. To avoid this, let ( t = 6 ). Then, ( a = \frac{2}{3}(6) = 4, b = \frac{5}{6}(6) = 5, ) and ( c = \frac{3}{5}(5) = 3. ) This time, ( 3a = 3(4) = 12 ) and ( 4b = 4(3) = 12. ) Again, the two columns are equal. Choose C.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perimeter = 3 + 6 + 3 + 6 = 18</td>
<td>Perimeter = 22</td>
<td>B is greater</td>
<td>C</td>
</tr>
</tbody>
</table>

The answer is D.

NOTE: You should consider answering this question directly (i.e., without plugging in numbers), only if you
are very comfortable with both fractions and elementary algebra. Here's the solution:

\[ c = \frac{3}{5} b = \frac{3}{5} \left( \frac{5}{6} t \right) = \frac{1}{2} t \]

Therefore, \( 2c = t \), and \( 4c = 2t \). Since \( a = \frac{2}{3} t \), \( 3a = 2t \). So, \( 4c = 3a \). The answer is C.

---

Choose an Appropriate Number

This is just like TACTIC 1. We are replacing a variable with a number, but the variable isn't mentioned in the problem.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example 9.</strong> Every band member is either 15, 16, or 17 years old. One third of the band members are 16, and twice as many band members are 16 as 15.</td>
<td><strong>The number of 17-year-old band members</strong> <strong>The total number of 15- and 16-year-old band members</strong></td>
</tr>
</tbody>
</table>

If the first sentence of Example 9 had been "There are \( n \) students in the school band, all of whom are 15, 16, or 17 years old," the problem would have been identical to this one. Using TACTIC 1, you could have replaced \( n \) with an easy-to-use number, such as 6, and solved:

\[ \frac{1}{3} \times 2 = \text{ 2 are 16 years old}; \text{ 1 is 15}; \text{ and the remaining 3 are 17.} \]

The answer is C.

The point of TACTIC 2 is that you can plug in numbers even if there are no variables. As discussed in TACTIC 3, chapter 12, this is especially useful on problems involving percents, in which case 100 is a good number, and problems involving fractions, in which case the LCD of the fractions is a good choice. However, the use of TACTIC 2 is not limited to these situations. Try using TACTIC 2 on the following three problems.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example 10.</strong> The perimeter of a square and the circumference of a circle are equal.</td>
<td><strong>The area of the circle</strong> <strong>The area of the square</strong></td>
</tr>
</tbody>
</table>

Example 11.
Jen, Ken, and Len divided a cash prize.
Jen took 50% of the money and spent \( \frac{3}{5} \) of what she took.
Ken took 40% of the money and spent \( \frac{3}{4} \) of what he took.
The amount that Jen spent
The amount that Ken spent

Example 12.
Elaine types twice as fast as Delphine. Delphine charges 50% more per page than Elaine.

SOLUTION 10. First use TACTIC 1, chapter 10: draw a diagram.

\[ C = 2\pi(1) = 2\pi \]
\[ A = \pi(1)^2 = \pi = 3.14 \]

Then use TACTIC 2: choose an easy-to-use number. Let the radius of the circle be 1. Then its area is \( \pi \). Let \( s \) be the side of the square:

\[ 4s = 2\pi = 6 \Rightarrow s = 1.5 \Rightarrow \text{area of the square} = (1.5)^2 = 2.25 \]

The answer is A.
SOLUTION 11. Use TACTIC 2. Assume the prize was $100. Then Jen took $50 and spent \( \frac{3}{5} \times 50 = 30 \). Ken took $40 and spent \( \frac{3}{4} \times 40 = 30 \). The answer is C.

SOLUTION 12. Use TACTIC 2. Choose appropriate numbers. Assume Delphine can type 1 page per hour and Eliane can type 2. Assume Eliane charges $1.00 per page and Delphine charges $1.50. Then in 9 hours, Eliane types 18 pages, earning $18.00. In 12 hours, Delphine types 12 pages, earning \( 12 \times 1.50 = 18.00 \). The answer is C.

### Make the Problem Easier: Do the Same Thing to Each Column

A quantitative comparison question can be treated as an equation or an inequality. Either:

- Column A < Column B, or
- Column A = Column B, or
- Column A > Column B

In solving an equation or an inequality, you can always add the same quantity to each side or subtract the same quantity from each side. Similarly, in solving a quantitative comparison, you can always add the same quantity to each column or subtract the same quantity from each column. You can also multiply or divide each side of an equation or inequality by the same quantity, but in the case of inequalities you can do this only if the quantity is positive. Since you don't know whether the columns are equal or unequal, you cannot multiply or divide by a variable unless you know that it is positive. If the quantities in each column are positive you may square them or take their square roots.

To illustrate the proper use of TACTIC 3, we will give alternate solutions to three of the examples which we already solved using TACTIC 1.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example 4.</strong></td>
<td></td>
</tr>
<tr>
<td>[ m &gt; 0 \text{ and } m \neq 1 ]</td>
<td></td>
</tr>
<tr>
<td>[ m^2 ]</td>
<td>[ m^3 ]</td>
</tr>
</tbody>
</table>

| **Example 5.** | |
| \[ 13y \] | \[ 15y \] |

| **Example 6.** | |
| \[ w + 11 \] | \[ w - 11 \] |

SOLUTION 4. Divide each column by \( m^2 \) (that's \( m^2 \) is positive): Column A Column B

\[
\begin{align*}
\text{Column A} & \quad \text{Column B} \\
\frac{m^2}{m^2} - 1 & \quad \frac{m^2}{m^2} = m
\end{align*}
\]

This is a much easier comparison. Which is greater, \( m \) or 1? We don't know. We know \( m > 0 \) and \( m \neq 1 \), but it could be greater than 1 or less than 1. The answer is D.

SOLUTION 5. Subtract \( 13y - 13y = 0 \). \( 15y - 13y = 2y \) from each column:

Since there are no restrictions on \( y \), \( 2y \) could be greater than, less than, or equal to 0. The answer is D.

SOLUTION 6. Subtract \( w + 11 \) w from each column:

\[
\begin{align*}
\text{Column A} & \quad \text{Column B} \\
& - \frac{w}{11} \\
& - \frac{w}{-11}
\end{align*}
\]

Clearly, \( 11 \) is greater than \(-11\). Column A is greater.

Here are five more examples on which to practice TACTIC 3.
SOLUTION 14. Divide each column by 
\( (43 + 59)(17 - 6) \) \( (43 + 59)(17 + 6) \)
Clearly, \( (17 + 6) > (17 - 6) \). The answer is B.

SOLUTION 15. CAUTION: \( (43 - 59) \) is negative, and you may not divide the columns by a negative number. The easiest alternative: Column A, being the product of 2 negative numbers, is positive, whereas Column B is negative. Column A is greater.

SOLUTION 16. Add \( a^2 \) to each column:
\[ a^2 + a^2 = 2a^2 \]
\[ -a^2 + a^2 = 0 \]
Since \( a \) is negative, \( 2a^2 \) is positive. The answer is A.

SOLUTION 17. Square each column:
\[ \left( \frac{\sqrt{20}}{2} \right)^2 = \frac{20}{4} = 5 \]
\[ \left( \frac{5}{\sqrt{5}} \right)^2 = \frac{25}{5} = 5 \]
The answer is C.

TACTIC 4 has many applications, but is most useful when one of the columns contains a variable and the other contains a number. In this situation ask yourself, "Could they be equal?" If the answer is "yes," eliminate A and B, and then ask, "Must they be equal?" If the second answer is "yes," then C is correct; if the second answer is "no," then choose D. When the answer to "Could they be equal?" is "no," we usually know right away what the correct answer is. In both questions, "Could they be equal?" and "Must they be equal?" the word they refers, of course, to the quantities in Columns A and B.

Let's look at a few examples.

Example 20.
School A has 100 teachers and School B has 200 teachers.
Each school has more female teachers than male teachers.

Example 21.
\( (m + 1)(m + 2)(m + 3) = 720 \)

Example 22.
The perimeter of a rectangle whose area is 21
SOLUTION 18. Could they be equal? Could \( x = 5? \) Of course. That's the all-important 3-4-5 right triangle. Eliminate A and B. Must they be equal? Must \( x = 5? \) If you're not sure, try drawing an acute or an obtuse triangle. The answer is No. Actually, \( x \) can be any number satisfying: \( 1 < x < 7. \) (See KEY FACT J12, the triangle inequality, and the figure below.) The answer is D.

SOLUTION 19. Could they be equal? Could \( c = 12? \) If \( c = 12, \) then \( 5c = 60, \) so, yes, they could be equal. Eliminate A and B. Must they be equal? Must \( c = 12? \) Could \( c \) be more or less than 12? BE CAREFUL: \( 5 \times 11 = 55, \) which is too small; and \( 5 \times 13 = 65, \) which is too big. Therefore, the only integer that \( c \) could be is 12; but \( c \) does not have to be an integer. The only restriction is that \( 56 < 5c < 64. \) If \( 5c \) were 58 or 61.6 or 63, then \( c \) would not be 12. The answer is D.

SOLUTION 20. Could they be equal? Could the number of female teachers be the same in both schools? No. More than half (i.e., more than 100) of School B's 200 teachers are female, but School A has only 100 teachers in all. The answer is B.

SOLUTION 21. Could they be equal? Could \( m + 2 = 10? \) No. If \( m + 2 = 10, \) then \( m + 1 = 9 \) and \( m + 3 = 11, \) and \( 9 \times 10 \times 11 = 990, \) which is too big. The answer is not C, and since \( m + 2 \) clearly has to be smaller than 10, the answer is B.

SOLUTION 22. Could they be equal? Could a rectangle whose area is 21 have a perimeter of 20? Yes, if its length is 7 and its width is 3: \( 7 + 3 + 7 + 3 = 20. \) Eliminate A and B. Must they be equal? If you're sure that there is no other rectangle with an area of 21, then choose C; if you're not sure, guess between C and D; if you know there are other rectangles of area 21, choose D.

There are other possibilities—lots of them; here are a 7 \times 3 \) rectangle and a few other rectangles whose areas are 21:

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 37 \times 43 )</td>
<td>( 39 \times 47 )</td>
</tr>
</tbody>
</table>

Example 23 is very easy. Just multiply: \( 37 \times 43 = 1591 \) and \( 30 \times 53 = 1590. \) The answer is A.

Example 24 is even easier. Don't multiply. In far less time than it takes to do the multiplications, you can see that \( 37 < 39 \) and \( 43 < 47, \) so clearly \( 37 \times 43 < 39 \times 47. \) The answer is B. You don't get any extra credit for taking the time to determine the value of each product!

Remember: do not start calculating immediately. Always take a second or two to glance at each column. In Example 23 it's not at all clear which product is larger, so you have to multiply. In Example 24, however, no calculations are necessary.
These are problems on which poor test-takers do a lot of arithmetic and good test-takers think! Practicing TACTIC 5 will help you become a good test-taker.

Now, test your understanding of TACTIC 5 by solving these problems.

### Column A

<table>
<thead>
<tr>
<th>Example 25.</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of years from 1776 to 1929</td>
<td>The number of years from 1767 to 1992</td>
</tr>
</tbody>
</table>

### Example 26.

$$45^2 + 25^2$$

$$(45 + 25)^2$$

### Example 27.

$$45(35 + 65)$$

$$45 \times 35 + 45 \times 65$$

### Example 28.

Marianne earned a 75 on each of her first three math tests and an 80 on her fourth and fifth tests.

| Marianne’s average after 4 tests | Marianne’s average after 5 tests |

### SOLUTIONS 25–28

#### Performing the Indicated Calculations

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929 – 1776 = 153</td>
<td>1992 – 1767 = 225</td>
</tr>
<tr>
<td>The answer is B.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>$$45^2 + 25^2 = 2025 + 625 = 2650$$</td>
<td>$$(45 + 25)^2 = 70^2 = 4900$$</td>
</tr>
<tr>
<td>The answer is B.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>45(35 + 65)</td>
<td>$$45 \times 35 + 45 \times 65$$</td>
</tr>
<tr>
<td>The answer is C.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>75 + 75 + 75 + 80 = $$\frac{4}{4}$$</td>
<td>$$\frac{305}{4} = 76.25$$</td>
</tr>
<tr>
<td>Column B:</td>
<td>Column B:</td>
</tr>
<tr>
<td>$$\frac{385}{5} = 77$$</td>
<td>The answer is B.</td>
</tr>
</tbody>
</table>

### Using TACTIC 5 to Avoid the Calculations

25. The subtraction is easy enough, but why do it? The dates in Column B start earlier and end later. Clearly, they span more years. You don’t need to know how many years. The answer is B.

26. For any positive numbers a and b:

$$(a + b)^2 > a^2 + b^2$$

You should do the calculations only if you don’t know this fact. The answer is B.

27. This is just the distributive property (KEY FACT A20), which states that, for any numbers a, b, c:

$$a(b + c) = ab + ac$$

The answer is C.

28. Remember, you want to know which average is higher, not what the averages are. After 4 tests Marianne’s average is clearly less than 80, so an 80 on the fifth test had to raise her average (KEY FACT E4). The answer is B.

**CAUTION:** TACTIC 5 is important, but don’t spend a lot of time looking for ways to avoid a simple calculation.

---

**Know When to Avoid Choice D**

If the quantities in Columns A and B are both fixed numbers, the answer cannot be D.

Notice that D was not the correct answer to any of the six examples discussed under TACTIC 5. Those problems had no variables. The quantities in each column were all specific numbers. In each of the next four examples, the quantities in Columns A and B are also fixed numbers. In each case, either the two numbers are equal or one is greater than the other. It can always be determined, and so D cannot be the correct answer to any of these problems. If, while taking the GRE, you find a problem of this type that you can’t solve, just guess: A, B, or C. Now try these four examples.
**Quantitative Comparison Questions**

<table>
<thead>
<tr>
<th><strong>Column A</strong></th>
<th><strong>Column B</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example 29.</strong></td>
<td></td>
</tr>
<tr>
<td>The number of seconds in one day</td>
<td>The number of days in one century</td>
</tr>
</tbody>
</table>

| **Example 30.** |  |
| The area of a square whose sides are 4 | Twice the area of an equilateral triangle whose sides are 4 |

| **Example 31.** |  |
| Three fair coins are flipped. |  |
| The probability of getting one head | The probability of getting two heads |

| **Example 32.** |  |
| The time it takes to drive 40 miles at 35 mph | The time it takes to drive 35 miles at 40 mph |

Here's the important point to remember: don't choose D because you can't determine which quantity is bigger; choose D only if nobody could determine it. You may or may not know how to compute the number of seconds in a day, the area of an equilateral triangle, or a certain probability, but these calculations can be made.

**Solutions 29–32**

<table>
<thead>
<tr>
<th><strong>Direct Calculation</strong></th>
<th><strong>Solution Using Various TACTICS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>29.</strong> Recall the facts you need and calculate. 60 seconds = 1 minute, 60 minutes = 1 hour, 24 hours = 1 day, 365 days = 1 year, and 100 years = 1 century. Column A: 60 x 60 x 24 = 86,400 Column B: 365 x 100 = 36,500 Even if we throw in some days for leap years, the answer is clearly A.**</td>
<td><strong>29. The point of TACTIC 6 is that even if you have no idea how to calculate the number of seconds in a day, you can eliminate two choices. The answer cannot be D, and it would be an incredible coincidence if these two quantities were actually equal, so don't choose C. Guess between A and B.</strong></td>
</tr>
</tbody>
</table>

| **30.** Calculate both areas. (See KEY FACT J15 for the easy way to find the area of an equilateral triangle.) Column A: \( A = \frac{s^2}{4} = 4 \times \frac{4}{4} = 16 \) Column B: \( A = \frac{s^2}{4} = \frac{4 \times \frac{4}{3}}{4} = 4/3 \); and twice \( A \) is \( 8/3 \). Since \( \sqrt{3} \approx 1.7 \), \( 8/3 \approx 13.6 \). The answer is A. | **30. Use TACTIC 5: don't calculate—draw a diagram and then compare.** |

| **31.** When a coin is flipped 3 times, there are 8 possible outcomes: HHH, HHT, HTT, TTH, THH, THT, HTT, and TTT. Of these, 3 have one head and 3 have two heads. Each has probability is \( \frac{3}{8} \). The answer is C. | **31. Don't forget TACTIC 5. Even if you know how, you don't have to calculate the probabilities. When 3 coins are flipped, getting two heads means getting one tail. Therefore, the probability of two heads equals the probability of one tail, which by symmetry equals the probability of one head. The answer is C. (If you don't remember anything about probability, TACTIC 5 at least allows you to eliminate D before you guess.)** |

| **32.** Since \( d = rt \), \( t = \frac{d}{r} \) [see Sect. 14-H]. Column A: 40 hours—more than 35 hours Column B: 35 hours—less than 40 hours. The answer is A. | **32. You do need to know these formulas, but not for this problem. At 35 mph it takes more than an hour to drive 40 miles. At 40 mph it takes less than an hour to drive 35 miles. Choose A.** |
### Practice Exercises

#### Quantitative Comparison Questions

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(197 + 398 + 586)</td>
<td>(203 + 405 + 607)</td>
</tr>
</tbody>
</table>

1. \(x > 0\)

| 10x | \(\frac{10}{x}\) |

2. The time that it takes to type 7 pages at a rate of 6 pages per hour

| The time that it takes to type 6 pages at a rate of 7 pages per hour |

| \((c + d)^2\) | \(c^2 + d^2\) |

4. \(a, b, \) and \(c\) are the measures of the angles of isosceles triangle \(ABC\)

| The average of \(a, b,\) and \(c\) | The average of \(x, y,\) and \(z\) |

5. \(b < 0\)

| 6b | \(b^b\) |

6. The area of a circle whose radius is 17

| The area of a circle whose diameter is 35 |

7. Line \(k\) goes through \((1,1)\) and \((5,2)\).

| The slope of line \(k\) | The slope of line \(m\) |

8. \(x\) is a positive integer

| The number of multiples of 6 between 100 and \(x + 100\) | The number of multiples of 9 between 100 and \(x + 100\) |

9. Column A

\[x + y = 5\]

| Column B |

\[y - x = -5\]

10. \(y\) | 0 |

11. \(\frac{7}{8}\) | \(\left(\frac{7}{8}\right)^3\) |

\(O\) is the center of the circle of radius 6.

\(OXYZ\) is a square.

12. The area of the shaded region | 12 |

The number of square inches in the surface area of a cube is equal to the number of cubic inches in its volume.

13. The length of an edge of the cube | 6 inches |

14. \(\pi x\) | \(x^2\) |

15. \(AB = AC\) | The area of \(\triangle ABC\) | 3 |
Answer Key


Answer Explanations

The direct mathematical solution to a problem is almost always the preferable one, so it is given first. It is often followed by one or more alternate solutions, indicated by a double asterisk, based on the various tactics discussed in this chapter. Occasionally, a solution based on one of the tactics is much easier than the straightforward one. In that case, it is given first.

1. B.  This can easily be solved in less than a minute by adding, but in only 5 seconds by thinking! Use TACTIC 5: don't calculate; compare. Each of the three numbers in Column B is greater than the corresponding number in Column A.

2. D.  Use TACTIC 1. When \( x = 1 \), the columns are equal; when \( x = 2 \), they aren't.
**Use TACTIC 3

\[
\begin{array}{c|c|c}
\text{Column A} & \text{Column B} \\
10x & x \\
\end{array}
\]

Multiply each column by \( x \) (this is OK since \( x > 0 \)): \( 10x^2 \)
Divide each column by 10: \( x^2 \)

This is a much easier comparison. \( x^2 \) could equal 1, but doesn't have to. The answer is Choice D.

3. A.  You can easily calculate each of the times—by dividing 7 by 6 in Column A, and 6 by 7 in Column B. However, it is easier to just observe that the time in Column A is more than one hour, whereas the time in Column B is less than one hour.

4. B.  Use TACTIC 3

\[
\begin{array}{c|c|c}
\text{Column A} & \text{Column B} \\
(c + d)^2 = c^2 + 2cd + d^2 & c^2 + d^2 \\
\end{array}
\]

Subtract \( c^2 + d^2 \) from each column:

\[ 2cd \]

Since it is given that \( cd < 0 \), so is \( 2cd \).
**If you can't expand \((c + d)^2\), use TACTIC 1. Replace \( c \) and \( d \) with numbers satisfying \( cd < 0 \).

5. C.  The average of 3 numbers is their sum divided by 3. Since in \( \text{any} \) triangle the sum of the measures of the 3 angles is \( 180^\circ \) [KEY FACT J1], the average in each column is equal to \( 180^\circ / 3 = 60^\circ \).
**Use TACTIC 1. Pick values for the measures of the angles. For example, in isosceles \( \triangle ABC \) choose 70, 70, 40; in right \( \triangle XYZ \), choose 30, 60, 90. Each average is 60. Choose C.

6. B.  Since \( b < 0 \), \( 6b \) is negative, whereas \( b^2 \) is positive.
**Use TACTIC 1. Replace \( b \) with numbers satisfying \( b < 0 \).

\[
\begin{array}{c|c|c|c}
\text{Column A} & \text{Column B} & \text{Compare} & \text{Eliminate} \\
-1 & -6 & 6 & \text{A and C} \\
-1 & -64 & 64 & \text{A and C} \\
\end{array}
\]

Both times Column B was greater: choose B.

7. B.  Again, use TACTIC 5: don't calculate the two areas; compare them. The circle in Column A has a radius of 17, and so its diameter is 34. Since the circle in Column B has a larger diameter, its area is greater.

8. A.  Again, use TACTIC 5: don't calculate either slope. Quickly, make a rough sketch of line \( k \), going through (1,1) and (5,2), and draw line \( m \) perpendicular to it.

![Diagram](image)

Line \( k \) has a positive slope (it slopes upward), whereas line \( m \) has a negative slope (it slopes downward). Column A is greater. [Note: the slope of \( k \) is \( \frac{1}{4} \) and the slope of \( m \) is -4. See Section 14-N for all the facts you need to know about slopes.]

**If you don't know this fact about slopes, use TACTIC 6. The answer cannot be Choice D, and if two lines intersect, their slopes cannot be equal, so eliminate Choice C. Guess Choices A or B.
9. D. Every sixth integer is a multiple of 6 and every ninth integer is a multiple of 9, so in a large interval there will be many more multiples of 6. But in a very small interval, there might be none or possibly just one of each.

**Use TACTIC 1. Let \( x = 1 \). Between 100 and 101 there are no multiples of 6 and no multiples of 9. Eliminate Choices A and B. Choose a large number for \( x \); 100, for example. Between 100 and 200 there are many more multiples of 6 than there are multiples of 9. Eliminate Choice C.

10. C. Add the equations.

\[
\begin{align*}
x + y &= 5 \\
y - x &= -5
\end{align*}
\]

Since \( 2y = 0 \), \( y = 0 \).

**Use TACTIC 4. Could \( y = 0 \)? In each equation, if \( y = 0 \), then \( x = -5 \). So, \( y \) can equal 0. Eliminate Choices A and B, and either guess between Choices C and D or try to continue. Must \( y = 0 \)? Yes, when you have two linear equations in two variables, there is only one solution, so nothing else is possible.

11. A. The arithmetic is annoying and time-consuming, but not difficult. However, you can avoid the arithmetic, if you know KEY FACT A24:

If \( 0 < x < 1 \) and \( n > 1 \), then \( x^n < x \).

Since \( \frac{7}{8} < 1 \), then \( \left( \frac{7}{8} \right)^5 < \frac{7}{8} \).

12. B. The area of the shaded region is the area of quarter-circle \( AOB \) minus the area of the square. Since \( r = OA = 6 \), the area of the quarter-circle is \( \frac{1}{4} \pi r^2 = \frac{1}{4} \cdot 36\pi = 9\pi \). \( OY \), the diagonal of the square, is 6 (since it is a radius of the circle), so \( OZ \), the side of the square, is \( \frac{6}{\sqrt{2}} \) [KEY FACT J8]. So the area of the square is \( \left( \frac{6}{\sqrt{2}} \right)^2 = \frac{36}{2} = 18 \). Finally, the area of the shaded region is \( 9\pi - 18 \), which is approximately 10.

**The solution above requires several steps. [See Sections 14-1, K, L to review any of the facts used.] If you can't reason through this, you still should be able to answer this question correctly. Use TACTIC 6. The shaded region has a definite area, which is either 12, more than 12, or less than 12. Eliminate D. Also, the area of a curved region almost always involves \( \pi \), so assume the area isn’t exactly 12. Eliminate Choice C. You can now guess between Choices A and B, but if you trust the diagram and know a little bit you can improve your guess. If you know that the area of the circle is 36\( \pi \), so that the quarter-circle is \( 9\pi \) or about 28, you can estimate the shaded region. It’s well less than half of the quarter-circle, so less than 14 and probably less than 12. Guess Choice B.

13. C. Use TACTIC 4. Could the edge be 6? Test it. If each edge is 6, the area of each face is \( 6 \times 6 = 36 \), and since a cube has 6 faces, the total surface area is \( 6 \times 36 = 216 \). The volume is \( 6^3 = 216 \). So the columns could be equal. Eliminate Choices A and B. If you have a sense that this is the only cube with this property, choose C. In fact, if you had no idea how to do this, you might use TACTIC 6, assume that there is only one way, eliminate Choice D, and then guess C. The direct solution is simple enough if you know the formulas. The area is \( 6e^2 \) and the volume is \( e^3 \): \( 6e^2 = e^3 \Rightarrow 6 = e \).

14. D. There are several ways to do this. Use TACTIC 1: plug in a number for \( x \). If \( x = 2 \), Column A is \( 2\pi \), which is slightly more than 6, and Column B is \( 2^2 = 4 \). Column A is greater: eliminate Choices B and C. Must Column A be greater? If the only other number you try is \( x = 3 \), you'll think so, because \( 3^2 = 9 \), but \( 3\pi > 9 \). But remember, \( x \) does not have to be an integer; \( 3.9^2 > 15 \), whereas \( 3.9\pi < 4\pi \), which is a little over 12.

**Use TACTIC 4. Could \( \pi x = x^2 \)? Yes, if \( x = \pi \). Must \( x = \pi \)? No.

**Use TACTIC 3. Divide each side by \( x \): Now Column A is \( \pi \) and Column B is \( x \).

Which is bigger, \( \pi \) or \( x \)? We cannot tell.

15. D. Use TACTIC 4. Could the area of \( \triangle ABC = 3 \)? Since the height is 6, the area would be 3 only if the base were \( \frac{1}{2} \times 1 \times 6 = 3 \). Could \( BC = 1 \)? Sure (see the figure). Must the base be 1? Of course not.
13

Data Interpretation Questions

- Tactics
- Practice Exercises
- Answer Key and Explanations

Four of the 28 questions in the quantitative section are data interpretation questions. As their name suggests, these questions are always based on the information that is presented in some form of a graph or chart. Occasionally, the data are presented in a chart or table, but much more often, they are presented graphically. The most common types of graphs are

- line graphs
- bar graphs
- circle graphs

Data interpretation questions always appear in two sets of two questions each. For example, questions 14 and 15 might refer to a particular set of graphs or charts, and then later there will be two more questions, say numbers 22 and 23, which refer to a completely different set of graphs and charts.

When the first data interpretation question appears, one or more graphs will be on the left-hand side of the screen, and the question will be on the right-hand side. It is possible that you will have to scroll down in order to see all of the data. After you confirm your answer to the first question, the second question will replace it on the right-hand side of the screen; the graphs, of course, will still be on the left-hand side for you to refer to.

The tactics discussed in this chapter can be applied to any type of data, no matter how they are displayed. In the practice exercises at the end of the chapter, there are data interpretation questions based on every type of graph that could appear on the GRE. Carefully, read through the answer explanations for each exercise, so that you learn the best way to handle each type of graph.

Infrequently, an easy data interpretation question will require only that you read the graph and find a numerical fact that is displayed. Usually, however, you will have to do some calculation on the data that you are analyzing. In harder questions, you may be given hypothetical situations and asked to make inferences based on the information provided in the given graphs.

Testing Tactics

The four questions that follow will be used to illustrate the tactics that you should use in answering data interpretation questions. Remember, however, that on the GRE there will always be exactly two questions that refer to a particular graph or set of graphs.
Questions 1–4 refer to the following graphs.

1. What is the average (arithmetic mean) in billions of dollars of the sales of XYZ Corporation for the period 1991–1998?
   (A) 5.5  (B) 6.0  (C) 7.0  (D) 8.0  (E) 8.5

2. For which year was the percentage increase in earnings from the previous year the greatest?
   (A) 1992  (B) 1993  (C) 1994  (D) 1995  (E) 1996

3. Which of the following statements can be deduced from the data in the given charts and circle graph?
   II. Earnings for the year in which earnings were greatest were more than sales for the year in which sales were lowest.

III. If in 1998, the sales of major appliances had been 10% less, and the sales of computers had been 10% greater, the sales of major appliances would have been less than the sales of computers.
   (A) None  (B) I only  (C) III only  (D) I and III only  (E) I, II, and III

4. What was the ratio of earnings to sales in 1993?
   (A) \( \frac{1}{40} \)  (B) \( \frac{1}{25} \)  (C) \( \frac{1}{4} \)  (D) \( \frac{25}{1} \)  (E) \( \frac{40}{1} \)
First Read the Titles

When the first data interpretation question appears on the screen, do not even read it! Before you attempt to answer a data interpretation question, take 15 or 30 seconds to study the graphs. Try to get a general idea about the information that is being displayed.

Observe that the bar graphs on which questions 1–4 are based present two different sets of data. The bar graph on the left-hand side provides information about the sales of XYZ Corporation, and the right-hand graph provides information about the corporation’s earnings. Also, note that whereas sales are given in billions of dollars, earnings are given in millions of dollars. Finally, the circle graph gives a breakdown by category of the sales of XYZ Corporation for one particular year.

Don’t Confuse Percents and Numbers

Many students make mistakes on data interpretation questions because they don’t distinguish between absolute numbers and percents. Although few students would look at the circle graph shown and think that XYZ Corporation sold 25 computers in 1998, many would mistakenly think that it sold 15% more major appliances than computers.

The problem is particularly serious when the questions involve percent increases or percent decreases. In question 2 you are not asked for the year in which the increase in earnings from the previous year was the greatest. You are asked for the year in which the percent increase in earnings was the greatest. A quick glance at the right-hand graph reveals that the greatest increase occurred from 1991 to 1992 when earnings jumped by $400 million. However, when we solve this problem in the discussion of TACTIC 3, you will see that Choice A is not the correct answer.

NOTE: Since many data interpretation questions involve percents, you should carefully study Section 15-C, and be sure that you know all of the tactics for solving percent problems. In particular, always try to use the number 100 or 1000, since it is so easy to mentally calculate percents of powers of 10.

Whenever Possible, Estimate

Since you are not allowed to have a calculator when you take the GRE, you will not be expected to do complicated or lengthy calculations. Often, thinking and using some common sense can save you considerable time. For example, it may seem that in order to get the correct answer to question 2, you have to calculate five different percents. In fact, you only need to do one calculation, and that one you can do in your head!

Just looking at the Earnings bar graph, it is clear that the only possible answers are 1992, 1994, and 1995, the three years in which there was a significant increase in earnings from the year before. From 1993 to 1994 expenditures doubled, from $200 million to $400 million—an increase of 100%. From 1991 to 1992 expenditures increased by $400 million (from $500 million to $900 million), but that is less than a 100% increase (we don’t care how much less). From 1994 to 1995 expenditures increased by $300 million (from $400 million to $700 million); but again, this is less than a 100% increase. The answer is C.
**Tactic 4**

Do Each Calculation Separately

As in all Roman numeral questions, question 3 requires you to determine which of three separate statements is true. The key is to work with the statements individually.

To determine whether or not statement I is true, look at both the Sales bar graph and the circle graph. In 1998, total sales were $10 billion, and sales of major appliances accounted for 40% of the total: 40% of $10 billion = $4 billion. This exceeds the $3 billion total sales figure for 1991, so statement I is true.

In 1992, the year in which earnings were greatest, earnings were $900 million. In 1991, the year in which sales were lowest, sales were $3 billion, which is much greater than $900 million. Statement II is false.

In 1998, sales of major appliances were $4 billion. If they had been 10% less, they would have been $3.6 billion. That year, sales of computers were $2.5 billion (25% of $10 billion). If computer sales had increased by 10%, sales would have been $2.75 billion. Statement III is false.

The answer is **B**: only statement I is true.

---

**Tactic 5**

Use Only the Information Given

You must base your answer to each question only on the information in the given charts and graphs. It is unlikely that you have any preconceived notion as to the sales of XYZ Corporation, but you might think that you know the population of the United States for a particular year or the percent of women currently in the workplace.

If your knowledge contradicts any of the data presented in the graphs, ignore what you know. First of all, you may be mistaken; but more important, the data may refer to a different, unspecified location or year. In any event, always base your answers on the given data.

---

**Tactic 6**

Always Use the Proper Units

In answering question 4, observe that earnings are given in millions, while sales are in billions. If you answer too quickly, you might say that in 1993 earnings were 200 and sales were 8, and conclude that the desired ratio is \( \frac{200}{8} = \frac{25}{1} \). You will avoid this mistake if you keep track of units: earnings were 200 million dollars, whereas sales were 8 billion dollars. The correct ratio is

\[
\frac{200,000,000}{8,000,000,000} = \frac{2}{80} = \frac{1}{40}
\]

The answer is **A**.

---

**Tactic 7**

Be Sure That Your Answer Is Reasonable

Before confirming your answer, take a second to be sure that it is reasonable. For example, in question 4, Choices D and E are unreasonable. From the logic of the situation, you should realize that earnings can't
exceed sales. The desired ratio, therefore, must be less than 1. If you use the wrong units (see TACTIC 6, above), your initial thought would be to choose D. By testing your answer for reasonableness, you will realize that you made a mistake.

Remember that if you don’t know how to solve a problem, you must guess in order to move on. Before guessing, however, check to see if one or more of the choices are unreasonable. If so, eliminate them. For example, if you forget how to calculate a percent increase, you would have to guess at question 2. But before guessing wildly, you should at least eliminate Choice B, since from 1992 to 1993 earnings decreased.

**Tactic 8**

**Try to Visualize the Answer**

Because graphs and tables present data in a form that enables you to readily see relationships and to make quick comparisons, you can often avoid doing any calculations. Whenever possible, use your eye instead of your computational skills.

For example, to answer question 1, rather than reading the sales figures in the bar graph on the left for each of the eight years, adding them, and then dividing by 8, visualize the situation. Where could you draw a horizontal line across the graph so that there would be the same amount of gray area above the line as white area below it? Imagine a horizontal line drawn through the 7 on the vertical axis. The portions of the bars above the line for 1993 and 1996–1998 are just about exactly the same size as the white areas below the line for 1991, 1992, and 1994. The answer is C.

**Practice Exercises**

**Data Interpretation Questions**

On the GRE there will always be exactly two questions based on any set of graphs. Accordingly, in all the model tests in this book, there are two pairs of data interpretation questions, each pair referring to a different set of graphs. However, to illustrate the variety of questions that can be asked, in this exercise set, for some of the graphs there is only one question and for some there are three questions.

**Questions 1–2** refer to the following graphs.

**Vitamin C Content of Foods**

Source: U.S. Department of Agriculture.

**Milligrams per 100 grams**

0 50 100 150 200

**Source:** U.S. Department of Agriculture.
1. What is the ratio of the amount of Vitamin C in 500 grams of orange to the amount of Vitamin C in 500 grams of orange juice?
   (A) 4:7  (B) 1:1  (C) 7:4  (D) 2:1  (E) 4:1

2. How many grams of tomato would you have to eat to be certain of getting more Vitamin C than you would get by eating 100 grams of raw broccoli?
   (A) 300  (B) 500  (C) 750  (D) 1200  (E) 1650

**Questions 3–5 refer to the following graphs.**

**College Enrollment, by Age and Sex: 1975 and 1995**

**Motor Vehicle Theft in the U.S. Percent Change from 1994 to 1998**

3. If there were 10,000,000 college students in 1975, how many more male students were there than female students?
   (A) 800,000  (B) 1,600,000  (C) 2,400,000
   (D) 4,600,000  (E) 5,400,000

4. In 1975 what percent of female college students were at least 25 years old?
   (A) 14%  (B) 30%  (C) 45%  
   (D) 69%  (E) 76%

5. If the total number of students enrolled in college was 40% higher in 1995 than in 1975, what is the ratio of the number of male students in 1995 to the number of male students in 1975?
   (A) 5:6  (B) 6:7  (C) 7:6  (D) 6:5  (E) 7:5

**Questions 6–8 refer to the following graph.**

Motor Vehicle Theft in the U.S. Percent Change from 1994 to 1998

6. If 1,000,000 vehicles were stolen in 1994, how many were stolen in 1996?
   (A) 889,000  (B) 906,000  (C) 940,000
   (D) 1,094,000  (E) 1,100,000

7. By what percent did the number of vehicles stolen decrease from 1997 to 1998?
   (A) 7.4%  (B) 8.0%  (C) 8.4%
   (D) 12.0%  (E) 19.4%

8. To the nearest percent, by what percent did the population of the United States increase from 1994 to 1998?
   (A) 1%  (B) 2%  (C) 3%  (D) 4%  (E) 5%
Questions 9–10 refer to the following graph.

**Perceptions of Body Weight Status**

![Graph showing perceptions of body weight status]

**Actual weight status**

Perceived compared with actual weight status of adult females.

Source: U.S. Department of Agriculture.

9. What percent of underweight adult females perceive themselves to be underweight?
   (A) 5%  (B) 22%  (C) 38%  (D) 50%  (E) 70%

10. The members of which of the four groups had the least accurate perception of their body weight?
    (A) Underweight

(B) Normal weight
(C) Moderately overweight
(D) Severely overweight
(E) It cannot be determined from the information given in the graph.

Questions 11–12 refer to the tables at the bottom of the page.

Residents of New York City pay both New York State and New York City tax.

Residents of New York State who live and work outside of New York City pay only New York State tax.

11. In 1979 how much tax would a resident of New York State who lived and worked outside New York City have paid on a taxable income of $16,100?
    (A) $34  (B) $110  (C) $352  
    (D) $970  (E) $1,322

12. In 1979, how much more total tax would a resident of New York City who had a taxable income of $36,500 pay, compared to a resident of New York City who had a taxable income of $36,000?
    (A) $21.50  (B) $43  (C) $70  
    (D) $91.50  (E) $183

---

**Tax Rate Schedules for 1979**

<table>
<thead>
<tr>
<th>New York State</th>
<th>City of New York</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Taxable Income</strong></td>
<td><strong>Amount of Tax</strong></td>
</tr>
<tr>
<td>over but not over</td>
<td>of taxable income</td>
</tr>
<tr>
<td>$ 0 $1,000</td>
<td>2% of taxable income</td>
</tr>
<tr>
<td>1,000 3,000</td>
<td>$20 plus 3% of excess over $1,000</td>
</tr>
<tr>
<td>3,000 5,000</td>
<td>80 plus 4% of excess over 3,000</td>
</tr>
<tr>
<td>5,000 7,000</td>
<td>160 plus 5% of excess over 5,000</td>
</tr>
<tr>
<td>7,000 9,000</td>
<td>260 plus 6% of excess over 7,000</td>
</tr>
<tr>
<td>9,000 11,000</td>
<td>380 plus 7% of excess over 9,000</td>
</tr>
<tr>
<td>11,000 13,000</td>
<td>520 plus 8% of excess over 11,000</td>
</tr>
<tr>
<td>13,000 15,000</td>
<td>680 plus 9% of excess over 13,000</td>
</tr>
<tr>
<td>15,000 17,000</td>
<td>860 plus 10% of excess over 15,000</td>
</tr>
<tr>
<td>17,000 19,000</td>
<td>1,060 plus 11% of excess over 17,000</td>
</tr>
<tr>
<td>19,000 21,000</td>
<td>1,280 plus 12% of excess over 19,000</td>
</tr>
<tr>
<td>21,000 23,000</td>
<td>1,520 plus 13% of excess over 21,000</td>
</tr>
<tr>
<td>23,000 25,000</td>
<td>1,780 plus 14% of excess over 23,000</td>
</tr>
<tr>
<td>25,000</td>
<td>675 plus 4.3% of excess over 25,000</td>
</tr>
</tbody>
</table>
Questions 13–14 refer to the following tables.

**Years of Life Expectancy at Birth**
(Life expectancy in years)

<table>
<thead>
<tr>
<th>Year</th>
<th>Hungary</th>
<th>Norway</th>
<th>Costa Rica</th>
<th>Republic of Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1955</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1960</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1965</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1970</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1975</td>
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<tr>
<td>1980</td>
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<tr>
<td>1985</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of the Census, Center for International Research.

14. By sex and nationality, who had the greatest increase in life expectancy between 1955 and 1990?
   (A) A Korean female
   (B) A Korean male
   (C) A Costa Rican female
   (D) A Costa Rican male
   (E) A Norwegian female

**Question 15 refers to the following graph.**

**Bias-Motivated Offenses 1998**
Percent Distribution

- Disability: 0.3%
- Ethnicity: 10.0%
- Sexual Orientation: 15.8%
- Religion: 16.0%
- Multiple Bias: 0.2%
- Race: 58.0%

Source: U.S. Department of Justice, Federal Bureau of Investigation.

15. If in 1998 there were 10,000 bias-motivated offenses based on ethnicity, how many more offenses were based on religion than on sexual orientation?
   (A) 4  (B) 40  (C) 400  (D) 4000  (E) 40,000

**Answer Key**

2. E  7. C  12. D
5. C  10. A  15. C

**Answer Explanations**

1. C. According to the graph on the left, there are approximately 70 milligrams of vitamin C in 100 grams of orange and 40 milligrams in the same amount of orange juice. This is a ratio of 70:40 = 7:4. Since the question refers to the same amount of orange and orange juice (500 grams), the ratio is unchanged.

2. E. From the graph on the right, you can see that by eating 100 grams of raw broccoli, you could receive as much as 165 milligrams of vitamin C. Since 100 grams of tomato could have as little as 10 milligrams of vitamin C, you would have to eat 1650 grams of tomato to be sure of getting 165 milligrams of vitamin C.

3. A. From the top graph, we see that in 1975, 54% (35% + 19%) of all college students were male, and the other 46% were female. So there...
were 5,400,000 males and 4,600,000 females—a difference of 800,000.

4. B. In 1975, of every 100 college students, 46 were female—32 of whom were less than 25 years old, and 14 of whom were 25 years old and over. So, 14 of every 46 female students were at least 25 years old. Finally, \( \frac{14}{46} = .30 = 30\% \).

5. C. From the two graphs, we see that in 1975 54\% (35\% + 19\%) of all college students were male, whereas in 1995 the corresponding figure was 45\% (28\% + 17\%). For simplicity, assume that there were 100 college students in 1975, 54 of whom were male. Then in 1995, there were 140 college students, 63 of whom were male (45\% of 140 = 63). So the ratio of the number of male students in 1995 to the number of male students in 1975 is 63:54 = 7:6.

6. B. From 1994 to 1996 there was a 9.4\% decrease in the number of vehicles stolen. Since 9.4\% of 1,000,000 = 94,000, the number of vehicles stolen in 1996 was 1,000,000 − 94,000 = 906,000. If you can’t solve problems such as this, you have to guess. But since the number of stolen vehicles is clearly decreasing, be sure to eliminate Choices D and E first.

7. C. For simplicity, assume that 1000 vehicles were stolen in 1994. By 1997, the number had decreased by 12.0\% to 880 (12\% of 1000 = 120, and 1000 − 120 = 880); by 1998, the number had decreased 19.4\% to 806 (19.4\% of 1000 = 194 and 1000 − 194 = 806). So from 1997 to 1998, the number of vehicles stolen decreased by 74 from 880 to 806. This represents a decrease of \( \frac{74}{880} = .084 = 8.4\% \).

8. D. Simplify the situation by assuming that in 1994 the population was 100,000 and there were 1000 vehicles stolen. As in the solution to question 7, in 1998 the number of stolen vehicles was 806. At the same time, the number of thefts per 100,000 inhabitants decreased 22.4\% from 1000 to 776. So if there were 776 vehicles stolen for every 100,000 inhabitants, and 806 cars were stolen, the number of inhabitants must have increased. To know by how much, solve the proportion: \( \frac{776}{100,000} = \frac{806}{x} \). Cross-multiply: \( 776x = 80,600,000 \).

Divide by 776: \( x = 103,800 \). So for every 100,000 inhabitants in 1994, there were 103,800 in 1998, an increase of 3.8\%.

9. B. The bar representing underweight adult females who perceive themselves to be underweight extends from about 70\% to about 95\%, a range of approximately 25\%. Choice B is closest.

10. A. Almost all overweight females correctly considered themselves to be overweight; and more than half of all females of normal weight correctly considered themselves “about right.” But nearly 70\% of underweight adult females inaccurately considered themselves “about right.”

11. D. Referring only to the New York State table, we see that the amount of tax on a taxable income between $15,000 and $17,000 was $860 plus 10\% of the excess over $15,000. Therefore, the tax on $16,100 is $860 plus 10\% of $1,100 = $860 + $110 = $970.

12. D. According to the tables, each additional dollar of taxable income over $25,000 was subject to a New York State tax of 14\% and a New York City tax of 4.3\%, for a total tax of 18.3\%. Therefore, an additional $500 in taxable income would have incurred an additional tax of 0.183 \times 500 = $91.50.

13. B. In Norway, the life expectancy of a female born in 1955 was 75 years, which is greater than the life expectancy of a male born in 1990. In Hungary, the life expectancy of a female born in 1955 was 66 years, whereas the life expectancy of a male born in 1990 was greater than 67. In the other two countries, the life expectancy of a female born in 1955 was less than 65 years, and the life expectancy of a male born in 1990 was greater than 65.

14. A. The life expectancy of a Korean female born in 1955 was about 51 and in 1990 it was about 74, an increase of 23 years. This is greater than any other nationality and sex.

15. C. Since there were 10,000 bias-motivated offenses based on ethnicity, and that represents 10\% of the total, there were 100,000 bias-motivated offenses in total. Of these, 16,000 (16\% of 100,000) were based on religion, and 15,600 (15.6\% of 100,000) were based on sexual orientation. The difference is 400.
The mathematics questions on the GRE General Test require a working knowledge of mathematical principles, including an understanding of the fundamentals of algebra, plane geometry, and arithmetic, as well as the ability to translate problems into formulas and to interpret graphs. The following review covers these areas thoroughly and will prove helpful.

This chapter is divided into 15 sections, labeled 14-A through 14-O. For each question on the Diagnostic Test and the five Model Tests, the Answer Key indicates which section of Chapter 14 you should consult if you need help on a particular topic.

How much time you initially devote to reviewing mathematics should depend on your math skills. If you have always been a good math student and you have taken some math in college and remember most of your high school math, you can skip the instructional parts of this chapter for now. If while doing the model tests in PART FIVE or on the accompanying CD-ROM, you find that you keep making mistakes on certain types of problems (averages, percents, circles, solid geometry, word problems, for example), or they take you too long, you should then study the appropriate sections here. Even if your math skills are excellent, and you don't need the review, you should complete the sample questions in these sections; they are an excellent source of additional GRE questions. If you know that your math skills are not very good and you have not done much math since high school, then it is advisable to review all of this material, including working out the problems, before tackling the model tests.

No matter how good you are in math, you should carefully read and do the problems in Chapters 10, 11, 12, and 13. For many of these problems, two solutions are given: the most direct mathematical solution and a second solution using one or more of the special tactics taught in these chapters.

**ARITHMETIC**

To do well on the GRE, you need to feel comfortable with most topics of basic arithmetic. In the first five sections of Chapter 14, we will review the basic arithmetic operations, signed numbers, fractions, decimals, ratios, percents, and averages. Since the GRE uses these concepts to test your reasoning skills, not your ability to perform tedious calculations, we will concentrate on the concepts and not on arithmetic drill. The solutions to more than one-third of the mathematics questions on the GRE depend on your knowing the key facts in these sections. Be sure to review them all.

**14-A. BASIC ARITHMETIC CONCEPTS**

Let's start by reviewing the most important sets of numbers and their properties. On the GRE the word number always means real number, a number that can be represented by a point on the number line.

![Number Line Diagram](image)

Signed Numbers

The numbers to the right of 0 on the number line are called **positive** and those to the left of 0 are called **negative**. Negative numbers must be written with a negative sign (−); positive numbers can be written with a plus sign (+) but are usually written without a sign (2). All numbers can be called **signed numbers**.
### KEY FACT A1:

For any number \( a \), exactly one of the following is true:

- \( a \) is negative
- \( a = 0 \)
- \( a \) is positive

The **absolute value** of a number \( a \), denoted \(|a|\), is the distance between \( a \) and 0 on the number line. Since 3 is 3 units to the right of 0 on the number line and \(-3\) is 3 units to the left of 0, both have an absolute value of 3:

- \( |3| = 3 \)
- \( |-3| = 3 \)

Two unequal numbers that have the same absolute value are called **opposites**. So, 3 is the opposite of \(-3\) and \(-3\) is the opposite of 3.

### KEY FACT A2:

The only number that is equal to its opposite is 0.

### Example 1.

\[
a - b = -(a - b)
\]

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>( a )</td>
<td>( b )</td>
</tr>
</tbody>
</table>

**SOLUTION.** Since \(-(a - b)\) is the opposite of \( a - b \), \( a - b = 0 \), and so \( a = b \). The answer is C.

In arithmetic we are basically concerned with the addition, subtraction, multiplication, and division of numbers. The third column of the following table gives the terms for the results of these operations.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Symbol</th>
<th>Result</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addition</td>
<td>+</td>
<td>Sum</td>
<td>16 + 12 = 28</td>
</tr>
<tr>
<td>Subtraction</td>
<td>-</td>
<td>Difference</td>
<td>8 - 12 = -4</td>
</tr>
<tr>
<td>Multiplication*</td>
<td>( \times )</td>
<td>Product</td>
<td>48 + 12 = 60</td>
</tr>
<tr>
<td>Division</td>
<td>÷</td>
<td>Quotient</td>
<td>3 + 12 = 15</td>
</tr>
</tbody>
</table>

*Multiplication can be indicated also by a dot, parentheses, or the juxtaposition of symbols without any sign: \( 2^2 \cdot 2^2 \), 3(4), 3(x + 2), 3a, 4abc.

Given any two numbers \( a \) and \( b \), we can always find their sum, difference, product, and quotient, except that we may never divide by zero.

- \( 0 ÷ 7 = 0 \)
- \( 7 ÷ 0 \) is meaningless

### Example 3.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The product of the integers from (-7) to 2</td>
<td>The product of the integers from (-2) to 7</td>
</tr>
</tbody>
</table>

**SOLUTION.** Do not multiply. Each column is the product of 10 numbers, one of which is 0. So, by KEY FACT A3, each product is 0. The columns are equal (C).

### KEY FACT A4:

The product and quotient of two positive numbers or two negative numbers are positive; the product and quotient of a positive number and a negative number are negative.

\[
\begin{array}{c|c|c}
\times & + & - \\
+ & + & + \\
- & + & - \\
\end{array}
\]

\[
\begin{array}{c|c|c}
\div & + & - \\
+ & + & + \\
- & + & - \\
\end{array}
\]

\[
\begin{array}{c|c|c|c|c|c|c}
6 \times 3 = 18 & 6 \times (-3) = -18 & (-6) \times 3 = -18 & (-6) \times (-3) = 18 \\
6 \div 3 = 2 & 6 \div (-3) = -2 & (-6) \div 3 = -2 & (-6) \div (-3) = 2
\end{array}
\]

To determine whether a product of more than two numbers is positive or negative, count the number of negative factors.

### KEY FACT A5:

- The product of an **even** number of negative factors is positive.
- The product of an **odd** number of negative factors is negative.
### Example 4.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>$(-1)(2)(-3)(4)(-5)$</td>
<td>$(1)(-2)(3)(-4)(5)$</td>
</tr>
</tbody>
</table>

**SOLUTION.** *Don't waste time multiplying.* The product in Column A is negative since it has 3 negative factors, whereas the product in Column B is positive since it has 2 negative factors. The answer is B.

### KEY FACT A6:
- The **reciprocal** of any nonzero number $a$ is $\frac{1}{a}$.
- The product of any number and its reciprocal is 1:
  \[ a \times \left( \frac{1}{a} \right) = 1. \]

### KEY FACT A7:
- The sum of two positive numbers is positive.
- The sum of two negative numbers is negative.
- To find the sum of a positive and a negative number, find the difference of their absolute values and use the sign of the number with the larger absolute value.

\[
6 + 2 = 8 \quad (-6) + (-2) = -8
\]

To calculate either $6 + (-2)$ or $(-6) + 2$, take the difference, $6 - 2 = 4$, and use the sign of the number whose absolute value is 6. So,

\[
6 + (-2) = 4 \quad (-6) + 2 = -4
\]

### KEY FACT A8:

The sum of any number and its opposite is 0:

\[
a + (-a) = 0.
\]

Many of the properties of arithmetic depend on the relationship between subtraction and addition and between division and multiplication.

### KEY FACT A9:
- Subtracting a number is the same as adding its opposite.
- Dividing by a number is the same as multiplying by its reciprocal.

\[
a - b = a + (-b) \quad a + b = a \times \left( \frac{1}{b} \right)
\]

Many problems involving subtraction and division can be simplified by changing them to addition and multiplication problems, respectively.

### KEY FACT A10:

To subtract signed numbers, change the problem to an addition problem, by changing the sign of what is being subtracted, and use KEY FACT A7.

\[
2 - 6 = 2 + (-6) = -4 \quad 2 - (-6) = 2 + (6) = 8
\]

\[
(-2) - (-6) = (-2) + 6 = 4 \quad (-2) - 6 = (-2) + (-6) = -8
\]

In each case, the minus sign was changed to a plus sign, and either the 6 was changed to $-6$ or the $-6$ was changed to 6.

**Integers**

The **integers** are {..., $-4$, $-3$, $-2$, $-1$, 0, 1, 2, 3, 4, ...}.

The **positive integers** are {1, 2, 3, 4, 5, ...}.

The **negative integers** are {..., $-5$, $-4$, $-3$, $-2$, $-1$}.

**NOTE:** The integer 0 is neither positive nor negative. Therefore, if a question on the GRE asks how many positive numbers have a certain property, and the only numbers with that property are $-2$, $-1$, 0, 1, and 2, the answer is 2.

**Consecutive integers** are two or more integers written in sequence in which each integer is 1 more than the preceding integer. For example:

\[
22, 23 \quad 6, 7, 8, 9 \quad -2, -1, 0, 1 \quad n, n + 1, n + 2, n + 3
\]

**Example 5.**

If the sum of three consecutive integers is less than 75, what is the greatest possible value of the smallest one?

(A) 23 (B) 24 (C) 25 (D) 26 (E) 27

**SOLUTION.** Let the numbers be $n$, $n + 1$, and $n + 2$.

Then,

\[
n + (n + 1) + (n + 2) = 3n + 3 \Rightarrow 3n + 3 < 75 \Rightarrow 3n < 72 \Rightarrow n < 24.
\]

So, the most $n$ can be is 23 (A).

**CAUTION:** Never assume that **number** means **integer**: 3 is not the only number between 2 and 4; there are infinitely many, including 2.5, 3.99, $\frac{10}{3}$, $\pi$, and $\sqrt{10}$.

**Example 6.**

If $2 < x < 4$ and $3 < y < 7$, what is the largest integer value of $x + y$?

(A) 7 (B) 8 (C) 9 (D) 10 (E) 11
SOLUTION. If \( x \) and \( y \) are integers, the largest value is \( 3 + 6 = 9 \). However, although \( x + y \) is to be an integer, neither \( x \) nor \( y \) must be. If \( x = 3.8 \) and \( y = 6.2 \), then \( x + y = 10 \) (D).

The sum, difference, and product of two integers are always integers; the quotient of two integers may be an integer, but it is not necessarily one. The quotient \( 23 \div 10 \) can be expressed as \( \frac{23}{10} \) or \( 2.3 \) or 2.3. If the quotient is to be an integer, we can also say that the quotient is 2 and there is a remainder of 3. It depends upon our point of view. For example, if 23 dollars is to be divided among 10 people, each one will get \$2.30 (2.3 dollars); but if 23 books are to be divided among 10 people, each one will get 2 books and there will be 3 left over (the remainder).

Example 7.
How many positive integers less than 100 have a remainder of 3 when divided by 7?

SOLUTION. To leave a remainder of 3 when divided by 7, an integer must be 3 more than a multiple of 7. For example, when 73 is divided by 7, the quotient is 10 and the remainder is 3: \( 73 = 10 \times 7 + 3 \). So, just take the multiples of 7 and add 3. (Don’t forget that 0 is a multiple of 7.)

\[
\begin{align*}
0 \times 7 + 3 & = 3; \\
1 \times 7 + 3 & = 10; \\
2 \times 7 + 3 & = 17; \\
& \quad \quad \vdots \\
13 \times 7 + 3 & = 94
\end{align*}
\]

A total of 14 numbers.

If \( a \) and \( b \) are integers, the following four terms are synonymous:

- \( a \) is a divisor of \( b \)
- \( a \) is a factor of \( b \)
- \( b \) is divisible by \( a \)
- \( b \) is a multiple of \( a \)

They all mean that when \( b \) is divided by \( a \) there is no remainder (or, more precisely, the remainder is 0). For example:

- 3 is a divisor of 12
- 3 is a factor of 12
- 12 is divisible by 3
- 12 is a multiple of 3

**KEY FACT A11:**

Every integer has a finite set of factors (or divisors) and an infinite set of multiples.

The factors of 12: \(-12, -6, -4, -3, -2, -1, 1, 2, 3, 4, 6, 12\)

The multiples of 12: \(\ldots, -48, -36, -24, -12, 0, 12, 24, 36, 48, \ldots\)

The only positive divisor of 1 is 1. All other positive integers have at least 2 positive divisors: 1 and itself, and possibly many more. For example, 6 is divisible by 1 and 6, as well as 2 and 3, whereas 7 is divisible only by 1 and 7. Positive integers, such as 7, that have exactly 2 positive divisors are called prime numbers or primes. The first few primes are

\[2, 3, 5, 7, 11, 13, 17, 19, 23.\]

Memorize this list—it will come in handy. Note that 1 is not a prime.

**KEY FACT A12:**

Every integer greater than 1 that is not a prime can be written as a product of primes.

To find the prime factorization of any integer, find any two factors; if they’re both primes, you are done; if not, factor them. Continue until each factor has been written in terms of primes. A useful method is to make a factor tree.

For example, here are the prime factorizations of 108 and 240:

![Factor Trees](image)

Example 8.
For any positive integer \( a \), let \( [a] \) denote the smallest prime factor of \( a \). Which of the following is equal to \( [35] \)?

\[
\begin{align*}
(A) & \quad 10 \\
(B) & \quad 15 \\
(C) & \quad 45 \\
(D) & \quad 55 \\
(E) & \quad 75
\end{align*}
\]

SOLUTION. Check the first few primes; 35 is not divisible by 2 or 3, but is divisible by 5, so 5 is the smallest prime factor of 35: \( [35] = 5 \). Now check the five choices: \([10] = 2\), and \([15]\), \([45]\), and \([75]\) are all equal to 3. Only \([55] = 5\). The answer is D.

The least common multiple (LCM) of two or more integers is the smallest positive integer that is a multiple of each of them. For example, the LCM of 6 and 10 is 30. Infinitely many positive integers are multiples of both 6 and 10, including 60, 90, 180, 600, 6000, and 66,000,000, but 30 is the smallest one. The greatest common factor (GCF) or greatest common divisor (GCD) of two or more integers is the largest integer that is a factor of each of them. For example, the only positive integers that are factors of both 6 and 10 are 1 and 2, so the GCF of 6 and 10 is 2. For small numbers, you can often find their GCF and LCM by inspection. For larger numbers, KEY FACTS A13 and A14 are useful.


**KEY FACT A13:**

The product of the GCF and LCM of two numbers is equal to the product of the two numbers.

---

**Helpful Hint**

It is usually easier to find the GCF than the LCM. For example, you might see immediately that the GCF of 36 and 48 is 12. You could then use KEY FACT A12 to find the LCM: since \( \text{GCF} \times \text{LCM} = 36 \times 48 \), then

\[
\text{LCM} = \frac{36 \times 48}{12} = 3 
\times 48 = 144.
\]

---

**KEY FACT A14:**

To find the GCF or LCM of two or more integers, first get their prime factorizations.

- The GCF is the product of all the primes that appear in each factorization, using each prime the smallest number of times it appears in any of the factorizations.
- The LCM is the product of all the primes that appear in any of the factorizations, using each prime the largest number of times it appears in any of the factorizations.

For example, let's find the GCF and LCM of 108 and 240. As we saw:

\[108 = 2 \times 2 \times 3 \times 3 \times 3 \text{ and } 240 = 2 \times 2 \times 2 \times 2 \times 3 \times 5.\]

- **GCF.** The primes that appear in both factorizations are 2 and 3; 2 appears twice in the factorization of 108 and 4 times in the factorization of 240, so we take it twice; 3 appears 3 times in the factorization of 108, but only once in the factorization of 240, so we take it just once. The GCF is \(2 \times 2 \times 3 = 12.\)

- **LCM.** Take one of the factorizations and add to it any primes from the other that are not yet listed. So, start with \(2 \times 2 \times 3 \times 3 \times 3 \times 3 \times 3\) (108) and look at the primes from 240: there are four 2s; we already wrote two 2s, so we need two more; there is a 3 but we already have that; there is a 5, which we need. So, the LCM is \((2 \times 2 \times 3 \times 3 \times 3) \times (2 \times 2 \times 5) = 108 \times 20 = 2160.\)

---

Example 9.

What is the smallest number that is divisible by both 34 and 35?

SOLUTION. We are being asked for the LCM of 34 and 35. By KEY FACT A12, \(\text{LCM} = \frac{34 \times 35}{\text{GCF}}.\) But the GCF is 1 since no number greater than 1 divides evenly into both 34 and 35. So, the LCM is \(34 \times 35 = 1190.\)

The **even numbers** are all the multiples of 2:

\(\{..., -4, -2, 0, 2, 4, 6, ...\}\)

The **odd numbers** are the integers not divisible by 2:

\(\{..., -5, -3, -1, 1, 3, 5, ...\}\)

**NOTE:** • The terms odd and even apply only to integers.
• Every integer (positive, negative, or 0) is either odd or even.
• 0 is an even integer; it is a multiple of 2. (0 = 0 \times 2)
• 0 is a multiple of every integer. (0 = 0 \times n)
• 2 is the only even prime number.

---

**KEY FACT A15:**

The tables below summarize three important facts:

1. If two integers are both even or both odd, their sum and difference are even.
2. If one integer is even and the other odd, their sum and difference are odd.
3. The product of two integers is even unless both of them are odd.

<table>
<thead>
<tr>
<th>+ and −</th>
<th>even</th>
<th>odd</th>
<th>×</th>
<th>even</th>
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</thead>
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<tr>
<td>even</td>
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<td>odd</td>
<td>even</td>
<td>odd</td>
</tr>
</tbody>
</table>

**Exponents and Roots**

Repeated addition of the same number is indicated by multiplication:

\[17 + 17 + 17 + 17 + 17 + 17 = 7 \times 17\]

Repeated multiplication of the same number is indicated by an exponent:

\[17 \times 17 \times 17 \times 17 \times 17 \times 17 = 17^7\]

In the expression \(17^7\), 17 is called the **base** and 7 is the **exponent**.

At some time, you may have seen expressions such as \(2^{-4}, 2^2\), or even \(2^{−2}\). On the GRE, although the base, \(b\), can be any number, the only exponents you will see will be positive integers.

---

**KEY FACT A16:**

For any number \(b\): \(b^1 = b\), and \(b^n = b \times b \times ... \times b\), where \(b\) is used as a factor \(n\) times.

(i) \(2^2 \times 2^3 = (2 \times 2 \times 2 \times 2 \times 2) \times (2 \times 2) = 2^6 = 2^{5+1}\)

(ii) \(2^3 = \frac{2 \times 2 \times 2 \times 2}{2 \times 2} = 2 \times 2 = 2^2 = 2^{3-3}\)

(iii) \((2^3)^2 = (2 \times 2) \times (2 \times 2) \times (2 \times 2) = 2^6 = \frac{2^{3 \times 2}}{2^{3 \times 1}}\)

(iv) \(2^2 \times 7^2 = (2 \times 2) \times (7 \times 7) = (2 \times 7 \times 2 \times 7) = (2 \times 7)^2\)
These four examples illustrate the following important laws of exponents given in KEY FACT A17.

**KEY FACT A17:**

For any numbers \( b \) and \( c \) and positive integers \( m \) and \( n \):

(i) \( b^m b^n = b^{m+n} \)  
(ii) \( b^m / b^n = b^{m-n} \)  
(iii) \( (b^m)^n = b^{mn} \)

(iv) \( b^{m/n} = (bc)^m \)

**CAUTION:** In (i) and (ii) the bases are the same and in (iv) the exponents are the same. None of these rules applies to expressions such as \( 7^5 \times 5^7 \), in which both the bases and the exponents are different.

**Example 10.**
If \( 2^x = 32 \), what is \( x^2 \)?

(A) 5  (B) 10  (C) 25  (D) 100  (E) 1024

**SOLUTION.** To solve \( 2^x = 32 \), just count (and keep track of) how many 2s you need to multiply to get 32:

\[ 2 \times 2 \times 2 \times 2 \times 2 = 32, \text{so} \ x = 5 \text{ and} \ x^2 = 25 \ (C). \]

**Example 11.**
If \( 3^4 \times 3^5 = 3^{100} \), what is the average (arithmetic mean) of \( a \) and \( b \)?

**SOLUTION.** Since \( 3^4 \times 3^5 = 3^{a+b} \), we see that

\[ a + b = 100 \Rightarrow \frac{a + b}{2} = 50. \]

The next KEY FACT is an immediate consequence of KEY FACTS A4 and A5.

**KEY FACT A18:**

For any positive integer \( a \):

- \( 0^a = 0 \)
- if \( a \) is positive, then \( a^a \) is positive
- if \( a \) is negative and \( n \) is even, then \( a^n \) is positive
- if \( a \) is negative and \( n \) is odd, then \( a^n \) is negative.

**Squares and Square Roots**

The exponent that appears most often on the GRE is 2. It is used to form the square of a number, as in \( \pi r^2 \) (the area of a circle), \( a^2 + b^2 = c^2 \) (the Pythagorean theorem), or \( x^2 - y^2 \) (the difference of two squares). Therefore, it is helpful to recognize the **perfect squares**, numbers that are the squares of integers. The squares of the integers from 0 to 15 are as follows:

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>( x^2 )</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>9</td>
<td>16</td>
<td>25</td>
<td>36</td>
<td>49</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>( x^2 )</td>
<td>64</td>
<td>81</td>
<td>100</td>
<td>121</td>
<td>144</td>
<td>169</td>
<td>196</td>
<td>225</td>
</tr>
</tbody>
</table>

There are two numbers that satisfy the equation \( x^2 = 9 \): \( x = 3 \) and \( x = -3 \). The positive one, 3, is called the **principal** square root of 9 and is denoted by the symbol \( \sqrt{9} \). Clearly, each perfect square has a square root: \( \sqrt{0} = 0 \), \( \sqrt{36} = 6 \), \( \sqrt{81} = 9 \), and \( \sqrt{144} = 12 \). But, it is an important fact that **every** positive number has a square root.

**KEY FACT A19:**

For any positive number \( a \), there is a positive number \( b \) that satisfies the equation \( b^2 = a \). That number is called the square root of \( a \) and we write \( b = \sqrt{a} \).

So, for any positive number \( a \): \( (\sqrt{a})^2 = \sqrt{a} \times \sqrt{a} = a \).

The only difference between \( \sqrt{9} \) and \( \sqrt{10} \) is that the first square root is an integer, while the second one isn't. Since 10 is a little more than 9, we should expect that \( \sqrt{10} \) is a little more than \( \sqrt{9} = 3 \). In fact, \( (3.1)^2 = 9.61 \), which is close to 10, and \( (3.16)^2 = 9.9856 \), which is very close to 10. So, \( \sqrt{10} \approx 3.16 \). On the GRE you will never have to evaluate such a square root; if the solution to a problem involves a square root, that square root will be among the answer choices.

**Example 13.**
What is the circumference of a circle whose area is \( 10 \pi \)?

(A) \( 5 \pi \)  (B) \( 10 \pi \)  (C) \( \pi \sqrt{10} \)  (D) \( 2 \pi \sqrt{10} \)  (E) \( \pi \sqrt{20} \)

**SOLUTION.** Since the area of a circle is given by the formula \( A = \pi r^2 \), we have

\[ \pi r^2 = 10 \pi \Rightarrow r^2 = 10 \Rightarrow r = \sqrt{10}. \]

The circumference is given by the formula \( C = 2 \pi r \), so \( C = 2 \pi \sqrt{10} \) (D). (See Section 14-L on circles.)
KEY FACT A20:

For any positive numbers \( a \) and \( b \):

- \( \sqrt{ab} = \sqrt{a} \times \sqrt{b} \)
- \( \sqrt{a} \div \sqrt{b} = \frac{\sqrt{a}}{\sqrt{b}} \)

CAUTION: \( \sqrt{a + b} \neq \sqrt{a} + \sqrt{b} \). For example:

\[
5 = \sqrt{25} = \sqrt{9 + 16} \neq \sqrt{9} + \sqrt{16} = 3 + 4 = 7.
\]

CAUTION: Although it is always true that \( (\sqrt{a})^2 = a \), \( \sqrt{a^2} = a \) is true only if \( a \) is positive:

\[
\sqrt{(-5)^2} = \sqrt{25} = 5 \text{, not } -5.
\]

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \sqrt{x^{10}} )</td>
<td>((x^5)^2)</td>
</tr>
</tbody>
</table>

SOLUTION. Column A: Since \( x^{10} \cdot x^{10} = x^{20} \), \( \sqrt{x^{20}} = x^{10} \).
Column B: \((x^5)^2 = x^{10}\). The columns are equal (C).

PEMDAS

When a calculation requires performing more than one operation, it is important to carry them out in the correct order. For decades students have memorized the sentence "Please Excuse My Dear Aunt Sally," or just the first letters, PEMDAS, to remember the proper order of operations. The letters stand for:

- Parentheses: first do whatever appears in parentheses, following PEMDAS within the parentheses if necessary.
- Exponents: next evaluate all terms with exponents.
- Multiplication and Division: then do all multiplications and divisions in order from left to right—with do multiply first and then divide.
- Addition and Subtraction: finally, do all additions and subtractions in order from left to right—do not add first and then subtract.

Here are some worked-out examples:

1. \( 12 + 3 \times 2 = 12 + 6 = 18 \) [Multiply before you add.]
   \( (12 + 3) \times 2 = 15 \times 2 = 30 \) [First add in the parentheses.]

2. \( 12 + 3 \times 2 = 4 \times 2 = 8 \) [Just go from left to right.]
   \( 12 + (3 \times 2) = 12 + 6 = 2 \) [First multiply inside the parentheses.]

3. \( 5 \times 2^2 = 5 \times 8 = 40 \) [Do exponents first.]
   \( (5 \times 2)^3 = 10^3 = 1000 \) [First multiply inside the parentheses.]

4. \( 4 + 4 + (2 + 6) = 4 + 4 + 8 = 4 + 5 = 4.5 \) [First add in the parentheses, then divide, and finally add.]

5. \( 100 - 2^2(3 + 4 \times 5) = 100 - 2^2(23) = 100 - 4(23) = 100 - 92 = 8 \) [First evaluate what’s inside the parentheses (using PEMDAS); then take the exponent; then multiply; and finally subtract.]

There is an important situation when you shouldn’t start with what’s in the parentheses. Consider the following two examples.

(i) What is the value of \( 7(100 - 1) \)?

Using PEMDAS, you would write \( 7(100 - 1) = 7(99) \), and then multiply: \( 7 \times 99 = 693 \). But you can do this even quicker in your head if you think of it this way: \( 7(100 - 1) = 700 - 7 = 693 \).

(ii) What is the value of \( (77 + 49) \div 7? \)

If you followed the rules of PEMDAS, you would first add, \( 77 + 49 = 126 \), and then divide, \( 126 \div 7 = 18 \). This is definitely more difficult and time-consuming than mentally doing \( \frac{77}{7} + \frac{49}{7} = 11 + 7 = 18 \).

Both of these examples illustrate the very important distributive law.

KEY FACT A21:

The distributive law

For any real numbers \( a, b, \) and \( c \):

- \( a(b + c) = ab + ac \)
- \( a(b - c) = ab - ac \)

and if \( a \neq 0 \):

\[
\frac{b + c}{a} = \frac{b}{a} + \frac{c}{a}, \quad \frac{b - c}{a} = \frac{b}{a} - \frac{c}{a}
\]

Helpful Hint

Many students who use the distributive law with multiplication forget about it with division. Don’t you do that.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 5(a - 7) )</td>
<td>( 5a - 7 )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{50 + x}{5} )</td>
<td>( 10 + x )</td>
</tr>
</tbody>
</table>
SOLUTION 15. By the distributive law, Column A = 5a - 35. The result of subtracting 35 from a number is always less than the result of subtracting 7 from that number. Column B is greater.

SOLUTION 16.  

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 + ( \frac{x}{5} )</td>
<td>10 + x</td>
</tr>
</tbody>
</table>

By the distributive law:

Subtract 10 from each column:  
\( \frac{x}{5} \)  
\( x \)

The columns are equal if \( x = 0 \), but not if \( x = 1 \).

The answer is D.

Example 17.  
If \( a = 9 \times 8321 \) and \( b = 9 \times 7321 \), what is the value of \( a - b \)?

SOLUTION. Remember, you will never have to do tedious multiplications on the GRE, so there must be an easier way to solve this. If you think, you can do it in your head. Remember the distributive law—in far less time than it takes to write the equation on your scrap paper, you should realize that

\[
a - b = 9(8321) - 9(7321) = 9(8321 - 7321) = 9(1000) = 9000.
\]

Inequalities

The number \( a \) is greater than the number \( b \), denoted \( a > b \), if \( a \) is to the right of \( b \) on the number line. Similarly, \( a \) is less than \( b \), denoted \( a < b \), if \( a \) is to the left of \( b \) on the number line. Therefore, if \( a \) is positive, \( a > 0 \), and if \( a \) is negative, \( a < 0 \). Clearly, if \( a > b \), then \( b < a \).

The following KEY FACT gives an important alternate way to describe greater than and less than.

**KEY FACT A22:**

- For any numbers \( a \) and \( b \):  
  \( a > b \) means that \( a - b \) is positive.
- For any numbers \( a \) and \( b \):  
  \( a < b \) means that \( a - b \) is negative.

**KEY FACT A23:**

- For any numbers \( a \) and \( b \), exactly one of the following is true:  
  \( a > b \) or \( a = b \) or \( a < b \).

The symbol \( \geq \) means greater than or equal to and the symbol \( \leq \) means less than or equal to. The statement \( x \geq 5 \) means that \( x \) can be 5 or any number greater than 5; the statement \( x \leq 5 \) means that \( x \) can be 5 or any number less than 5. The statement \( 2 < x < 5 \) is an abbreviation for the statement \( 2 < x \) and \( x < 5 \). It means that \( x \) is a number between 2 and 5 (greater than 2 and less than 5).

Inequalities are very important on the GRE, especially on the quantitative comparison questions where you have to determine which of two quantities is the greater one. KEY FACTS A24 and A25 give some important facts about inequalities.

If the result of performing an arithmetic operation on an inequality is a new inequality in the same direction, we say that the inequality has been preserved. If the result of performing an arithmetic operation on an inequality is a new inequality in the opposite direction, we say that the inequality has been reversed.

**KEY FACT A24:**

- Adding a number to an inequality or subtracting a number from an inequality preserves it.
  \[
  \begin{align*}
  a < b, & \quad a + c < b + c \\
  3 < 7 \Rightarrow 3 + 100 < 7 + 100 \quad (103 < 107) \\
  3 < 7 \Rightarrow 3 - 100 < 7 - 100 \quad (-97 < -93)
  \end{align*}
  \]

- Adding inequalities in the same direction preserves them.
  \[
  \begin{align*}
  a < b \quad \text{and} \quad c < d \Rightarrow a + c < b + d. \\
  3 < 7 \quad \text{and} \quad 5 < 10 \Rightarrow 3 + 5 < 7 + 10 \quad (8 < 17)
  \end{align*}
  \]

- Multiplying or dividing an inequality by a positive number preserves it.
  \[
  \begin{align*}
  a < b, \quad \text{and} \quad c \quad \text{is positive}, & \quad a < b \quad \text{and} \quad \frac{a}{c} < \frac{b}{c} \\
  3 < 7 \Rightarrow 3 \times 100 < 7 \times 100 \quad (300 < 700) \\
  3 < 7 \Rightarrow 3 \div 100 < 7 \div 100 \quad \left( \frac{3}{100} < \frac{7}{100} \right)
  \end{align*}
  \]

- Multiplying or dividing an inequality by a negative number reverses it.
  \[
  \begin{align*}
  a < b, \quad \text{and} \quad c \quad \text{is negative}, & \quad a > b \quad \text{and} \quad \frac{a}{c} > \frac{b}{c} \\
  3 < 7 \Rightarrow 3 \times (-100) > 7 \times (-100) \quad (-300 > -700) \\
  3 < 7 \Rightarrow 3 \div (-100) > 7 \div (-100) \quad \left( \frac{-3}{100} > \frac{-7}{100} \right)
  \end{align*}
  \]

- Taking negatives reverses an inequality.
  \[
  \begin{align*}
  a < b, & \quad -a > -b \quad \text{and} \quad a > b, \quad -a < -b. \\
  3 < 7 \Rightarrow -3 > -7 \quad 7 > -3 \Rightarrow -7 < -3
  \end{align*}
  \]

- If two numbers are each positive or negative, then taking reciprocals reverses an inequality.
  \[
  \begin{align*}
  a \quad \text{and} \quad b \quad \text{are both positive or both negative and} \quad a < b, & \quad \text{then} \quad \frac{1}{a} > \frac{1}{b}. \\
  3 < 7 \Rightarrow \frac{1}{3} > \frac{1}{7} \quad -7 < -3 \Rightarrow -\frac{1}{7} > -\frac{1}{3}
  \end{align*}
  \]

**Helpful Hint**

Be sure you understand KEY FACT A24; it is very useful. Also, review the important properties listed in KEY FACTS A25 and A26. These properties come up often on the GRE.
KEY FACT A25:
Important inequalities for numbers between 0 and 1.
• If $0 < x < 1$, and $a$ is positive, then $ax < a$. For example: $.85 \times 19 < 19$.
• If $0 < x < 1$, and $m$ and $n$ are integers with $m > n$, then $x^m < x^n$.
  For example, $\left(\frac{1}{2}\right)^5 < \left(\frac{1}{2}\right)^3 < \frac{1}{2}$.
• If $0 < x < 1$, then $\sqrt{x} > x$. For example, $\sqrt{\frac{3}{4}} > \frac{3}{4}$.
• If $0 < x < 1$, then $\frac{1}{x} > x$. In fact, $\frac{1}{x} > 1$.
  For example, $\frac{1}{0.2} > 1 > 0.2$.

KEY FACT A26:
Properties of Zero
• 0 is the only number that is neither positive nor negative.
• 0 is smaller than every positive number and greater than every negative number.
• 0 is an even integer.
• 0 is a multiple of every integer.
• For every number $a$: $a + 0 = a$ and $a - 0 = a$.
• For every number $a$: $a \times 0 = 0$.
• For every positive integer $n$: $0^n = 0$.
• For every number $a$ (including 0): $a \div 0$ and $\frac{a}{0}$ are meaningless symbols. (They are undefined.)
• For every number $a$ other than 0: $0 \div a = \frac{0}{a} = 0$.
• 0 is the only number that is equal to its opposite: $0 = -0$.
• If the product of two or more numbers is 0, at least one of them is 0.

KEY FACT A27:
Properties of 1
• For any number $a$: $1 \times a = a$ and $\frac{a}{1} = a$.
• For any integer $n$: $1^n = 1$.
• 1 is a divisor of every integer.
• 1 is the smallest positive integer.
• 1 is an odd integer.
• 1 is not a prime.

PRACTICE EXERCISES—BASIC ARITHMETIC

Multiple-Choice Questions

1. For how many positive integers, $a$, is it true that $a^2 \leq 2a$?
   (A) None   (B) 1   (C) 2   (D) 4   (E) More than 4

2. If $0 < a < b < 1$, which of the following are true?
   I. $a - b$ is negative
   II. $\frac{1}{ab}$ is positive
   III. $\frac{1}{b} - \frac{1}{a}$ is positive
   (A) I only   (B) II only   (C) III only   (D) I and II only   (E) I, II, and III

3. If the product of 4 consecutive integers is equal to one of them, what is the largest possible value of one of the integers?
   (A) 0   (B) 3   (C) 4   (D) 6   (E) 24

4. At 3:00 A.M. the temperature was $13^\circ$ below zero. By noon it had risen to $32^\circ$. What was the average hourly increase in temperature?
   (A) $\left(\frac{19}{9}\right)^\circ$   (B) $\left(\frac{19}{6}\right)^\circ$   (C) $5^\circ$   (D) $7.5^\circ$
   (E) $45^\circ$

5. If $a$ and $b$ are negative, and $c$ is positive, which of the following statements are true?
   I. $a - b < a - c$
   II. If $a < b$, then $\frac{a}{c} < \frac{b}{c}$
   III. $\frac{1}{b} < \frac{1}{c}$
   (A) I only   (B) II only   (C) III only   (D) II and III only   (E) I, II, and III

6. If $-7 \leq x \leq 7$ and $0 \leq y \leq 12$, what is the greatest possible value of $y - x$?
   (A) $-19$   (B) $5$   (C) $7$   (D) $17$   (E) $19$
7. If \((7^a)(7^b) = 7^c\), what is \(d\) in terms of \(a\), \(b\), and \(c\)?

(A) \(\frac{c}{ab}\)  (B) \(c - a - b\)  (C) \(a + b - c\)  (D) \(c - ab\)  (E) \(\frac{c}{a + b}\)

8. If each of \(\star\) and \(\bullet\) can be replaced by \(+\), \(-\), or \(\times\), how many different values are there for the expression \(2 \star 2 \bullet 2\)?

(A) 4  (B) 5  (C) 6  (D) 7  (E) 9

9. A number is "terrific" if it is a multiple of 2 or 3. How many terrific numbers are there between \(-11\) and \(11\)?

(A) 6  (B) 7  (C) 11  (D) 15  (E) 17

Questions 10 and 11 refer to the following definition.
For any positive integer \(n\), \(\tau(n)\) represents the number of positive divisors of \(n\).

10. Which of the following are true?
   I. \(\tau(5) = \tau(7)\)
   II. \(\tau(5) \cdot \tau(7) = \tau(35)\)
   III. \(\tau(5) + \tau(7) = \tau(12)\)

   (A) I only  (B) II only  (C) I and II only
   (D) I and III only  (E) I, II, and III

11. What is the value of \(\tau(\tau(12))\)?

   (A) 1  (B) 2  (C) 3  (D) 4  (E) 6

12. If \(p\) and \(q\) are primes greater than 2, which of the following must be true?
   I. \(p + q\) is even
   II. \(pq\) is odd
   III. \(p^2 - q^2\) is even

   (A) I only  (B) II only  (C) I and II only
   (D) I and III only  (E) I, II, and III

13. If \(0 < x < 1\), which of the following lists the numbers in increasing order?

   (A) \(\sqrt{x}, x, x^2\)  (B) \(x^2, x, \sqrt{x}\)  (C) \(x^2, \sqrt{x}, x\)
   (D) \(x, x^2, \sqrt{x}\)  (E) \(x, \sqrt{x}, x^2\)

14. Which of the following is equal to \((7^8 \times 7^9)\)\(^{10}\)?

   (A) \(7^{40}\)  (B) \(7^{82}\)  (C) \(7^{170}\)  (D) \(49^{170}\)  (E) \(49^{20}\)

15. If \(x \circ y\) represents the number of integers greater than \(x\) and less than \(y\), what is the value of \(-\pi \circ \sqrt{2}\)?

   (A) 2  (B) 3  (C) 4  (D) 5  (E) 6

### Quantitative Comparison Questions

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The product of the</td>
<td>The product of the</td>
</tr>
<tr>
<td>odd integers between (-8) and (8)</td>
<td>even integers between (-9) and (9)</td>
</tr>
<tr>
<td>(a) and (b) are nonzero integers</td>
<td></td>
</tr>
<tr>
<td>(a + b)</td>
<td>(ab)</td>
</tr>
<tr>
<td>The remainder when (a) is divided by (7)</td>
<td>7</td>
</tr>
<tr>
<td>(\frac{2x - 17}{2})</td>
<td>(x - 17)</td>
</tr>
<tr>
<td>(n) is an integer greater than 1 that leaves()</td>
<td></td>
</tr>
<tr>
<td>a remainder of 1 when it is divided by 2, 3, 4,()</td>
<td></td>
</tr>
<tr>
<td>5, and 6</td>
<td></td>
</tr>
<tr>
<td>(n)</td>
<td>60</td>
</tr>
<tr>
<td>The number of primes that are divisible by 2</td>
<td>The number of primes that are divisible by 3</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>(n) is a positive integer</td>
<td></td>
</tr>
<tr>
<td>The number of different prime factors of (n)</td>
<td>The number of different prime factors of (n^2)</td>
</tr>
<tr>
<td>The number of even positive factors of 30</td>
<td>The number of odd positive factors of 30</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>((-10)^n)</td>
<td>((-10)^{n+1})</td>
</tr>
</tbody>
</table>
Answer Key


Answer Explanations

1. C. Since $a$ is positive, we can divide both sides of the given inequality by $a$:
   \[
   a^2 \leq 2a \Rightarrow a \leq 2 \Rightarrow a = 1 \text{ or } 2.
   \]

2. D. Since $a < b$, $a - b$ is negative (I is true).
   Since $a$ and $b$ are positive, so is their product, $ab$; and the reciprocal of a positive number is
   positive (II is true).
   \[
   \frac{1}{b} \cdot \frac{1}{a} = \frac{a - b}{ab},
   \]
   and have just seen that the numerator is negative and the denominator positive; so the value of the fraction is negative (III is false).

3. B. If all four integers were negative, their product would be positive, and so could not equal one of them. If all of the integers were positive, their product would be much greater than any of them (even $1 \times 3 \times 9 \times 14 = 94$). So, the integers must include 0, which case their product is 0. The largest set of four consecutive integers that includes 0 is 0, 1, 2, 3.

4. C. In the 9 hours from 3:00 to 12:00, the temperature rose $32 - (-13) = 32 + 13 = 45$ degrees. So, the average hourly increase was $45 \div 9 = 5$°.

5. D. Since $b$ is negative and $c$ is positive,
   \[
   b < c \Rightarrow -b > -c \Rightarrow a - b > a - c
   \]
   (I is false). Since $c$ is positive, dividing by $c$ preserves the inequality. (II is true.) Since $b$ is negative, $\frac{1}{b}$ is negative, and so is less than $\frac{1}{c}$, which is positive (III is true).

6. E. To make $y - x$ as large as possible, let $y$ be as big as possible (12), and subtract the smallest amount possible ($x = -7$): $12 - (-7) = 19$.

7. B. \(7^m \cdot 7^n = 7^{m+n}\), and \(\frac{7^c}{7^d} = 7^{c-d}\). Therefore,
   \[
   a + b = c - d \Rightarrow a + b + d = c \Rightarrow d = c - a - b
   \]

8. A. Just list the 9 possible outcomes of replacing ★ by +, −, and ×, and see that there are 4 different values: −2, 2, 6, 8.
   
   \[
   \begin{align*}
   2 + 2 + 2 &= 6 \\
   2 - 2 - 2 &= -2 \\
   2 \times 2 \times 2 &= 8 \\
   2 + 2 &- 2 = 2 \\
   2 - 2 \times 2 &= -2 \\
   2 \times 2 + 2 &= 6 \\
   2 + 2 &\times 2 = 6 \\
   2 - 2 + 2 &= 2 \\
   2 \times 2 - 2 &= 2
   \end{align*}
   \]

9. D. There are 15 "terrific" numbers: 2, 3, 4, 6, 8, 9, 10, their opposites, and 0.

10. C. Since 5 and 7 have two positive factors each,
    \(\tau(5) = \tau(7)\) (I is true.)
    Since 35 has 4 divisors (1, 5, 7, and 35) and
    \(\tau(5) \cdot \tau(7) = 2 \times 2 = 4\) (II is true.)
    Since the positive divisors of 12 are 1, 2, 3, 4, 6, and 12, \(\tau(12) = 6\), which is not equal to 2 + 2. (III is false.)

11. C. \(\tau(\tau(12)) = \tau(6) = \tau(4) = 3\)

12. E. All primes greater than 2 are odd, so \(p\) and \(q\) are odd, and \(p + q\) is even (I is true). The product of two odd numbers is odd (II is true). Since \(p\) and \(q\) are odd, so are their squares, and so the difference of the squares is even (III is true).

13. B. For any number, \(x\), between 0 and 1:
   \[
   x^2 < x < x \sqrt{x}. 
   \]

14. C. First, multiply inside the parentheses:
    \(7^a \cdot 7^b = 7^{a+b}\); then, raise to the 10th power:
    \((7^{a+b})^{10} = 7^{10a+10b}\).

15. D. There are 5 integers (1, 0, −1, −2, −3) that are greater than −3.14 (−π) and less than 1.41 (√2).

16. A. Since the product in Column A has 4 negative factors (−7, −5, −3, −1), it is positive. The product in Column B also has 4 negative factors, but be careful—it also has the factor 0, and so Column B is 0.

17. D. If \(a\) and \(b\) are each 1, then \(a + b = 2\), and \(ab = 1\); so, Column A is greater. But, if \(a\) and \(b\) are each 3, \(a + b = 6\), and \(ab = 9\), and Column B is greater.

18. B. The remainder is always less than the divisor.

19. A. According to PEMDAS, you divide and multiply from left to right (do not do the multiplication first): \(24 \div 6 \times 4 = 4 \times 4 = 16\).

20. A. By the distributive law,
    \[
    \frac{2x - 17}{2} = \frac{2x}{2} - \frac{17}{2} = x - 8.5, \text{ which is greater than } x - 17 \text{ (the larger the number you subtract, the smaller the difference.)}
    \]
21. A. The LCM of 2, 3, 4, 5, 6 is 60; and all multiples of 60 are divisible by each of them. So, n could be 61 or 1 more than any multiple of 60.

22. C. The only prime divisible by 2 is 2, and the only prime divisible by 3 is 3. The number in each column is 1.

23. C. If you make a factor tree for \( n^2 \), the first branches would be \( n \) and \( n \). Now, when you factor each \( n \), you get exactly the same prime factors. (See the example below.)

\[
\begin{array}{c}
20 \\
\downarrow \\
4 \\
\downarrow \\
2 \\
\downarrow \\
4 \\
\downarrow \\
2 \\
\downarrow \\
5 \\
\downarrow \\
20^2 = 400 \\
\downarrow \\
4 \\
\downarrow \\
2 \\
\downarrow \\
4 \\
\downarrow \\
2 \\
\downarrow \\
5 \\
\end{array}
\]

24. C. Just list the factors of 30: 1, 2, 3, 5, 6, 10, 15, 30. Four of them are odd and four are even.

25. D. If \( n \) is even, then \( n + 1 \) is odd, and consequently \((-10)^n\) is positive, whereas \((-10)^{n+1}\) is negative. If \( n \) is odd, exactly the opposite is true.

### 14-B. FRACTIONS AND DECIMALS

Several questions on the GRE involve fractions or decimals. The 23 KEY FACTS in this section cover all of the important facts you need to know for the GRE.

When a whole is divided into \( n \) equal parts, each part is called one \( \frac{1}{n} \) of the whole, written \( \frac{1}{n} \). For example, if a pizza is cut (divided) into 8 equal slices, each slice is one eighth \( \left( \frac{1}{8} \right) \) of the pizza; a day is divided into 24 equal hours, so an hour is one twenty-fourth \( \left( \frac{1}{24} \right) \) of a day; and an inch is one twelfth \( \left( \frac{1}{12} \right) \) of a foot.

- If Donna slept for 5 hours, she slept for five twenty-fourths \( \left( \frac{5}{24} \right) \) of a day.
- If Taryn bought 8 slices of pizza, she bought eight eighths \( \left( \frac{8}{8} \right) \) of a pie.
- If Avila's shelf is 30 inches long, it measures thirty twelfths \( \left( \frac{30}{12} \right) \) of a foot.

Numbers such as \( \frac{5}{24}, \frac{8}{8}, \frac{30}{12} \), in which one integer is written over a second integer, are called fractions. The center line is called the fraction bar. The number above the bar is called the **numerator**, and the number below the bar is called the **denominator**.

**CAUTION:** The denominator of a fraction can never be 0.

- A fraction, such as \( \frac{5}{24} \), in which the numerator is less than the denominator, is called a **proper fraction**. Its value is less than 1.

- A fraction, such as \( \frac{30}{12} \), in which the numerator is more than the denominator, is called an **improper fraction**. Its value is greater than 1.

- A fraction, such as \( \frac{8}{8} \), in which the numerator and denominator are the same, is also improper, but it is equal to 1.

It is useful to think of the fraction bar as a symbol for division. If three pizzas are divided equally among eight people, each person gets \( \frac{3}{8} \) of a pizza. If you actually divide 3 by 8, you get that \( \frac{3}{8} = 0.375 \).

**KEY FACT 7:**

Every fraction, proper or improper, can be expressed in decimal form (or as a whole number) by dividing the numerator by the denominator.

\[
\frac{3}{10} = 0.3 \quad \frac{3}{4} = 0.75 \quad \frac{5}{8} = 0.625 \quad \frac{3}{16} = 0.1875
\]

\[
\frac{8}{8} = 1 \quad \frac{11}{8} = 1.375 \quad \frac{48}{16} = 3 \quad \frac{100}{8} = 12.5
\]

Note that any number beginning with a decimal point can be written with a 0 to the left of the decimal point. In fact, some calculators will express \( 3 \div 8 \) as \( .375 \), whereas others will print 0.375.

Unlike the examples above, when most fractions are converted to decimals, the division does not terminate after 2 or 3 or 4 decimal places; rather it goes on forever with some set of digits repeating itself.

\[
\frac{2}{3} = 0.666666... \quad \frac{3}{11} = 0.272727... \quad \frac{5}{12} = 0.416666...
\]

\[
\frac{17}{15} = 1.133333...
\]

However, on the GRE, you do not need to be concerned with this. On both multiple-choice and quantitative comparison questions, all numbers written as decimals terminate.
Comparing Fractions and Decimals

**KEY FACT B2:**

To compare two decimals, follow these rules.

- Whichever number has the greater number to the left of the decimal point is greater: since 11 > 9, 11.001 > 9.896 and since 1 > 0, 1.234 > 0.8. (Recall that if a decimal is written without a number to the left of the decimal point, you may assume that a 0 is there. So, 1.234 > .8.)

- If the numbers to the left of the decimal point are equal (or if there are no numbers to the left of the decimal point), proceed as follows:
  1. If the numbers do not have the same number of digits to the right of the decimal point, add zeros to the end of the shorter one.
  2. Now, compare the numbers **ignoring** the decimal point.

For example, to compare 1.83 and 1.823, add a 0 to the end of 1.83, forming 1.830. Now compare them, **thinking of them as whole numbers**: since, 1830 > 1823, then 1.830 > 1.823.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>.2139</td>
<td>.239</td>
</tr>
</tbody>
</table>

**SOLUTION.** Do not think that Column A is greater because 2139 > 239. Be sure to add a 0 to the end of .239 (forming .2390) before comparing. Now, since 2390 > 2139, Column **B** is greater.

**KEY FACT B3:**

There are two methods of comparing fractions:

1. Convert them to decimals (by dividing), and use **KEY FACT B2**.
2. Cross-multiply.

For example, to compare \( \frac{1}{3} \) and \( \frac{3}{8} \), we have two choices:

1. Write \( \frac{1}{3} = .3333... \) and \( \frac{3}{8} = .375 \). Since .375 > .333, then \( \frac{3}{8} > \frac{1}{3} \).
2. Cross-multiply:
   \[
   \frac{1}{3} \times 8 > \frac{3}{8} \times 3 \quad \text{Since} \ 3 \times 3 > 8 \times 1, \text{then} \ \frac{3}{8} > \frac{1}{3}.
   \]

**KEY FACT B4:**

When comparing fractions, there are three situations in which it is easier just to **look** at the fractions, and not use either method in **KEY FACT B3**.

1. **If the fractions have the same denominator**, the fraction with the larger numerator is greater. Just as \( \frac{9}{10} > \frac{7}{10} \), and \( \frac{9}{7} > \frac{7}{9} \), and \( \frac{7}{10} > \frac{7}{10} \).

2. **If the fractions have the same numerator**, the fraction with the smaller denominator is greater. If you divide a cake into 5 equal pieces, each piece is larger than the pieces you would get if you had divided the cake into 10 equal pieces: \( \frac{1}{5} > \frac{1}{10} \), and similarly \( \frac{3}{5} > \frac{3}{10} \).

3. **Sometimes the fractions are so familiar or easy to work with**, you just know the answer. For example, \( \frac{3}{4} > \frac{1}{5} \) and \( \frac{11}{20} > \frac{1}{2} \) (since \( \frac{10}{20} = \frac{1}{2} \)).

**KEY FACT B5:**

**KEY FACTS B2, B3, and B4 apply to positive decimals and fractions.**

- Clearly, any positive number is greater than any negative number:
  \[
  \frac{1}{2} > -\frac{1}{5} \quad \text{and} \quad 0.123 > -2.56
  \]
- For negative decimals and fractions, use **KEY FACT A24**, which states that if \( a > b \), then \(-a < -b\):
  \[
  \frac{1}{2} > \frac{1}{5} \Rightarrow -\frac{1}{2} < -\frac{1}{5} \quad \text{and} \quad .83 > .829 \Rightarrow -.83 < -.829
  \]

**Example 2.**

Which of the following lists the fractions \( \frac{2}{3}, \frac{5}{8}, \text{and} \ \frac{13}{20} \) in order from least to greatest?

(A) \( \frac{2}{3}, \frac{5}{8}, \frac{13}{20} \) (B) \( \frac{5}{8}, \frac{2}{3}, \frac{13}{20} \) (C) \( \frac{5}{8}, \frac{13}{20}, \frac{2}{3} \) (D) \( \frac{13}{20}, \frac{5}{8}, \frac{2}{3} \) (E) \( \frac{13}{20}, \frac{2}{3}, \frac{5}{8} \)

**SOLUTION.** Quickly, convert each to a decimal, writing down the first few decimal places: \( \frac{2}{3} = .666 \),
\[
\frac{5}{8} = 0.625, \quad \text{and} \quad \frac{13}{20} = 0.65. \quad \text{It is now easy to order the decimals:} \quad 0.625 < 0.650 < 0.666. \quad \text{The answer is C.}
\]

**Alternative solution.** Cross-multiply.

- Since \(8 \times 2 > 3 \times 5\), then \(\frac{2}{3} > \frac{5}{8}\).
- Since \(8 \times 13 > 20 \times 5\), then \(\frac{13}{20} > \frac{5}{8}\).
- Since \(20 \times 2 > 3 \times 13\), then \(\frac{2}{3} > \frac{13}{20}\).

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0 &lt; x &lt; y)</td>
<td>(\frac{1}{x} - \frac{1}{y})</td>
</tr>
</tbody>
</table>

**SOLUTION.** By KEY FACT B4, \(x < y \Rightarrow \frac{1}{x} > \frac{1}{y}\), and so by KEY FACT A22, \(\frac{1}{x} - \frac{1}{y}\) is positive. Column A is greater.

**Equivalent Fractions**

If Bill and Al shared a pizza, and Bill ate \(\frac{1}{2}\) of the pizza and Al ate \(\frac{4}{8}\) of it, they had exactly the same amount.

We express this idea by saying that \(\frac{1}{2}\) and \(\frac{4}{8}\) are **equivalent fractions**; they have the exact same value.

![Pizza diagram](Image)

**NOTE:** If you multiply both the numerator and denominator of \(\frac{1}{2}\) by 4 you get \(\frac{4}{8}\); and if you divide both the numerator and denominator of \(\frac{4}{8}\) by 4 you get \(\frac{1}{2}\). This illustrates the next KEY FACT.

**KEY FACT B6:**

Two fractions are equivalent if multiplying or dividing both the numerator and denominator of the first one by the same number gives the second one.

Consider the following two cases.

1. When the numerator and denominator of \(\frac{3}{8}\) are each multiplied by 15, the products are \(3 \times 15 = 45\) and \(8 \times 15 = 120\). Therefore, \(\frac{3}{8}\) and \(\frac{45}{120}\) are equivalent fractions.

2. Since 2 must be multiplied by 14 to get 28, but 3 must be multiplied by 15 to get 45, then \(\frac{2}{3}\) and \(\frac{28}{45}\) are not equivalent fractions.

**KEY FACT B7:**

To determine if two fractions are equivalent, cross-multiply. The fractions are equivalent if and only if the two products are equal.

For example, since \(120 \times 3 = 8 \times 45\), then \(\frac{3}{8}\) and \(\frac{45}{120}\) are equivalent.

Since \(45 \times 2 \times 3 = 28\), then \(\frac{2}{3}\) and \(\frac{28}{45}\) are not equivalent fractions.

A fraction is in **lowest terms** if no positive integer greater than 1 is a factor of both the numerator and denominator. For example, \(\frac{9}{20}\) is in lowest terms, since no integer greater than 1 is a factor of both 9 and 20; but \(\frac{9}{24}\) is not in lowest terms, since 3 is a factor of both 9 and 24.

**KEY FACT B8:**

Every fraction can be **reduced** to lowest terms by dividing the numerator and the denominator by their greatest common factor (GCF). If the GCF is 1, the fraction is already in lowest terms.

**Example 4.**

For any positive integer \(n\): \(n!\) means the product of all the integers from 1 to \(n\). What is the value of \(\frac{5!}{8!}\)?

\[
\text{(A) } \frac{1}{56} \quad \text{(B) } \frac{1}{48} \quad \text{(C) } \frac{1}{8} \quad \text{(D) } \frac{1}{4} \quad \text{(E) } \frac{3}{4}
\]

**SOLUTION.** Clearly, you do not want to calculate 6! (1·2·3·4·5·6 = 720) and 8! (1·2·3·4·5·6·7·8 = 40,320) and then have to reduce \(\frac{720}{40,320}\). Here's the easy solution:

\[
\frac{6!}{8!} = \frac{6 \times 5 \times 4 \times 3 \times 2 \times 1}{8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1} = \frac{1}{8 \times 7} = \frac{1}{56}
\]
Arithmetic Operations with Decimals

**KEY FACT B9:**

To add or subtract decimal numbers, make sure that the decimal points are lined up, and then add or subtract normally, ignoring the decimal points. Finally, place a decimal point in the answer immediately below the other decimal points.

For example, \(3.2 + 7 + 1.125 = 11.325\) and \(3.456 - 1.28 = 2.176\)

\[
\begin{array}{c}
3.2 \\
7. \\
+ 1.125 \\
\hline
11.325
\end{array}
\quad
\begin{array}{c}
3.456 \\
- 1.28 \\
\hline
2.176
\end{array}
\]

**KEY FACT B10:**

To multiply decimal numbers, multiply normally, ignoring the decimal points. Then count the total number of digits to the right of the decimal points in both factors, and place a decimal point in the product that many places from the right.

For example, \(2.6 \times 3.14 = 8.164\)

\[
\begin{array}{c}
3.14 \text{ (two decimal places)} \\
\times 2.6 \text{ (one decimal place)} \\
\hline
628 \\
8.164 \text{ (three decimal places)}
\end{array}
\]

**KEY FACT B11:**

To divide decimal numbers, count the number of digits to the right of the decimal point in the divisor, and move the decimal point in both the divisor and the dividend that many places to the right (adding zeros if necessary). Now, divide normally and if there is a decimal point in the dividend, place a decimal place in the quotient directly above the one in the dividend.

For example, \(35 \div 1.25 = 28\) and \(.035 \div 1.25 = .028\)

\[
\begin{array}{c}
35 \div 1.25 = 28 \\
1.25 \div 0.035 = 0.028
\end{array}
\]

Multiplying and dividing by powers of 10 is particularly easy and can be accomplished just by moving the decimal point.

**KEY FACT B12:**

To multiply any decimal or whole number by a power of 10, move the decimal point as many places to the right as there are 0s in the power of 10, filling in with 0s, if necessary.

\[
\begin{array}{c}
1.35 \times 10 = 13.5 \\
1.35 \times 100 = 135 \\
1.35 \times 1000 = 1350
\end{array}
\]

\[
\begin{array}{c}
23 \times 10 = 230 \\
23 \times 100 = 2300 \\
23 \times 1,000,000 = 23,000,000
\end{array}
\]

**KEY FACT B13:**

To divide any decimal or whole number by a power of 10, move the decimal point as many places to the left as there are 0s in the power of 10, filling in with 0s, if necessary.

\[
\begin{array}{c}
67.8 \div 10 = 6.78 \\
67.8 \div 100 = 0.678 \\
67.8 \div 1000 = 0.0678
\end{array}
\]

\[
\begin{array}{c}
14 \div 10 = 1.4 \\
14 \div 100 = 0.14 \\
14 \div 1,000,000 = 0.000014
\end{array}
\]

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.75 \times 10^4</td>
<td>37,500,000 \div 10^4</td>
</tr>
</tbody>
</table>

SOLUTION. In Column A, move the decimal point 4 places to the right: \(37,500\). In Column B, move the decimal point 3 places to the left: \(37,500\). The answer is C.

Arithmetic Operations with Fractions

**KEY FACT B14:**

To multiply two fractions, multiply their numerators and multiply their denominators:

\[
\frac{3}{5} \times \frac{4}{7} = \frac{3 \times 4}{5 \times 7} = \frac{12}{35}
\]
**KEY FACT B15:**

To multiply a fraction by any other number, write that number as a fraction whose denominator is 1:

\[
\frac{3}{5} \times 7 = \frac{3}{5} \times \frac{7}{1} = \frac{21}{5}
\]

\[
\frac{3}{4} \times \pi = \frac{3}{4} \times \frac{\pi}{1} = \frac{3\pi}{4}
\]

**TACTIC B1**

Before multiplying fractions, reduce. You may reduce by dividing any numerator and any denominator by a common factor.

**Example 6.**

Express the product, \(\frac{3}{4} \times \frac{8}{9} \times \frac{15}{16}\), in lowest terms.

**SOLUTION.** If you multiply the numerators and denominators you get \(\frac{360}{376}\), which is a nuisance to reduce. It is better to use TACTIC B1 and reduce first:

\[
\frac{3}{4} \times \frac{8}{9} \times \frac{15}{16} = \frac{1 \times 1 \times 5}{4 \times 1 \times 2} = \frac{5}{8}
\]

**TACTIC B2**

When a problem requires you to find a fraction of a number, multiply.

**Example 7.**

If \(\frac{4}{7}\) of the 350 sophomores at Monroe High School are girls, and \(\frac{7}{8}\) of them play on a team, how many sophomore girls do not play on a team?

**SOLUTION.** There are \(\frac{4}{7} \times 350 = 200\) sophomore girls.

Of these, \(\frac{7}{8} \times 200 = 175\) play on a team. So, \(200 - 175 = 25\) do not play on a team.

The **reciprocal** of any nonzero number \(x\) is that number \(y\) such that \(xy = 1\). Since \(x \times \left(\frac{1}{x}\right) = 1\), then \(\frac{1}{x}\) is the reciprocal of \(x\). Similarly, the reciprocal of the fraction \(\frac{a}{b}\) is the fraction \(\frac{b}{a}\), since \(\frac{a}{b} \times \frac{b}{a} = 1\).

**KEY FACT B16:**

To divide any number by a fraction, multiply that number by the reciprocal of the fraction:

\[
\frac{20}{3} \div \frac{2}{1} = \frac{20}{3} \times \frac{1}{2} = \frac{30}{6} = \frac{5}{1} = 5
\]

\[
\frac{3}{5} \div \frac{3}{2} = \frac{3}{5} \times \frac{2}{3} = \frac{6}{15} = \frac{2}{5}
\]

\[
\sqrt{\frac{2}{3}} \div \frac{3}{2} = \sqrt{\frac{2}{3}} \times \frac{3}{2} = \frac{\sqrt{2}}{\sqrt{3}} \times \frac{3}{2} = \frac{\sqrt{6}}{2}
\]

**Example 8.**

In the meat department of a supermarket, 100 pounds of chopped meat was divided into packages, each of which weighed \(\frac{4}{7}\) of a pound. How many packages were there?

**SOLUTION.** \(100 \div \frac{4}{7} = 100 \times \frac{7}{4} = 175\)

**KEY FACT B17:**

- To add or subtract fractions with the same denominator, add or subtract the numerators and keep the denominator:

\[
\frac{4}{9} + \frac{1}{9} = \frac{5}{9}
\]

- To add or subtract fractions with different denominators, first rewrite the fractions as equivalent fractions with the same denominators:

\[
\frac{1}{6} + \frac{3}{4} = \frac{2}{12} + \frac{9}{12} = \frac{11}{12}
\]

NOTE: The easiest common denominator to find is the product of the denominators \((6 \times 4 = 24\), in this example), but the best denominator to use is the **least common denominator**, which is the least common multiple (LCM) of the denominators \(12\), in this case). Using the least common denominator minimizes the amount of reducing that is necessary to express the answer in lowest terms.

**KEY FACT B18:**

If \(\frac{a}{b}\) is the fraction of a whole that satisfies some property, then \(1 - \frac{a}{b}\) is the fraction of that whole that does not satisfy it.
Example 9.

In a jar, \( \frac{1}{2} \) of the marbles are red, \( \frac{1}{4} \) are white, and \( \frac{1}{5} \) are blue. What fraction of the marbles are neither red, white, nor blue?

SOLUTION. The red, white, and blue marbles constitute

\[
\frac{1}{2} + \frac{1}{4} + \frac{1}{5} = \frac{10}{20} + \frac{5}{20} + \frac{4}{20} = \frac{19}{20}
\]

of the total, so

\[
1 - \frac{19}{20} = \frac{20}{20} - \frac{19}{20} = \frac{1}{20}
\]

of the marbles are neither red, white, nor blue.

Example 10.

Lindsay ate \( \frac{1}{3} \) of a cake and Emily ate \( \frac{1}{4} \) of it. What fraction of the cake was still uneaten?

Example 11.

Lindsay ate \( \frac{1}{3} \) of a cake and Emily ate \( \frac{1}{4} \) of what was left. What fraction of the cake was still uneaten?

CAUTION: Be sure to read questions carefully. In Example 10, Emily ate \( \frac{1}{4} \) of the cake, in Example 11, however, she only ate \( \frac{1}{4} \) of the \( \frac{2}{3} \) that was left after Lindsay had her piece: she ate \( \frac{1}{4} \times \frac{2}{3} = \frac{1}{6} \) of the cake.

SOLUTION 10: \( \frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12} = \frac{7}{12} \) of the cake was eaten, and \( 1 - \frac{7}{12} = \frac{5}{12} \) was uneaten.

SOLUTION 11: \( \frac{1}{3} + \frac{1}{6} = \frac{2}{6} + \frac{1}{6} = \frac{1}{2} \) of the cake was eaten, and the other \( \frac{1}{2} \) was uneaten.

Arithmetic Operations with Mixed Numbers

A mixed number is a number such as \( 3 \frac{1}{2} \), which consists of an integer followed by a fraction. It is an abbreviation for the sum of the number and the fraction; so, \( 3 \frac{1}{2} \) is an abbreviation for \( 3 + \frac{1}{2} \). Every mixed number can be written as an improper fraction, and every improper fraction can be written as a mixed number:

\[
3 \frac{1}{2} = \frac{3}{2} = \frac{3 \times 1 + 1}{2} = \frac{6 + 1}{2} = \frac{7}{2}
\]

and

\[
\frac{7}{2} = \frac{6}{2} + \frac{1}{2} = 3 + \frac{1}{2} = 3 \frac{1}{2}
\]

KEY FACT B19:

1. To write a mixed number \( 3 \frac{1}{2} \) as an improper fraction, multiply the whole number (3) by the denominator (2), add the numerator (1), and write the sum over the denominator (2): \( \frac{3 \times 2 + 1}{2} = \frac{7}{2} \).

2. To write an improper fraction \( \frac{7}{2} \) as a mixed number, divide the numerator by the denominator; the quotient (3) is the whole number and the remainder (1) is placed over the denominator to form the fractional part \( \frac{1}{2} \): \( 3 \frac{1}{2} \).

KEY FACT B20:

To add mixed numbers, add the integers and add the fractions:

\[
5 \frac{1}{4} + 3 \frac{2}{3} = (5 + 3) + \left( \frac{1}{4} + \frac{2}{3} \right) = 8 + \left( \frac{3}{12} + \frac{8}{12} \right) = 8 + \frac{11}{12} = 8 \frac{11}{12}
\]

KEY FACT B21:

To subtract mixed numbers, subtract the integers and the fractions. However, if the fraction in the second number is greater than the fraction in the first number, you first have to borrow 1 from the integer part. For example, since \( \frac{2}{3} > \frac{1}{4} \), we can't subtract \( 5 \frac{1}{4} - 3 \frac{2}{3} \) until we borrow 1 from the 5:

\[
5 \frac{1}{4} = 5 + \frac{1}{4} = (4 + 1) + \frac{1}{4} = 4 + \left( 1 + \frac{1}{4} \right) = 4 + \frac{5}{4}
\]

Now, you have

\[
5 \frac{1}{4} - 3 \frac{2}{3} = 4 \frac{5}{4} - 3 \frac{2}{3} = (4 - 3) + \left( \frac{5}{4} - \frac{2}{3} \right) = \frac{15}{12} - \frac{8}{12} = \frac{7}{12}
\]
KEY FACT B22:

To multiply or divide mixed numbers, change them to improper fractions:

\[
1 \frac{2}{3} \times 3 \frac{1}{4} = \frac{5}{3} \times \frac{13}{4} = \frac{65}{12} = \frac{5\frac{5}{12}}{12}.
\]

CAUTION: Be aware that \(3 \times \frac{5}{2}\) is not \(15\frac{1}{2}\); rather:

\[
3 \times \frac{5}{2} = 3 \left(\frac{10}{2}\right) = 15 + \frac{3}{2} = 15 \frac{3}{2} = 16 \frac{1}{2}.
\]

Complex Fractions

A complex fraction is a fraction, such as \(\frac{1 + \frac{6}{3}}{2 - \frac{4}{3}}\), which has one or more fractions in its numerator or denominator or both.

KEY FACT B23:

There are two ways to simplify a complex fraction:

- Multiply every term in the numerator and denominator by the least common multiple of all the denominators that appear in the fraction.
- Simplify the numerator and the denominator, and then divide.

To simplify \(\frac{1 + \frac{1}{6}}{2 - \frac{4}{3}}\), multiply each term by 12, the LCM of 6 and 4:

\[
\frac{12(1) + 12\left(\frac{1}{6}\right)}{12(2) - 12\left(\frac{3}{4}\right)} = \frac{12 + 2}{24 - 9} = \frac{14}{15}.
\]

or write

\[
\frac{1 + \frac{6}{3}}{2 - \frac{4}{3}} = \frac{\frac{7}{5}}{\frac{4}{5}} = \frac{7\times 5}{5\times 4} = \frac{14}{15}.
\]

PRACTICE EXERCISES—FRACTIONS AND DECIMALS

Multiple-Choice Questions

1. A biology class has 12 boys and 18 girls. What fraction of the class are boys?
   (A) \(\frac{2}{5}\) (B) \(\frac{3}{5}\) (C) \(\frac{2}{3}\) (D) \(\frac{3}{4}\) (E) \(\frac{3}{2}\)

2. For how many integers, \(a\), between 30 and 40 is it true that \(\frac{5}{a}\), \(\frac{8}{a}\), and \(\frac{13}{a}\) are all in lowest terms?
   (A) 1 (B) 2 (C) 3 (D) 4 (E) 5

3. What fractional part of a week is 96 hours?
   (A) \(\frac{7}{24}\) (B) \(\frac{7}{98}\) (C) \(\frac{1}{2}\) (D) \(\frac{7}{7}\) (E) \(\frac{7}{12}\)

4. What is the value of the product
   \(\frac{5}{3} \times \frac{5}{10} \times \frac{5}{15} \times \frac{5}{20} \times \frac{5}{25}\)?
   (A) \(\frac{1}{120}\) (B) \(\frac{1}{60}\) (C) \(\frac{1}{30}\) (D) \(\frac{1}{30}\) (E) \(\frac{1}{2}\)

5. If \(\frac{3}{11}\) of a number is 22, what is \(\frac{6}{11}\) of that number?
   (A) 6 (B) 11 (C) 12 (D) 33 (E) 44

6. Jason won some goldfish at the state fair. During the first week, \(\frac{1}{5}\) of them died, and during the second week, \(\frac{3}{8}\) of those still alive at the end of the first week died. What fraction of the original goldfish were still alive after two weeks?
   (A) \(\frac{3}{10}\) (B) \(\frac{7}{40}\) (C) \(\frac{1}{2}\) (D) \(\frac{23}{40}\) (E) \(\frac{7}{10}\)

7. \(\frac{5}{8}\) of 24 is equal to \(\frac{15}{7}\) of what number?
   (A) 7 (B) 8 (C) 15 (D) \(\frac{7}{225}\) (E) \(\frac{225}{7}\)

8. If \(7a = 3\) and \(3b = 7\), what is the value of \(\frac{a}{b}\)?
   (A) \(\frac{9}{49}\) (B) \(\frac{3}{7}\) (C) 1 (D) \(\frac{7}{3}\) (E) \(\frac{49}{9}\)

9. What is the value of \(\frac{7 \times 7}{\frac{7}{9} + \frac{7}{9} + \frac{7}{9}}\)?
   (A) \(\frac{7}{27}\) (B) \(\frac{2}{3}\) (C) \(\frac{7}{9}\) (D) \(\frac{9}{7}\) (E) \(\frac{3}{2}\)
10. Which of the following are greater than \( x \) when \( x = \frac{9}{11} \)?

I. \( \frac{1}{x} \)

II. \( \frac{x + 1}{x} \)

III. \( \frac{x + 1}{x - 1} \)

(A) I only  
(B) I and II only  
(C) I and III only  
(D) II and III only  
(E) I, II, and III

11. One day at Lincoln High School, \( \frac{1}{12} \) of the students were absent, and \( \frac{1}{5} \) of those present went on a field trip. If the number of students staying in school that day was 704, how many students are enrolled at Lincoln High?

(A) 840  
(B) 960  
(C) 1080  
(D) 1600  
(E) 3520

12. If \( a = 0.87 \), which of the following are less than \( a \)?

I. \( \sqrt{a} \)

II. \( a^2 \)

III. \( \frac{1}{a} \)

(A) None  
(B) I only  
(C) II only  
(D) III only  
(E) II and III only

13. For what value of \( x \) is \( \frac{34.56(7.89)}{x} = (34.56)(7.89) \)?

(A) .001  
(B) .01  
(C) .1  
(D) 10  
(E) 100

14. If \( A = \{1, 2, 3\} \), \( B = \{2, 3, 4\} \), and \( C \) is the set consisting of all the fractions whose numerators are in \( A \) and whose denominators are in \( B \), what is the product of all the numbers in \( C \)?

(A) \( \frac{1}{64} \)  
(B) \( \frac{1}{48} \)  
(C) \( \frac{1}{24} \)  
(D) \( \frac{1}{12} \)  
(E) \( \frac{1}{2} \)

15. For the final step in a calculation, Ezra accidentally divided by 1000 instead of multiplying by 1000. What should he do to his incorrect answer to correct it?

(A) Multiply it by 1000.  
(B) Multiply it by 100,000.  
(C) Multiply it by 1,000,000.  
(D) Square it.  
(E) Double it.

16. \( x = \frac{2}{3} \) and \( y = \frac{3}{5} \)

\[ \text{Column A} \quad \frac{47}{13} \quad \text{of} \quad 5 \]

\[ \text{Column B} \quad \frac{5}{13} \quad \text{of} \quad 47 \]

17. \( xy \)

\[ \frac{x}{y} \]

18. \( 15 \)

\[ \frac{1}{15} \]

19. Judy needed 8 pounds of chicken. At the supermarket, the only packages available weighed \( \frac{3}{4} \) of a pound each.

\[ \text{The number of packages Judy needed to buy} \]

10.

20. \( \frac{11}{12} \)

\( \frac{13}{14} \)

\( \frac{14}{15} \)

21. \( a \neq b \quad \frac{a}{b} = \frac{b}{a} \)

\[ 3 \sqrt{4} \]

\[ \frac{\sqrt{2}}{3} \]

22. \( \frac{100}{2^{100}} \)

\[ \frac{100}{3^{100}} \]

23. \[ \left( \frac{1}{2}, \frac{3}{4}, \frac{5}{6}, \frac{7}{8} \right) \]

\[ \left( \frac{3}{7}, \frac{5}{9}, \frac{2}{11} \right) \]

\[ a = \frac{1}{2} \quad \text{and} \quad b = \frac{1}{3} \]

24. \( \frac{a}{b} \)

\[ \frac{b}{a} \]

25. \( \left( \frac{3}{\sqrt{11}} \right)^2 \)

\[ \frac{3}{\sqrt{11}} \]
Answer Key


Answer Explanations

1. A. The class has 30 students, of whom 12 are boys. So, the boys make up \(12 \div 30 = \frac{2}{5}\) of the class.

2. C. If \(a\) is even, then \(\frac{8}{a}\) is not in lowest terms, since both \(a\) and 8 are divisible by 2. Therefore, the only possibilities are 31, 33, 35, 37, and 39; but \(\frac{5}{35} = \frac{1}{7}\) and \(\frac{13}{39} = \frac{1}{3}\), so only 3 integers—31, 33, and 37—satisfy the given condition.

3. E. There are 24 hours in a day and 7 days in a week, so there are \(24 \times 7 = 168\) hours in a week: \(\frac{98}{168} = \frac{7}{12}\).

4. A. Reduce each fraction and multiply:
\[
1 \times \frac{1}{2} \times \frac{1}{3} \times \frac{1}{4} \times \frac{1}{5} = \frac{1}{120}.
\]

5. E. Don’t bother writing an equation for this one; just think. We know that \(\frac{3}{11}\) of the number is 22, and \(\frac{6}{11}\) of a number is twice as much as \(\frac{3}{11}\) of it: \(2 \times 22 = 44\).

6. C. The algebra way is to let \(x = \) the number of goldfish Jason won. During the first week \(\frac{1}{5}x\) died, so \(\frac{4}{5}x\) were still alive. During week two, \(\frac{3}{8}\) of them died and \(\frac{5}{8}\) of them survived:
\[
\left(\frac{5}{8}\right)^2 \left(\frac{4}{5}\right)^2 \left(\frac{1}{11}\right) x = \frac{1}{2} x.
\]

On the GRE, the best way is to assume that the original number of goldfish was 40, the LCM of the denominators (see TACTIC 3, Chapter 12).

Then, 8 died the first week \(\left(\frac{1}{5}\right) \times 40\), and 12 of the 32 survivors \(\left(\frac{3}{8}\right) \times 32\) died the second week. In all, \(8 + 12 = 20\) died; the other 20 \(\left(\frac{1}{2}\right)\) the original number \(\) were still alive.

7. A. If \(x\) is the number, then \(\frac{15}{7}x = \frac{5}{x} \times 24 = 15\).

So, \(\frac{15}{7}x = 15\), which means (dividing by 15) that \(\frac{1}{7}x = 1\), and so \(x = 7\).

8. A. \(7a = 3\) and \(3b = 7\) \(\Rightarrow a = \frac{3}{7}\) and \(b = \frac{7}{3}\) \(\Rightarrow\)
\[
a \div b = \left(\frac{3}{7}\right) \div \left(\frac{7}{3}\right) = \frac{3}{7} \times \frac{3}{7} = \frac{9}{49}.
\]

9. A. Don’t start by doing the arithmetic. This is just \(\frac{(a)(b)}{a + c + a} = \frac{(a)(c)}{2a} = \frac{a}{3} \).

Now, replacing \(a\) with \(\frac{7}{9}\) gives
\[
\frac{7}{9} \div 3 = \frac{7}{9} \times \frac{1}{3} = \frac{7}{27}.
\]

10. B. The reciprocal of a positive number less than 1 is greater than 1 (II is true).
\[
\frac{x + 1}{x} = 1 + \frac{1}{x}, \text{ which is greater than 1 (II is true).}
\]

Since \(\frac{9}{11} + 1\) is positive and \(\frac{9}{11} - 1\) is negative, when \(x = \frac{9}{11}\), \(x - 1 < 0\) and, therefore, less than \(x\) (III is false).

11. B. If \(s\) is the number of students enrolled, \(\frac{1}{12} s\) is the number who were absent, and \(\frac{11}{12} s\) is the number who were present. Since \(\frac{1}{5}\) of them went on a field trip, \(\frac{4}{5}\) of them stayed in school. Therefore,
\[
704 = \frac{4}{5} \div \frac{11}{12} \div \frac{11}{15} \Rightarrow
s = 704 + \frac{11}{15} = 704 \times \frac{15}{11} = 960.
\]
12. C. Since \( a < 1 \), \( \sqrt{a} > a \) (I is false).
Since \( a < 1 \), \( a^2 < a \) (II is true).
The reciprocal of a positive number less than 1 is greater than 1 (III is false).

13. D. There are two easy ways to do this. The first is to see that \((34.56)(78.9)\) has 4 decimal places, whereas \((.3456)(78.9)\) has 5, so the numerator has to be divided by 10. The second is to round off and calculate mentally: since \(30 \times 8 = 240\), and \(.3 \times 80 = 24\), we must divide by 16.

14. A. Nine fractions are formed:
\[
\frac{1}{2}, \frac{1}{3}, \frac{2}{4}, \frac{2}{3}, \frac{2}{4}, \frac{3}{4}, \frac{1}{3}, \frac{3}{3}, \frac{3}{4},
\]
Note that although some of these fractions are equivalent, we do have nine distinct fractions. When you multiply, the three 2s and the three 3s in the numerators cancel with the three 2s and three 3s in the denominators. So, the numerator is 1 and the denominator is \(4 \times 4 = 64\).

15. C. Multiplying Ezra's incorrect answer by \(1000\) would undo the final division he made. At that point he should have multiplied by 1000. So, to correct his error, he should multiply again by 1000. In all, Ezra should multiply his incorrect answer by \(1000 \times 1000 = 1,000,000\).

16. C. Each column equals \(\frac{5 \times 47}{13}\).

17. A. Column A: \(-\frac{2}{3} \times \frac{3}{5} = -\frac{2}{5}\).
Column B: \(-\frac{2}{5} + \frac{3}{5} = \frac{2}{3} \times \frac{5}{3} = -\frac{10}{9}\).
Finally, \(\frac{10}{9} > \frac{2}{5} \Rightarrow \frac{10}{9} < -\frac{2}{5}\).

18. A. Column A: \(\frac{15}{1} = 15 \times 15 = 225\).

19. C. \(8 + \frac{3}{4} = 8 \times \frac{4}{3} = \frac{32}{3} = 10 \frac{2}{3}\). Since 10 packages wouldn't be enough, she had to buy 11. (10 packages would weigh only \(7 \frac{1}{2}\) pounds.)

20. B. You don't need to multiply on this one: since \(\frac{11}{12} < 1\), \(\frac{11}{12} \times \frac{13}{14}\) is less than \(\frac{13}{14}\), which is already less than \(\frac{14}{15}\).

21. C. Column B is the sum of 2 complex fractions:
\[
\frac{1}{2} + \frac{3}{2} = \frac{1}{3}.
\]
Simplifying each complex fraction, by multiplying numerator and denominator by 6, or treating these as the quotients of 2 fractions, we get: \(\frac{1}{6} + \frac{3}{4}\), which is exactly the value of Column A.

22. A. When two fractions have the same numerator, the one with the smaller denominator is bigger, and \(\frac{2}{100} < \frac{3}{100}\).

23. A. Since Column A is the product of 4 negative numbers, it is positive, and so is greater than Column B, which, being the product of 3 negative numbers, is negative.

24. A. Column A: \(\frac{1}{2} + \frac{1}{3} = \frac{1}{2} \times \frac{3}{2} = \frac{3}{4}\). Since Column B is the reciprocal of Column A,
Column B = \(\frac{2}{3}\).

25. B. If \(0 < x < 1\), then \(x^2 < x < \sqrt{x}\). In this question, \(x = \frac{3}{11}\).

14-C. PERCENTS

The word percent means hundredth. We use the symbol "%" to express the word "percent." For example, "17 percent" means "17 hundredths," and can be written with a % symbol, as a fraction, or as a decimal:

\[17\% = \frac{17}{100} = 0.17.\]

**KEY FACT C1:**

- To convert a percent to a decimal, drop the % symbol and move the decimal point two places to the left, adding 0s if necessary. (Remember that we assume that there is a decimal point to the right of any whole number.)

- To convert a percent to a fraction, drop the % symbol, write the number over 100, and reduce:

\[25\% = 0.25 = \frac{25}{100} = \frac{1}{4}\]
\[100\% = 1.00 = \frac{100}{100} = 1\]
\[12.5\% = 0.125 = \frac{12.5}{100} = \frac{125}{1000} = \frac{1}{8}\]
\[1\% = 0.01 = \frac{1}{100}\]
\[250\% = 2.50 = \frac{250}{100} = \frac{5}{2}\]
KEY FACT C2:

- To convert a decimal to a percent, move the decimal point two places to the right, adding 0s if necessary, and add the % symbol.

- To convert a fraction to a percent, first convert the fraction to a decimal, then convert the decimal to a percent, as indicated above.

$$0.375 = 37.5\% \quad 0.3 = 30\% \quad 1.25 = 125\% \quad 0.10 = 1000\%$$

$$\frac{3}{4} = 0.75 = 75\% \quad \frac{1}{3} = 0.3333\ldots = 33\frac{1}{3}\% \quad \frac{1}{5} = 0.2 = 20\%$$

You should be familiar with the following basic conversions:

- \( \frac{1}{2} = 50\% \)
- \( \frac{1}{10} = 10\% \)
- \( \frac{6}{10} = \frac{3}{5} = 60\% \)

- \( \frac{1}{3} = \frac{1}{3} \)
- \( \frac{2}{10} = \frac{1}{5} = 20\% \)
- \( \frac{7}{10} = 70\% \)

- \( \frac{2}{3} = \frac{2}{3} \)
- \( \frac{3}{10} = 30\% \)
- \( \frac{8}{10} = \frac{4}{5} = 80\% \)

- \( \frac{1}{4} = 25\% \)
- \( \frac{4}{10} = \frac{2}{5} = 40\% \)
- \( \frac{9}{10} = 90\% \)

- \( \frac{3}{4} = 75\% \)
- \( \frac{5}{10} = \frac{1}{2} = 50\% \)
- \( \frac{10}{10} = 1 = 100\% \)

Knowing the above conversions can help solve many problems more quickly. For example, the fastest way to find 25% of 32 is not to multiply 32 by 0.25; rather, it is to know that 25% = \( \frac{1}{4} \), and that \( \frac{1}{4} \) of 32 is 8.

Many questions involving percents can actually be answered more quickly in your head than by using paper and pencil. Since 10% = \( \frac{1}{10} \) to take 10% of a number, just divide by 10 by moving the decimal point one place to the left: 10% of 60 is 6. Also, since 5% is half of 10%, then 5% of 60 is 3 (half of 6); and since 30% is 3 times 10%, then 30% of 60 is 18 (3 x 6).

Practice doing this, because improving your ability to do mental math will add valuable points to your score on the GRE.

Solving Percent Problems

Consider the following three questions:

(i) What is 45% of 200?
(ii) 90 is 45% of what number?
(iii) 90 is what percent of 200?

The arithmetic needed to answer each of these questions is very easy, but unless you set a question up properly, you won't know whether you should multiply or divide. In each case, there is one unknown, which we will call \( x \). Now just translate each sentence, replacing "is" by "=", and the unknown by \( x \).

(i) \( x = 45\% \) of 200 \( \Rightarrow \) \( x = 0.45 \times 200 = 90 \)

(ii) 90 = 45% of \( x \) \( \Rightarrow \) \( 0.45x = 90 \) \( \Rightarrow \) \( x = \frac{90}{0.45} = 200 \)

(iii) \( 90 = x \% \) of 200 \( \Rightarrow \) \( \frac{x}{100} \times 200 = 90 \) \( \Rightarrow \) \( 90 \times \frac{2}{10} = 90 \times 2x = x = 45 \)

Example 1.
Charlie gave 20% of his baseball cards to Kenne and 15% to Paulie. If he still had 520 cards, how many did he have originally?

(A) 555 (B) 700 (C) 800 (D) 888 (E) 1000

SOLUTION. Originally, Charlie had 100% of the cards (all of them). Since he gave away 35% of them, he has 100% - 35% = 65% of them left. So, 520 is 65% of what number?

\[ 520 = 0.65x \Rightarrow x = \frac{520}{0.65} = 800 \ (C). \]

Example 2.
After Ruth gave 110 baseball cards to Alison and 75 to Susanna, she still had 315 left. What percent of her cards did Ruth give away?

(A) 25% (B) 33\( \frac{1}{3} \)% (C) 37% (D) 40% (E) 50%

SOLUTION. Ruth gave away a total of 185 cards and had 315 left. Therefore, she started with 185 + 315 = 500 cards. So, 185 is what percent of 500?

\[ 185 = \frac{x}{500} \times 500 \Rightarrow 5x = 185 \Rightarrow x = 185 \times \frac{5}{10} = 37 \]

Ruth gave away 37% of her cards, (C).

Since percent means hundredth, the easiest number to use in any percent problem is 100:

\[ a \% \text{ of } 100 = \frac{a}{100} \times 100 = a. \]

KEY FACT C3:

For any positive number \( a \); \( a \% \) of 100 is \( a \).

For example: 91.2% of 100 is 91.2; 300% of 100 is 300; and \( \frac{1}{2} \% \) of 100 is \( \frac{1}{2} \).
In any problem involving percents, use the number 100 (it doesn’t matter whether or not 100 is a realistic number—a country can have a population of 100; an apple can cost $100; a man can run 100 miles per hour.)

Example 3.

In 1985 the populations of town A and town B were the same. From 1985 to 1995 the population of town A increased by 60% while the population of town B decreased by 60%. In 1995, the population of town B was what percent of the population of town A?

(A) 25%  (B) 36%  (C) 40%  (D) 60%  (E) 120%

SOLUTION. On the GRE, do not waste time with a nice algebraic solution. Simply, assume that in 1985 the population of each town was 100. Then, since 60% of 100 is 60, in 1995, the populations were 100 + 60 = 160 and 100 – 60 = 40. So, in 1995, town B’s population was $\frac{40}{100} = \frac{1}{4} = 25\%$ of town A’s(A).

Since $a\%$ of $b$ is $\frac{ab}{100}$ and $b\%$ of $a$ is $\frac{ba}{100}$, we have the result shown in KEY FACT C4.

KEY FACT C4:

For any positive numbers $a$ and $b$: $a\%$ of $b$ = $b\%$ of $a$.

KEY FACT C4 often comes up on the GRE in quantitative comparison questions: Which is greater, 13% of 87 or 87% of 13? Don’t multiply—they’re equal.

Percent Increase and Decrease

KEY FACT C5:

• The percent increase of a quantity is $\frac{\text{actual increase}}{\text{original amount}} \times 100\%$.

• The percent decrease of a quantity is $\frac{\text{actual decrease}}{\text{original amount}} \times 100\%$.

For example:

• If a $100 lamp is on sale for $80, the actual decrease in price is $20$, and the percent decrease is $\frac{20}{100} \times 100\% = 20\%$.

Notice that the percent increase in going from 80 to 100 is not the same as the percent decrease in going from 100 to 80.

KEY FACT C6:

If $a < b$, the percent increase in going from $a$ to $b$ is always greater than the percent decrease in going from $b$ to $a$.

KEY FACT C7:

• To increase a number by $k\%$, multiply it by $(1 + k\%)$.

• To decrease a number by $k\%$, multiply it by $(1 - k\%)$.

For example:

• The value of a $1600$ investment after a $25\%$ increase is $1600(1 + 25\%) = 1600(1.25) = 2000$.

• If the investment then loses $25\%$ of its value, it is worth $2000(1 - 25\%) = 2000(0.75) = 1500$.

Note that, after a $25\%$ increase followed by a $25\%$ decrease, the value is $1500$, $\$100$ less than the original amount.

KEY FACT C8:

An increase of $k\%$ followed by a decrease of $k\%$ is equal to a decrease of $k\%$ followed by an increase of $k\%$, and is always less than the original value. The original value is never regained.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example 4. Store B always sells CDs at 60% off the list price, Store A sells its CDs at 40% off the list price, but often runs a special sale during which it reduces its prices by 20%.</td>
<td></td>
</tr>
<tr>
<td>Tie the price of a CD when it is on sale at store A</td>
<td>The price of the same CD at store B</td>
</tr>
</tbody>
</table>

SOLUTION. Assume the list price of the CD is $100$. Store B always sells the CD for $40 ($60 off the list price), Store A normally sells the CD for $60 ($40 off the list price), but on sale reduces its price by 20%. Since 20% of 60 is 12, the sale price is $48 ($60 - $12). The price is greater at Store A.
Notice that a decrease of 40% followed by a decrease of 20% is not the same as a single decrease of 60%; it is less. In fact, a decrease of 40% followed by a decrease of 30% wouldn't even be as much as a single decrease of 60%.

**KEY FACT C9:**

- A decrease of a% followed by a decrease of b% always results in a smaller decrease than a single decrease of (a + b)%.
- An increase of a% followed by an increase of b% always results in a larger increase than a single increase of (a + b)%.
- An increase (or decrease) of a% followed by another increase (or decrease) of a% is never the same as a single increase (or decrease) of 2a%.

**Example 5.**

Sally and Heidi were both hired in January at the same salary. Sally got two 40% raises, one in July and another in November. Heidi got one 90% raise in October.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example 5.</td>
<td></td>
</tr>
<tr>
<td>Sally and Heidi were both</td>
<td></td>
</tr>
<tr>
<td>hired in January at the</td>
<td></td>
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<tr>
<td>same salary. Sally got</td>
<td></td>
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<tr>
<td>two 40% raises, one in</td>
<td></td>
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<tr>
<td>July and another in</td>
<td></td>
</tr>
<tr>
<td>November. Heidi got one</td>
<td></td>
</tr>
<tr>
<td>90% raise in October.</td>
<td></td>
</tr>
</tbody>
</table>

**SOLUTION.** Since this is a percent problem, assume their salaries were $100. Column A: Sally’s salary rose to 100(1.40) = $140, and then to 140(1.40) = $196. Column B: Heidi’s salary rose to 100(1.90) = $190. Column A is greater.

**Example 6.**

In January, the value of a stock increased by 25%, and in February, it decreased by 20%. How did the value of the stock at the end of February compare with its value at the beginning of January?

(A) It was less.
(B) It was the same.
(C) It was 5% greater.
(D) It was more than 5% greater
(E) It cannot be determined from the information given.

**SOLUTION.** Assume that at the beginning of January the stock was worth $100. Then at the end of January it was worth $125. Since 20% of 125 is 25, during February its value decreased from $125 to $100. The answer is B.

**KEY FACT C10:**

- If a number is the result of increasing another number by \( k\% \), to find the original number, divide by \( 1 + k\% \).
- If a number is the result of decreasing another number by \( k\% \), to find the original number, divide it by \( 1 - k\% \).

For example, if the population of a town in 1990 was 3000, and this represents an increase of 20% since 1980, to find the population in 1980, divide 3000 by \( (1 + 20\%) = 3000 \div 1.20 = 2500 \).

**Example 7.**

From 1989 to 1990, the number of applicants to a college increased 15% to 5060. How many applicants were there in 1989?

(A) 759  (B) 4301  (C) 4400  (D) 5819  (E) 5953

**SOLUTION.** The number of applicants in 1989 was 5060 \( \div \) 1.15 = 4400 (C).

**CAUTION.** Percents over 100%, which come up most often on questions involving percent increases, are often confusing for students. First of all, be sure you understand that 100% of a number is that number, 200% of a number is 2 times the number, and 1000% of a number is 10 times the number. If the value of an investment goes from $1000 to $5000, it is now worth 5 times, or 500%, as much as it was originally; but there has only been a 400% increase in value:

\[
\text{actual increase} \times 100\% = \frac{4000}{1000} \times 100\% = 4 \times 100\% = 400\%.
\]

**Example 8.**

The population of a country doubled every 10 years from 1960 to 1990. What was the percent increase in population during this time?

(A) 200%  (B) 300%  (C) 700%  (D) 800%  (E) 1000%

**SOLUTION.** The population doubled three times (once from 1960 to 1970, again from 1970 to 1980, and a third time from 1980 to 1990). Assume that the population was originally 100. Then it increased from 100 to 200 to 400 to 800. So the population in 1990 was 8 times the population in 1960, but this was an increase of 700 people, or 700% (C).
PRACTICE EXERCISES—PERCENTS

Multiple-Choice Questions

1. If 25 students took an exam and 4 of them failed, what percent of them passed?
   (A) 4%  (B) 21%  (C) 42%  (D) 84%  (E) 96%

2. Amanda bought a $60 sweater on sale at 5% off. How much did she pay, including 5% sales tax?
   (A) $54.15  (B) $57.00  (C) $57.75  (D) $59.85  (E) $60.60

3. What is 10% of 20% of 30%?
   (A) 0.006%  (B) 0.6%  (C) 6%  (D) 60%  (E) 6000%

4. If c is a positive number, 500% of c is what percent of 500c?
   (A) 0.01  (B) 0.1  (C) 1  (D) 10  (E) 100

5. What percent of 50 is b?
   (A) \( \frac{b}{50} \)  (B) \( \frac{b}{2} \)  (C) \( \frac{50}{b} \)  (D) \( \frac{2}{b} \)  (E) 2b

6. 8 is \( \frac{1}{3} \) of what number?
   (A) .24  (B) 2.4  (C) 24  (D) 240  (E) 2400

7. During his second week on the job, Mario earned $110. This represented a 25% increase over his earnings of the previous week. How much did he earn during his first week of work?
   (A) $82.50  (B) $85.00  (C) $88.00  (D) $137.50  (E) $146.67

8. At Bernie’s Bargain Basement everything is sold for 20% less than the price marked. If Bernie buys radios for $80, what price should he mark them if he wants to make a 20% profit on his cost?
   (A) $96  (B) $100  (C) $112  (D) $120  (E) $125

9. Mrs. Fisher was planning on depositing a certain amount of money each month into a vacation fund. She then decided not to make any contributions during June and July. To make the same annual contribution that she had originally planned, by what percent should she increase her monthly deposits?
   (A) 16 \( \frac{2}{3} \)%  (B) 29%  (C) 25%  (D) 33 \( \frac{1}{3} \)%  (E) it cannot be determined from the information given.

10. If 1 micron = 10,000 angstroms, then 100 angstroms is what percent of 10 microns?
    (A) 0.0001%  (B) 0.001%  (C) 0.01%  (D) 0.1%  (E) 1%

11. The price of a loaf of bread was increased by 20%. How many loaves can be purchased for the amount of money that used to buy 300 loaves?
    (A) 240  (B) 250  (C) 280  (D) 320  (E) 360

12. There are twice as many girls as boys in an English class. If 30% of the girls and 45% of the boys have already handed in their book reports, what percent of the students have not yet handed in their reports?
    (A) 25%  (B) 35%  (C) 50%  (D) 65%  (E) 75%

13. An art dealer bought a Ming vase for $1000 and later sold it for $10,000. By what percent did the value of the vase increase?
    (A) 10%  (B) 90%  (C) 100%  (D) 900%  (E) 1000%

14. During a sale a clerk was putting a new price tag on each item. On one jacket, he accidentally raised the price by 15% instead of lowering the price by 15%. As a result the price on the tag was $45 too high. What was the original price of the jacket?
    (A) $60  (B) $75  (C) $90  (D) $105  (E) $150

15. On a test consisting of 80 questions, Eve answered 75% of the first 60 questions correctly. What percent of the other 20 questions does she need to answer correctly for her grade on the entire exam to be 80%?
    (A) 85%  (B) 87.5%  (C) 90%  (D) 95%  (E) 100%

Quantitative Comparison Questions

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>17.</td>
</tr>
<tr>
<td>400% of 3</td>
<td>300% of 4</td>
</tr>
<tr>
<td>( n % ) of 25 is 50</td>
<td>75</td>
</tr>
<tr>
<td>The price of a television when it is on sale at 25% off</td>
<td>The price of that television when it's on sale at $25 off</td>
</tr>
<tr>
<td>Column A</td>
<td>Column B</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>The price of cellular phone 1 is 20% more than the price of cellular phone 2.</td>
<td>The price of cellular phone 2</td>
</tr>
<tr>
<td>19.</td>
<td>20.</td>
</tr>
<tr>
<td>( \frac{2}{3} \text{ of } \frac{3}{4} )</td>
<td>( \frac{3}{4} \text{ of } \frac{2}{3} )</td>
</tr>
<tr>
<td>21.</td>
<td>22.</td>
</tr>
<tr>
<td>( a% \text{ of } \frac{1}{b} )</td>
<td>20%</td>
</tr>
<tr>
<td>Bank A pays 5% interest on its savings accounts. Bank B pays 4% interest on its savings accounts. Percent by which bank B would have to raise its interest rate to match bank A</td>
<td>23.</td>
</tr>
<tr>
<td>24.</td>
<td>25.</td>
</tr>
<tr>
<td>( b ) is an integer greater than 1, and ( b ) equals ( n% ) of ( b^2 )</td>
<td>After Ali gave Lior 50% of her money, she had 20% as much as she did. 75% of the amount Lior had originally is 150% of the amount Ali had originally</td>
</tr>
</tbody>
</table>

**Answer Key**


**Answer Explanations**

1. D. If 4 students failed, then the other 25 - 4 = 21 students passed, and \( \frac{21}{25} = \frac{84}{100} = .84 = 84\% \).

2. D. Since 5% of 60 is 3, Amanda saved $3, and thus paid $57 for the sweater. She then had to pay 5% sales tax on the $57: .05 \times 57 = 2.85$, so the total cost was $57 + 2.85 = 59.85$.

3. B. 10% of 20% of 30% = \( .10 \times .20 \times .30 = .006 = .6\% \).

4. C. 500% of \( c = 5c \), which is 1% of 500\( c \).

5. E. \( b = \frac{1}{200} \implies b = \frac{x}{2} \implies x = 2b \).

6. E. \( \frac{1}{100} \times x = \frac{1}{300} \implies x = 8 \times 300 = 2400 \).

7. C. To find Mario's earnings during his first week, divide his earnings from the second week by 1.25: \( 110 \div 1.25 = 88 \).

8. D. Since 20% of 80 is 16, Bernie wants to get $96 for each radio he sells. What price should the radios be marked so that after a 20% discount, the customer will pay $96? If \( x \) represents the marked price, then \( .80x = 96 \implies x = 96 \div .80 = 120 \).

9. B. Assume that Mrs. Fisher was going to contribute $100 each month, for an annual total of
10. D. 1 micron = 10,000 angstroms ⇒
10 microns = 100,000 angstroms; dividing both sides by 100, we get
100 angstroms = \frac{1}{1000} (10 microns);
and \frac{1}{1000} = .001 = 0.1%.

11. B. Assume that a loaf of bread used to cost $1
and that now it costs $1.20 (20% more). Then
300 loaves of bread used to cost $300. How
many loaves costing $1.20 each can be bought
for $300? 300 ÷ 1.20 = 250.

12. D. Assume that there are 100 boys and 200 girls
in the class. Then, 45 boys (45% of 100) and
60 girls (30% of 200), have handed in their
reports. So 105 of the 300 students have
handed them in, and 300 - 105 = 195 have not
handed them in. What percent of 300 is 195?
\frac{195}{300} = .65 = 65%.

13. D. The increase in the value of the vase was
$9,000. So the percent increase is
\frac{actual \ increase}{original \ cost} = \frac{9000}{1000} = 9 = 900%.

14. E. If p represents the original price, the jacket
was priced at 1.15p instead of .85p. Since this
was a $45 difference,
45 = 1.15p - .85p = .30p ⇒
p = 45 ÷ .30 = $150.

15. D. To earn a grade of 80% on the entire exam,
Eve needs to correctly answer 64 questions
(80% of 80). So far, she has answered 45
questions correctly (75% of 60). Therefore, on
the last 20 questions she needs 64 - 45 = 19
correct answers; and \frac{19}{20} = 95%.

16. C. Column A: 400% of 3 = 4 × 3 = 12.
Column B: 300% of 4 = 3 × 4 = 12.

17. A. Since \( n \)% of 25 is 50, then 25% of \( n \) is also 50, and 50% of \( n \) is twice as much: 100. If
you don’t see that, just solve for \( n \):
\[ \frac{n}{100} \times 25 = 50 \Rightarrow \frac{n}{4} = 50 \Rightarrow n = 200 \Rightarrow \]
50% of \( n \) = 100.

18. D. A 25% discount on a $10 television is much
less than $25, whereas a 25% discount on a
$1000 television is much more than $25.
(They would be equal only if the regular price
of the television were $100.)

19. B. Assume that the price of cellular phone 2 is
$100; then the price of cellular phone 1 is
$120, and on sale at 20% off it costs $24 less:
$96.

20. C. For any numbers a and b: a% of b is equal to
b% of a.

21. D. \[
\begin{array}{l}
\text{Column A} \\
\frac{1}{b} \\
\text{Column B} \\
\frac{1}{a}
\end{array}
\]
\[
\frac{1}{b} \times \frac{1}{a} = \frac{a}{b} \quad \frac{b}{100} \times \frac{1}{a} = \frac{b}{100a}
\]
Multiply by 100:
\[
\frac{a}{b} = \frac{b}{a}
\]
The columns are equal if a and b are equal,
and unequal otherwise.

22. A. Bank B would have to increase its rate from
4% to 5%, an actual increase of 1%. This
represents a percent increase of
\[
\frac{1\%}{4\%} \times 100\% = 25\%.
\]

23. B. Assume a vat contains 100 ounces of a solution,
of which 20% or 20 ounces is sugar
(the remaining 80 ounces being water). If the
amount of sugar is doubled, there would be 40
ounces of sugar and 80 ounces of water. The
sugar will then comprise
\[
\frac{40}{120} \Rightarrow \frac{1}{3} \Rightarrow \frac{33\frac{1}{3}}{3} \% \ of \ the \ solution.
\]

24. D. If \( b = 2 \), then \( b^2 = 4 \), and \( 2 = 50\% \ of \ 4 \); in this
case, the columns are equal. If \( b = 4 \), \( b^2 = 16 \),
and 4 is not 50% of 16; in this case, the
columns are not equal.

25. C. Avoid the algebra and just assume Ali started
with $100. After giving Lior $50, she had $50
left, which was 20% or one-fifth of what he
had. So, Lior had \( 5 \times 50 = 250 \), which
means that originally he had $200.
Column A: 75% of $200 = $150.
Column B: 150% of $100 = $150.
The columns are equal.
14-D. RATIOs AND PROPORTIONS

A ratio is a fraction that compares two quantities that are measured in the same units. The first quantity is the numerator and the second quantity is the denominator.

For example, if there are 4 boys and 16 girls on the debate team, we say that the ratio of the number of boys to the number of girls on the team is 4 to 16, or \( \frac{4}{16} \). This is often written 4:16. Since a ratio is just a fraction, it can be reduced or converted to a decimal or a percent. The following are all different ways to express the same ratio:

\[
\begin{align*}
4 \text{ to } 16 & : 4:16 & \frac{4}{16} & = \frac{2}{8} & 0.25 & 25\
1 \text{ to } 4 & : 1:4 & \frac{1}{4} & & &
\end{align*}
\]

**CAUTION:** Saying that the ratio of boys to girls on the team is 1:4 does not mean that \( \frac{1}{4} \) of the team members are boys. It means that for every 1 boy on the team there are 4 girls; so for every 5 members of the team, there are 4 girls and 1 boy. Boys, therefore, make up \( \frac{1}{5} \) of the team, and girls \( \frac{4}{5} \).

**KEY FACT D1:**

If a set of objects is divided into two groups in the ratio of \( a:b \), then the first group contains \( \frac{a}{a+b} \) of the objects and the second group contains \( \frac{b}{a+b} \) of the objects.

**Example 1.**

Last year, the ratio of the number of tennis matches that Central College’s women’s team won to the number of matches they lost was 7:3. What percent of their matches did the team win?

**SOLUTION.** The team won \( \frac{7}{7+3} = \frac{7}{10} = 70\% \) of their matches.

**Example 2.**

If 45% of the students at a college are male, what is the ratio of male students to female students?

Reminder: In problems involving percents the best number to use is 100.

**SOLUTION.** Assume that there are 100 students. Then 45 of them are male, and \( 100 - 45 = 55 \) of them are female. So, the ratio of males to females is \( \frac{45}{55} = \frac{9}{11} \).

If we know how many boys and girls there are in a club, then, clearly, we know not only the ratio of boys to girls, but several other ratios too. For example, if the club has 7 boys and 3 girls: the ratio of boys to girls is \( \frac{7}{3} \), the ratio of girls to boys is \( \frac{3}{7} \), the ratio of boys to members is \( \frac{7}{10} \), the ratio of members to girls is \( \frac{10}{3} \), and so on.

However, if we know a ratio, we cannot determine how many objects there are. For example, if a jar contains only red and blue marbles, and if the ratio of red marbles to blue marbles is 3:5, there may be 3 red marbles and 5 blue marbles, but not necessarily. There may be 300 red marbles and 500 blue ones, since the ratio 300:500 reduces to 3:5. In the same way, all of the following are possibilities for the distribution of marbles.

<table>
<thead>
<tr>
<th>Red</th>
<th>6</th>
<th>12</th>
<th>33</th>
<th>51</th>
<th>150</th>
<th>3000</th>
<th>3x</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>10</td>
<td>20</td>
<td>55</td>
<td>85</td>
<td>250</td>
<td>5000</td>
<td>5x</td>
</tr>
</tbody>
</table>

The important thing to observe is that the number of red marbles can be any multiple of 3, as long as the number of blue marbles is the same multiple of 5.

**KEY FACT D2:**

If two numbers are in the ratio of \( a:b \), then for some number \( x \), the first number is \( ax \) and the second number is \( bx \). If the ratio is in lowest terms, and if the quantities must be integers, then \( x \) is also an integer.

**Tactic D1**

In any ratio problem, write the letter \( x \) after each number and use some given information to solve for \( x \).

**Example 3.**

If the ratio of men to women in a particular dormitory is 5:3, which of the following could not be the number of residents in the dormitory?

(A) 24 (B) 40 (C) 96 (D) 150 (E) 224

**SOLUTION.** If \( 5x \) and \( 3x \) are the number of men and women in the dormitory, respectively, then the number of residents in the dormitory is \( 5x + 3x = 8x \). So, the number of students must be a multiple of 8. Of the five choices, only (D) 150 is not divisible by 8.

Note: Assume that the ratio of the number of pounds of cole slaw to the number of pounds of potato salad consumed in the dormitory’s cafeteria was 5:3. Then, it is possible that a total of exactly 150 pounds was eaten.
93.75 pounds of cole slaw and 56.25 pounds of potato salad. In Example 3, 150 wasn't possible because there had to be a whole number of men and women.

**Example 4.**
The measures of the two acute angles in a right triangle are in the ratio of 5:13. What is the measure of the larger angle?
(A) 25°  (B) 45°  (C) 60°  (D) 65°  (E) 75°

**SOLUTION:** Let the measure of the smaller angle be 5x and the measure of the larger angle be 13x. Since the sum of the measures of the 2 acute angles of a right triangle is 90° (KEY FACT J1),

\[5x + 13x = 90 \Rightarrow 18x = 90 \Rightarrow x = 5.\]

Therefore, the measure of the larger angle is \[13 \times 5 = 65°\] (D).

Ratios can be extended to 3 or 4 or more terms. For example, we can say that the ratio of freshmen to sophomores to juniors to seniors in a college marching band is 6:8:5:8, which means that for every 6 freshmen in the band there are 8 sophomores, 5 juniors, and 8 seniors.

**NOTE:** TACTIC D1 applies to extended ratios, as well.

**Example 5.**
The concession stand at Cinema City sells popcorn in three sizes: large, super, and jumbo. One day, Cinema City sold 240 bags of popcorn, and the ratio of large to super to jumbo was 8:17:15. How many super bags of popcorn were sold that day?
(A) 48  (B) 90  (C) 102  (D) 108  (E) 120

**SOLUTION:** Let 8x, 17x, and 15x be the number of large, super, and jumbo bags of popcorn sold, respectively. Then

\[8x + 17x + 15x = 240 \Rightarrow 40x = 240 \Rightarrow x = 6.\]

The number of super bags sold was \[17 \times 6 = 102\] (D).

**KEY FACT D3:**

KEY FACT D1 applies to extended ratios, as well. If a set of objects is divided into 3 groups in the ratio \[a:b:c,\] then the first group contains \[\frac{a}{a+b+c}\] of the objects, the second \[\frac{b}{a+b+c}\], and the third \[\frac{c}{a+b+c}\].

**Example 6.**
If the ratio of large to super to jumbo bags of popcorn sold at Cinema City was 8:17:15, what percent of the bags sold were super?
(A) 20%  (B) 25%  (C) 33\(\frac{1}{3}\)%  (D) 37.5%  (E) 42.5%

**SOLUTION:** Super bags made up

\[
\frac{17}{8 + 17 + 15} = \frac{17}{40} = 42.5\% \text{ of the total (E).}
\]

A jar contains a number of red (R), white (W), and blue (B) marbles. Suppose that R:W = 2:3 and W:B = 3:5. Then, for every 2 red marbles, there are 3 white ones, and for those 3 white ones, there are 5 blue ones. So, R:B = 2:5, and we can form the extended ratio R:W:B = 2:3:5.

If the ratios were R:W = 2:3 and W:B = 4:5, however, we wouldn't be able to combine them as easily. From the diagram below, you see that for every 8 reds there are 15 blues, so R:B = 8:15.

To see this without drawing a picture, we write the ratios as fractions: \[\frac{R}{W} = \frac{2}{3} \text{ and } \frac{W}{B} = \frac{4}{5}.\] Then, we multiply the fractions:

\[\frac{R}{W} \times \frac{W}{B} = \frac{2}{3} \times \frac{4}{5} = \frac{8}{15}, \text{ so } \frac{R}{B} = \frac{8}{15}.\]

Not only does this give us R:B = 8:15, but also, if we multiply both W numbers, \[3 \times 4 = 12,\] we can write the extended ratio: R:W:B = 8:12:15.
Column A

Example 7.
Jar A and jar B each have 70 marbles, all of which are red, white, or blue.
In jar A, R:W = 2:3 and W:B = 3:5.
In jar B, R:W = 2:3 and W:B = 4:5.

The number of white marbles in jar A

The number of white marbles in jar B

SOLUTION. From the discussion immediately preceding this example, in jar A the extended ratio R:W:B is 2:3:5, which implies that the white marbles constitute
\[ \frac{3}{2+3+5} = \frac{3}{10} \text{ of the total: } \frac{3}{10} \times 70 = 21. \]
In jar B the extended ratio R:W:B is 8:12:15, so the white marbles are
\[ \frac{12}{8+12+15} = \frac{12}{35} \text{ of the total: } \frac{12}{35} \times 70 = 24. \]
The answer is B.

A proportion is an equation that states that two ratios are equivalent. Since ratios are just fractions, any equation such as \[ \frac{4}{6} = \frac{10}{15} \]
in which each side is a single fraction is a proportion. Usually the proportions you encounter on the GRE involve one or more variables.

D2

Solve proportions by cross-multiplying: if \( \frac{a}{b} = \frac{c}{d} \), then \( ad = bc \).

Setting up a proportion is a common way of solving a problem on the GRE.

Example 8.
If \( \frac{3}{7} = \frac{x}{84} \), what is the value of \( x \)?

(A) 12  (B) 24  (C) 36  (D) 42  (E) 48

SOLUTION. Cross-multiply:
\[ 3(84) = 7x \Rightarrow 252 = 7x \Rightarrow x = 36 \text{ (C)}. \]

Example 9.
If \( \frac{x+2}{17} = \frac{x}{16} \), what is the value of \( \frac{x+6}{19} \)?

(A) \( \frac{1}{2} \)  (B) 1  (C) \( \frac{3}{2} \)  (D) 2  (E) 3

SOLUTION. Cross-multiply:
\[ 16(x + 2) = 17x \Rightarrow 16x + 32 = 17x \Rightarrow x = 32. \]

So, \( \frac{x + 6}{19} = \frac{32 + 6}{19} = \frac{38}{19} = 2 \text{ (D)}. \)

D3

Set up rate problems just like ratio problems. Solve the proportions by cross-multiplying.

Example 11.
Brigitte solved 24 math problems in 15 minutes. At this rate, how many problems can she solve in 40 minutes?

(A) 25  (B) 40  (C) 48  (D) 60  (E) 64

SOLUTION. Handle this rate problem exactly like a ratio problem. Set up a proportion and cross-multiply:
\[ \frac{24 \text{ problems}}{15 \text{ minutes}} = \frac{x \text{ problems}}{40 \text{ minutes}} \Rightarrow 15x = 40 	imes 24 = 960 \Rightarrow x = 64 \text{ (E)}. \]

When the denominator in the given rate is 1 unit (1 minute, 1 mile, 1 dollar), the problem can be solved by a single division or multiplication. Consider Examples 12 and 13.
Example 12.
If Stefano types at the rate of 35 words per minute, how long will it take him to type 987 words?

SOLUTION 12. Set up a proportion and cross-multiply:
\[
\frac{\text{words typed}}{\text{minutes}} = \frac{35}{1} = \frac{987}{x} \Rightarrow 35x \times 987 
\]
\[x = \frac{987}{35} = 28.2\text{ minutes.}\]

Example 13.
If Mario types at the rate of 35 words per minute, how many words can he type in 85 minutes?

SOLUTION 13. Set up a proportion and cross-multiply:
\[
\frac{\text{words typed}}{\text{minutes}} = \frac{35}{1} = \frac{x}{85} \Rightarrow x = 35 \times 85 = 2975\text{ words.}
\]
Notice that in Example 12, all we did was divide 987 by 35, and in Example 13, we multiplied 35 by 85. If you realize that, you don’t have to introduce x and set up a proportion. You must know, however, whether to multiply or divide. If you’re not absolutely positive which is correct, write the proportion; then you can’t go wrong.

CAUTION: In rate problems it is essential that the units in both fractions be the same.

Example 14.
If 3 apples cost 50¢, how many apples can you buy for $20?
(A) 20 (B) 60 (C) 120 (D) 600 (E) 2000

SOLUTION. We have to set up a proportion, but it is not \( \frac{3}{50} = \frac{20}{x} \). In the first fraction, the denominator represents cents, whereas in the second fraction, the denominator represents dollars. The units must be the same.
We can change 50 cents to 0.5 dollar or we can change 20 dollars to 2000 cents:
\[\frac{3}{50} = \frac{x}{2000} \Rightarrow 50x = 6000 \Rightarrow x = 120\text{ apples (C).}
\]
On the GRE, some rate problems involve only variables. They are handled in exactly the same way.

Example 15.
If \( a \) apples cost \( c \) cents, how many apples can be bought for \( d \) dollars?
(A) \( 100acd \) (B) \( \frac{100d}{ac} \) (C) \( \frac{ad}{100c} \) (D) \( \frac{c}{100ad} \)
(E) \( \frac{100ad}{c} \)

SOLUTION. First change \( d \) dollars to 100\( d \) cents, and set up a proportion: \( \frac{\text{apples}}{\text{cents}} = \frac{a}{100d} \). Now cross-multiply:
\[100ad = cx \Rightarrow x = \frac{100ad}{c} \quad \text{(E).}
\]
Most students find problems such as Example 15 very difficult. If you get stuck on such a problem, use TACTIC 2, Chapter 11, which gives another strategy for handling these problems.

Notice that in rate problems, as one quantity increases or decreases, so does the other. If you are driving at 45 miles per hour, the more hours you drive, the further you go; if you drive fewer miles, it takes less time. If chopped meat cost $3.00 per pound, the less you spend, the fewer pounds you get; the more meat you buy, the more it costs.

In some problems, however, as one quantity increases, the other decreases. These cannot be solved by setting up a proportion. Consider the following two examples, which look similar but must be handled differently.

Example 16.
A hospital needs 150 pills to treat 6 patients for a week. How many pills does it need to treat 10 patients for a week?

Example 17.
A hospital has enough pills on hand to treat 10 patients for 14 days. How long will the pills last if there are 35 patients?

SOLUTION 16. Example 16 is a standard rate problem. The more patients there are, the more pills are needed. The ratio or quotient remains constant:
\[\frac{150}{6} = \frac{x}{10} \Rightarrow 6x = 1500 \Rightarrow x = 250\text{.}
\]

SOLUTION 17. In Example 17, the situation is different. With more patients, the supply of pills will last for a shorter period of time; if there were fewer patients, the supply would last longer. It is not the ratio that remains constant, it is the product.

There are enough pills to last for \( 10 \times 14 = 140 \) patient-days:
\[\frac{140\text{ patient-days}}{10 \text{ patients}} = 14\text{ days} \]
\[\frac{140\text{ patient-days}}{35 \text{ patients}} = 4\text{ days} \]
\[\frac{140\text{ patient-days}}{70 \text{ patients}} = 2\text{ days} \]
\[\frac{140\text{ patient-days}}{1 \text{ patient}} = 140\text{ days} \]
There are many mathematical situations in which one quantity increases as another decreases, but their product is not constant. Those types of problems, however, do not appear on the GRE.

**TACTIC D4**

If one quantity increases as a second quantity decreases, multiply them; their product will be a constant.

**Example 18.**

If 15 workers can pave a certain number of driveways in 24 days, how many days will 40 workers take, working at the same rate, to do the same job?

(A) 6  (B) 9  (C) 15  (D) 24  (E) 40

SOLUTION. Clearly, the more workers there are, the less time it will take, so use TACTIC D4: multiply. The job takes 15 \times 24 = 360 \text{ worker-days}:

\[
\frac{360 \text{ worker-days}}{40 \text{ workers}} = 9 \text{ days (B)}. \]

Note that it doesn’t matter how many driveways have to be paved, as long as the 15 workers and the 40 workers are doing the same job. Even if the question had said, “15 workers can pave 18 driveways in 24 days,” the number 18 would not have entered into the solution. This number would be important only if the second group of workers was going to pave a different number of driveways.

**Example 19.**

If 15 workers can pave 18 driveways in 24 days, how many days would it take 40 workers to pave 22 driveways?

(A) 6  (B) 9  (C) 11  (D) 15  (E) 18

SOLUTION. This question is similar to Example 18, except that now the jobs that the two groups of workers are doing is different. The solution, however, starts out exactly the same way. Just as in Example 18, 40 workers can do in 9 days the same job that 15 workers can do in 24 days. Since that job is to pave 18 driveways, 40 workers can pave \(18 + 9 = 22\) driveways every day. So, it will take 11 days to pave 22 driveways (C).

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**PRACTICE EXERCISES—RATIOS AND PROPORTIONS**

**Multiple-Choice Questions**

1. If \(\frac{3}{4}\) of the employees in a supermarket are not college graduates, what is the ratio of the number of college graduates to those who are not college graduates?
   (A) 1:3  (B) 3:7  (C) 3:4  (D) 4:3  (E) 3:1

2. If \(a = \frac{10}{24}\), what is the value of \(a^2\)?
   (A) 3\sqrt{6}  (B) 3\sqrt{5}  (C) 9\sqrt{6}  (D) 45  (E) 90

3. If all the members of a team are juniors or seniors, and if the ratio of juniors to seniors on the team is 3:5, what percent of the team members are seniors?
   (A) 37.5%  (B) 40%  (C) 60%  (D) 62.5%  (E) It cannot be determined from the information given.

4. Scott can read 50 pages per hour. At this rate, how many pages can he read in 50 minutes?
   (A) 25  (B) 41\frac{2}{3}  (C) 45\frac{1}{2}  (D) 48  (E) 60

5. If 80% of the applicants to a program were rejected, what is the ratio of the number accepted to the number rejected?
   (A) \(\frac{1}{5}\)  (B) \(\frac{1}{4}\)  (C) \(\frac{2}{5}\)  (D) \(\frac{4}{5}\)  (E) \(\frac{4}{1}\)

6. The measures of the three angles in a triangle are in the ratio of 1:1:2. Which of the following must be true?
   I. The triangle is isosceles.
   II. The triangle is a right triangle.
   III. The triangle is equilateral.
   (A) None  (B) I only  (C) II only  (D) I and II only  (E) I and III only

7. What is the ratio of the circumference of a circle to its radius?
   (A) 1  (B) \(\pi\)  (C) \(\sqrt{\pi}\)  (D) \(\pi\)  (E) 2\(\pi\)

8. The ratio of the number of freshmen to sophomores to juniors to seniors on a college basketball team is 4:7:6:8. What percent of the team are sophomores?
   (A) 16%  (B) 24%  (C) 25%  (D) 28%  (E) 32%
9. At Central State College the ratio of the number of students taking Spanish to the number taking French is 7:2. If 140 students are taking French, how many are taking Spanish?
   (A) 40  (B) 140  (C) 360  (D) 490  (E) 630

10. If $a:b = 3:5$ and $a:c = 5:7$, what is the value of $b:c$?
   (A) 3:7  (B) 21:35  (C) 21:25  (D) 25:21  (E) 7:3

11. If $x$ is a positive number and $\frac{x}{3} = \frac{12}{x}$, then $x =$
   (A) 3  (B) 4  (C) 6  (D) 12  (E) 36

12. In the diagram below, $b:a = 7:2$. What is $b - a$?
   \[ b = \text{?}, \quad a = \text{?} \]
   (A) 20  (B) 70  (C) 100  (D) 110  (E) 160

13. A snail can move $i$ inches in $m$ minutes. At this rate, how many feet can it move in $h$ hours?
   (A) $\frac{5hi}{m}$  (B) $\frac{60hi}{m}$  (C) $\frac{hi}{12m}$  (D) $\frac{5m}{hi}$  (E) $5him$

14. Gilda can grade $t$ tests in $\frac{1}{x}$ hours. At this rate, how many tests can she grade in $x$ hours?
   (A) $tx$  (B) $tx^2$  (C) $\frac{1}{t}$  (D) $\frac{x}{t}$  (E) $\frac{1}{tx}$

15. A club had 3 boys and 5 girls. During a membership drive the same number of boys and girls joined the club. How many members does the club have now if the ratio of boys to girls is 3:4?
   (A) 12  (B) 14  (C) 16  (D) 21  (E) 28

16. If $\frac{3x - 1}{25} = \frac{x + 5}{11}$, what is the value of $x$?
   (A) $\frac{3}{4}$  (B) 3  (C) 7  (D) 17  (E) 136

17. If 4 boys can shovel a driveway in 2 hours, how many minutes will it take 5 boys to do the job?
   (A) 60  (B) 72  (C) 96  (D) 120  (E) 150

18. If 500 pounds of mush will feed 20 pigs for a week, for how many days will 200 pounds of mush feed 14 pigs?
   (A) 4  (B) 5  (C) 6  (D) 7  (E) 8
Answer Key


Answer Explanations

1. A. Of every 4 employees, 3 are not college graduates, and 1 is a college graduate. So the ratio of graduates to nongraduates is 1:3.

2. D. Cross-multiplying, we get:
   \[2a^2 = 90 \Rightarrow a^2 = 45.\]

3. D. Out of every 8 team members, 3 are juniors and 5 are seniors. Seniors, therefore, make up \(\frac{5}{8} = 62.5\%\) of the team.

4. B. Set up a proportion:
   \[
   \frac{50 \text{ pages}}{1 \text{ hour}} = \frac{50 \text{ pages}}{60 \text{ minutes}} = \frac{x \text{ pages}}{50 \text{ minutes}},
   \]
   and cross-multiply:
   \[50 \times 50 = 60x \Rightarrow 2500 = 60x \Rightarrow x = 41.67.\]

5. B. If 80% were rejected, 20% were accepted, and the ratio of accepted to rejected is 20:80 = 1:4.

6. D. It is worth remembering that if the ratio of the measures of the angles of a triangle is 1:1:2, the angles are 45-45-90 (see Section 14-J). Otherwise, the first step is to write
   \[x + x + 2x = 180 \Rightarrow 4x = 180 \Rightarrow x = 45.\]
   Since two of the angles have the same measure, the triangle is isosceles, and since one of the angles measures 90°, it is a right triangle. I and II are true, and, of course, III is false.

7. E. By definition, \(\pi\) is the ratio of the circumference to the diameter of a circle (see Section 14-L). Therefore, \(\pi = \frac{C}{d} = \frac{C}{2r} \Rightarrow 2\pi = \frac{C}{r}.\)

8. D. The fraction of the team that is sophomores is
   \[\frac{7}{4 + 7 + 6 + 8} = \frac{7}{25}, \text{ and } \frac{7}{25} \times 100\% = 28\%.\]

9. D. Let the number of students taking Spanish be \(7x\), and the number taking French be \(2x\). Then,
   \[2x = 140 \Rightarrow x = 70 \Rightarrow 7x = 490.\]

10. D. Since \(\frac{a}{b} = \frac{3}{5}, \frac{b}{a} = \frac{5}{3}\), So,
    \[bc = \frac{b}{c} \times \frac{1}{a} \times a = \frac{5}{3} \times \frac{5}{7} = \frac{25}{21} = 25:21.\]

Alternatively, we could write equivalent ratios with the same value for \(a\):
   \[a:b = 3:5 = 15:25 \text{ and } a:c = 5:7 = 15:21.\]
   So, when \(a = 15, b = 25, \text{ and } c = 21.\)

11. C. To solve a proportion, cross-multiply:
    \[\frac{x}{3} = \frac{12}{x} \Rightarrow x^2 = 36 \Rightarrow x = 6.\]

12. C. Let \(b = 7x \text{ and } a = 2x.\) Then,
    \[7x + 2x = 180 \Rightarrow 9x = 180 \Rightarrow x = 20 \Rightarrow b = 140 \text{ and } a = 40 \Rightarrow b - a = 140 - 40 = 100.\]

13. A. Set up the proportion, keeping track of units:
    \[\frac{x \text{ feet}}{h \text{ hours}} = \frac{12 \text{ inches}}{60 \text{ minutes}} \Rightarrow \frac{i \text{ inches}}{m \text{ minutes}} \Rightarrow \frac{x}{5h} = \frac{i}{m} \Rightarrow x = \frac{5hi}{m}.\]

14. B. Gilda grades at the rate of \(\frac{1}{x} \text{ tests per hour} = \frac{ax \text{ tests}}{1 \text{ hour}}.\)
    Since she can grade \(ax\) tests each hour, in \(x\) hours she can grade \(x(ax) = tx^2\) tests.

15. B. Suppose that \(x\) boys and \(x\) girls joined the club. Then, the new ratio of boys to girls would be \(3x:5x\), which we are told is \(3:4\). So,
    \[\frac{3 + x}{5 + x} = \frac{3}{4} \Rightarrow 4(3 + x) = 3(5 + x) \Rightarrow 12 + 4x = 15 + 3x \Rightarrow x = 3.\]
    Therefore, 3 boys and 3 girls joined the other 3 boys and 5 girls: a total of 14.

16. D. Cross-multiplying, we get:
    \[11(3x - 1) = 25(x + 5) \Rightarrow 33x - 11 = 25x + 125 \Rightarrow 8x = 136 \Rightarrow x = 17.\]

17. C. Since 4 boys can shovel the driveway in 2 hours, or \(4 \times 60 = 120\) minutes, the job takes \(4 \times 120 = 480\) boy-minutes; and so 5 boys would need \(\frac{480 \text{ boy-minutes}}{5 \text{ boys}} = 96\) minutes.
18. Since 500 pounds will last for 20 pig-weeks = 140 pig-days, 200 pounds will last for
\[ \frac{2}{5} \times 140 \text{ pig-days} = 56 \text{ pig-days}, \] and
\[ \frac{56 \text{ pig-days}}{14 \text{ pigs}} = 4 \text{ days}. \]

19. Assume that to start there were 3x red marbles and 5x blue ones and that y of each color were added.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{3x + y}{5x + y} )</td>
<td>( \frac{3}{5} )</td>
</tr>
<tr>
<td>Cross-multiply:</td>
<td>( 5(3x + y) )</td>
</tr>
<tr>
<td>Distribute:</td>
<td>( 15x + 5y )</td>
</tr>
<tr>
<td>( 15x )</td>
<td>( 15x + 3y )</td>
</tr>
<tr>
<td>Subtract 15x:</td>
<td>( 5y )</td>
</tr>
<tr>
<td></td>
<td>( 3y )</td>
</tr>
</tbody>
</table>

Since y is positive, Column A is greater.

20. The shares are 2x, 5x, and 8x, and their sum is 3000:
\[ 2x + 5x + 8x = 3000 \Rightarrow 15x = 3000 \Rightarrow x = 200, \] and so \( 8x - 2x = 6x = 1200. \)

21. Ratios alone can't answer the question, "How many?" There could be 5 boys in the chess club or 500. We can't tell.

22. Assume that Sally invited x boys and y girls.
When she wound up with x girls and x + 5 boys, the girl:boy ratio was 4:5. So,
\[ \frac{x}{x + 5} = \frac{4}{5} \Rightarrow 5x = 4x + 20 \Rightarrow x = 20 \]
Sally invited 40 people (20 boys and 20 girls).

23. If the probability of drawing a red marble is \( \frac{3}{7} \), 3 out of every 7 marbles are red, and 4 out of every 7 are non-red. So the ratio red:non-red = 3:4, which is greater than \( \frac{1}{2} \).

24. Multiplying the first equation by 3 and the second by 2 to get the same coefficient of b, we have:
\[ 9a = 6b \text{ and } 10c = 10c \Rightarrow 9a = 10c \Rightarrow \frac{9}{c} = \frac{10}{9} \]

25. Assume the radius of circle I is 1 and the radius of circle II is 3. Then the areas are \( \pi \) and \( 9\pi \), respectively. So, the area of circle II is 9 times the area of circle I, and \( 3\pi > 9 \).

14-E. AVERAGES

The average of a set of \( n \) numbers is the sum of those numbers divided by \( n \).
\[ \text{average} = \frac{\text{sum of the } n \text{ numbers}}{n} \]
or simply
\[ A = \frac{\text{sum}}{n}. \]

If the weights of three children are 80, 90, and 76 pounds, respectively, to calculate the average weight of the children, you would add the three weights and divide by 3:
\[ \frac{80 + 90 + 76}{3} = \frac{246}{3} = 82 \]

The technical name for this type of average is "arithmetic mean," and on the GRE those words always appear in parentheses—for example, "What is the average (arithmetic mean) of 80, 90, and 76?"

Usually, on the GRE, you are not asked to find an average; rather, you are given the average of a set of numbers and asked for some other information. The key to solving all of these problems is to first find the sum of the numbers. Since \( A = \frac{\text{sum}}{n} \), multiplying both sides by \( n \) yields the equation: sum = \( nA \).

If you know the average, \( A \), of a set of \( n \) numbers, multiply \( A \) by \( n \) to get their sum.

**Example 1.**

One day a supermarket received a delivery of 25 frozen turkeys. If the average (arithmetic mean) weight of a turkey was 14.2 pounds, what was the total weight, in pounds, of all the turkeys?

**SOLUTION.** Use Tactic E1: 25 \times 14.2 = 355.

**NOTE:** We do not know how much any individual turkey weighed nor how many turkeys weighed more or less than 14.2 pounds. All we know is their total weight.

**Example 2.**

Sheila took five chemistry tests during the semester and the average (arithmetic mean) of her test scores was 85. If her average after the first three tests was 83, what was the average of her fourth and fifth tests?

(A) 83  (B) 85  (C) 87  (D) 88  (E) 90
SOLUTION.

- Use TACTIC E1: On her five tests, Sheila earned $5 \times 85 = 425$ points.
- Use TACTIC E1 again: On her first three tests she earned $3 \times 83 = 249$ points.
- Subtract: On her last two tests Sheila earned $425 - 249 = 176$ points.
- Calculate her average on her last two tests.
  \[
  \frac{176}{2} = 88 \text{ (D)}.
  \]

NOTE: We cannot determine Sheila’s grade on even one of the tests.

KEY FACT E1:

- If all the numbers in a set are the same, then that number is the average.
- If the numbers in a set are not all the same, then the average must be greater than the smallest number and less than the largest number. Equivalently, at least one of the numbers is less than the average and at least one is greater.

If Jessica’s test grades are 85, 85, 85, and 85, her average is 85. If Gary’s test grades are 76, 83, 88, and 88, his average must be greater than 76 and less than 88. What can we conclude if, after taking five tests, Kristen’s average is 90? We know that she earned exactly $5 \times 90 = 450$ points, and that either she got a 90 on every test or at least one grade was less than 90 and at least one was over 90. Here are a few of the thousands of possibilities for Kristen’s grades:

(a) 90, 90, 90, 90, 90
(b) 80, 90, 90, 90, 100
(c) 83, 84, 87, 97, 99
(d) 77, 88, 93, 95, 97
(e) 50, 100, 100, 100, 100

In (b), 80, the one grade below 90, is 10 points below, and 100, the one grade above 90, is 10 points above. In (c), 83 is 7 points below 90, 84 is 6 points below 90, and 87 is 3 points below 90, for a total of $7 + 6 + 3 = 16$ points below 90; 97 is 7 points above 90, and 99 is 9 points above 90, for a total of $7 + 9 = 16$ points above 90.

These differences from the average are called deviations, and the situation in these examples is not a coincidence.

KEY FACT E2:

The total deviation below the average is equal to the total deviation above the average.

Example 3.

If the average (arithmetic mean) of 25, 31, and $x$ is 37, what is the value of $x$?

(A) 31, (B) 37, (C) 43, (D) 55, (E) 56

SOLUTION 1. Use KEY FACT E2. Since 25 is 12 less than 37 and 31 is 6 less than 37, the total deviation below the average is $12 + 6 = 18$. Therefore, the total deviation above must also be 18. So, $x = 37 + 18 = 55$ (D).

SOLUTION 2. Use TACTIC E1. Since the average of the three numbers is 37, the sum of the 3 numbers is $3 \times 37 = 111$. Then,

\[25 + 31 + x = 111 \Rightarrow 56 + x = 111 \Rightarrow x = 55.\]

KEY FACT E3:

Assume that the average of a set of numbers is $A$. If a number $x$ is added to the set and a new average is calculated, then the new average will be less than, equal to, or greater than $A$, depending on whether $x$ is less than, equal to, or greater than $A$, respectively.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The average (arithmetic mean) of the integers from 0 to 12</td>
<td>The average (arithmetic mean) of the integers from 1 to 12</td>
</tr>
</tbody>
</table>

Example 4.

Helpful Hint

Remember TACTIC 5 from Chapter 12. We don’t have to calculate the averages, we just have to compare them.

SOLUTION 1. Column B is the average of the integers from 1 to 12, which is surely greater than 1. In Column A we are taking the average of those same 12 numbers and 0. Since the extra number, 0, is less than the Column B average, the Column A average must be lower [KEY FACT E3]. The answer is B.

SOLUTION 2. Clearly the sum of the 13 integers from 0 to 12 is the same as the sum of the 12 integers from 1 to 12. Since that sum is positive, dividing by 13 yields a smaller quotient than dividing by 12 [KEY FACT B4].

Although in solving Example 4 we didn’t calculate the averages, we could have:

\[
\begin{align*}
0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + 11 + 12 &= 78 \\
\text{and } \frac{78}{13} &= 6.
\end{align*}
\]

\[
\begin{align*}
1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + 11 + 12 &= 78 \\
\text{and } \frac{78}{12} &= 6.5.
\end{align*}
\]
Notice that the average of the 13 consecutive integers 0, 1, ..., 12 is the middle integer, 6, and the average of the 12 consecutive integers 1, 2, ..., 12 is the average of the two middle integers, 6 and 7. This is a special case of KEY FACT E4.

**KEY FACT E4:**

Whenever $n$ numbers form an arithmetic sequence (one in which the difference between any two consecutive terms is the same): (i) if $n$ is odd, the average of the numbers is the middle term in the sequence and (ii) if $n$ is even, the average of the numbers is the average of the two middle terms.

For example, in the arithmetic sequence 6, 9, 12, 15, 18, the average is the middle number, 12; in the sequence 10, 20, 30, 40, 50, 60, the average is 35, the average of the two middle numbers—30 and 40.

**Example 5.**

On Thursday, 20 of the 25 students in a chemistry class took a test and their average was 80. On Friday, the other 5 students took the test, and their average was 90. What was the average (arithmetic mean) for the entire class?

(A) 80 (B) 82 (C) 84 (D) 85 (E) 88

**SOLUTION.** The class average is calculated by dividing the sum of all 25 test grades by 25.

- The first 20 students earned a total of: $20 \times 80 = 1600$ points
- The other 5 students earned a total of: $5 \times 90 = 450$ points
- Add: altogether the class earned: $1600 + 450 = 2050$ points
- Calculate the class average: $\frac{2050}{25} = 82$ (B).

Notice that the answer to Example 5 is not 85, which is the average of 80 and 90. This is because the averages of 80 and 90 were earned by different numbers of students, and so the two averages had to be given different weights in the calculation. For this reason, this is called a **weighted average**.

**KEY FACT E5:**

To calculate the weighted average of a set of numbers, multiply each number in the set by the number of times it appears, add all the products, and divide by the total number of numbers in the set.

So, the solution to Example 5 should look like this:

\[
\frac{20(80) + 5(90)}{25} = \frac{1600 + 450}{25} = \frac{2050}{25} = 82
\]

**Helpful Hint**

Without doing any calculations, you should immediately realize that since the grade of 80 is being given more weight than the grade of 90, the average will be closer to 80 than to 90—certainly less than 85.

Problems involving **average speed** will be discussed in Section 15-H, but we mention them briefly here because they are closely related to problems on weighted averages.

**Example 6.**

For the first 3 hours of his trip, Justin drove at 50 miles per hour. Then, due to construction delays, he drove at only 40 miles per hour for the next 2 hours. What was his average speed, in miles per hour, for the entire trip?

(A) 40 (B) 43 (C) 46 (D) 48 (E) 50

**SOLUTION.** This is just a weighted average:

\[
\frac{3(50) + 2(40)}{5} = \frac{150 + 80}{5} = \frac{230}{5} = 46
\]

Note that in the fractions above, the numerator is the total distance traveled and the denominator the total time the trip took. This is always the way to find an average speed. Consider the following slight variation on Example 6.

**Example 6a.**

For the first 100 miles of his trip, Justin drove at 50 miles per hour, and then due to construction delays, he drove at only 40 miles per hour for the next 120 miles. What was his average speed, in miles per hour, for the entire trip?

**SOLUTION.** This is not a weighted average. Here we immediately know the total distance traveled, 220 miles. To get the total time the trip took, we find the time for each portion and add: the first 100 miles took $\frac{100}{50} = 2$ hours, and the next 120 miles took $\frac{120}{40} = 3$ hours. So the average speed was $\frac{220}{5} = 44$ miles per hour.

Notice that in Example 6 since Justin spent more time traveling at 50 miles per hour than at 40 miles per hour, his average speed was closer to 50; in Example 6a, he spent more time driving at 40 miles per hour than at 50 miles per hour, so his average speed was closer to 40.

Two other terms that are associated with averages are **median** and **mode**. In a set of $n$ numbers that are arranged in increasing order, the **median** is the middle number (if $n$ is odd), or the average of the two middle
Example 7.
During a 10-day period, Jorge received the following number of phone calls each day: 2, 3, 9, 3, 5, 7, 7, 10, 7, 6. What is the average (arithmetic mean) of the median and mode of this set of data?
(A) 6 (B) 6.25 (C) 6.5 (D) 6.75 (E) 7

SOLUTION. The first step is to write the data in increasing order: 2, 3, 3, 5, 6, 7, 7, 7, 9, 10.
• The median is 6.5, the average of the middle two numbers.
• The mode is 7, the number that appears more times than any other.
• The average of the median and the mode is \( \frac{6.5 + 7}{2} = 6.75 \) (D).

PRACTICE EXERCISES—AVERAGES

Multiple-Choice Questions

1. Michael's average (arithmetic mean) on 4 tests is 80. What does he need on his fifth test to raise his average to 84?
   (A) 82 (B) 84 (C) 92 (D) 96 (E) 100

2. Maryline's average (arithmetic mean) on 4 tests is 80. Assuming she can earn no more than 100 on any test, what is the least she can earn on her fifth test and still have a chance for an 85 average after seven tests?
   (A) 60 (B) 70 (C) 75 (D) 80 (E) 85

3. Sandrine's average (arithmetic mean) on 4 tests is 80. Which of the following cannot be the number of tests on which she earned exactly 80 points?
   (A) 0 (B) 1 (C) 2 (D) 3 (E) 4

4. What is the average (arithmetic mean) of the positive integers from 1 to 100, inclusive?
   (A) 49 (B) 49.5 (C) 50 (D) 50.5 (E) 51

5. If 10a + 10b = 35, what is the average (arithmetic mean) of a and b?
   (A) 1.75 (B) 3.5 (C) 7 (D) 10 (E) 17.5

6. If \( x + y = 6 \), \( y + z = 7 \), and \( z + x = 9 \), what is the average (arithmetic mean) of \( x \), \( y \), and \( z \)?
   (A) \( \frac{11}{3} \) (B) \( \frac{11}{2} \) (C) \( \frac{22}{3} \) (D) 11 (E) 22

7. If \( a + b = 3c + d \), which of the following is the average (arithmetic mean) of \( a \), \( b \), \( c \), and \( d \)?
   \( \frac{c + d}{4} \) (B) \( \frac{3(c + d)}{8} \) (C) \( \frac{c + d}{2} \) (D) \( \frac{3(c + d)}{4} \) (E) \( c + d \)

8. If the average (arithmetic mean) of \( 5 \), \( 6 \), \( 7 \), and \( w \) is 8, what is the value of \( w \)?
   (A) 8 (B) 12 (C) 14 (D) 16 (E) 24

9. What is the average (arithmetic mean) of the measures of the five angles in a pentagon?
   (A) 36° (B) 72° (C) 90° (D) 108° (E) 144°

10. In the diagram below, lines \( \ell \) and \( m \) are not parallel.

   If \( A \) represents the average (arithmetic mean) of the degree measures of all eight angles, which of the following is true?
   (A) \( A = 45 \) (B) \( 45 < A < 90 \) (C) \( A = 90 \)
   (D) \( 90 < A < 180 \) (E) \( A = 180 \)

11. What is the average (arithmetic mean) of \( z^{10} \) and \( 2^{20} \)?
   (A) \( 2^{15} \) (B) \( 2^5 + 2^{10} \) (C) \( 2^9 + 2^9 \) (D) \( 2^{29} \) (E) 30

12. Let \( M \) be the median and \( m \) the mode of the following set of numbers: 10, 70, 20, 40, 70, 90. What is the average (arithmetic mean) of \( M \) and \( m \)?
   (A) 50 (B) 55 (C) 60 (D) 62.5 (E) 65
### Quantitative Comparison Questions

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The average (arithmetic mean) of the measures of the three angles of an equilateral triangle</td>
<td>The average (arithmetic mean) of the measures of the three angles of a right triangle</td>
</tr>
</tbody>
</table>

13. 10 students took a test and the average grade was 80. No one scored exactly 80.

14. The number of grades over 80

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>0</td>
</tr>
</tbody>
</table>

17. The average (arithmetic mean) of the even numbers between 1 and 11

18. The average (arithmetic mean) of the odd numbers between 2 and 12

19. The average (arithmetic mean) of 17, 217, 417

20. The average (arithmetic mean) of $x$, $y$, and $2y$

There are the same number of boys and girls in a club. The average weight of the boys is 150 pounds. The average weight of the girls is 110 pounds.

16. The number of boys weighing over 150

15. The average (arithmetic mean) of $2x$ and $2y$

180

### Answer Key


### Answer Explanations

1. **E.** Use TACTIC E1. For Michael’s average on five tests to be an 84, he needs a total of $5 \times 84 = 420$ points. So far, he has earned $4 \times 80 = 320$ points. Therefore, he needs 100 points more.

   *Alternative solution.* Use KEY FACT E2. Assume Michael’s first 4 tests were all 80s. His total deviation below 84 is $4 \times 4 = 16$. So, his total deviation above 84 must also be 16. He needs $84 + 16 = 100$.

2. **C.** Use TACTIC E1. So far, Maryline has earned 320 points. She can survive a low grade on test five if she gets the maximum possible on both the sixth and seventh tests. So, assume she gets two 100s. Then her total for tests 1, 2, 3, 4, 6, and 7 would be 520. For her seventh test average to be 85, she needs a total of $7 \times 85 = 595$ points. Therefore, she needs at least $595 - 520 = 75$ points.

   *Alternative solution.* Use KEY FACT E2. Assume Maryline’s first four tests were all
80s. Then her total deviation below 85 would be \(4 \times 5 = 20\). Her maximum possible deviation above 85 (assuming 100s on tests 6 and 7) is \(15 + 15 = 30\). So, on test 5 she can deviate at most 10 more points below 85: 
\[
85 - 10 = 75.
\]

3. D. Since Sandrine’s 4-test average is 80, she earned a total of \(4 \times 80 = 320\) points. Could Sandrine have earned a total of 320 points with:

- 0 grades of 80? Easily; for example, 20, 100, 100, 100 or 60, 70, 90, 100.
- 1 grade of 80? Lots of ways; 80, 40, 100, 100, for instance.
- 2 grades of 80? Yes; 80, 80, 60, 100.
- 4 grades of 80? Sure: 80, 80, 80, 80.
- 3 grades of 80? NO! \(0 + 80 + 80 + 80 + x = 320 \Rightarrow x = 80\), as well.

4. D. Clearly, the sequence of integers from 1 to 100 has 100 terms, and so by KEY FACT E4, we know that the average of all the numbers is the average of the two middle ones: 50 and 51. The average, therefore, is 50.5.

5. A. Since \(10a + 10b = 35\), dividing both sides of the equation by 10, we get that \(a + b = 3.5\). Therefore, the average of \(a\) and \(b\) is \(3.5 / 2 = 1.75\).

6. A. Whenever a question involves three equations, add them:

\[
\begin{align*}
x + y &= 6 \\
y + z &= 7 \\
z + x &= 9
\end{align*}
\]

Divide by 2:

\[
\begin{align*}
2x + 2y + 2z &= 22 \\
x + y + z &= 11
\end{align*}
\]

The average of \(x, y,\) and \(z\) is \(\frac{x + y + z}{3} = \frac{11}{3}\).

7. E. Calculate the average:

\[
\frac{a + b + c + d}{4} = \frac{3(c + d) + c + d}{4} = \frac{3c + 3d + c + d}{4} = \frac{4c + 4d}{4} = c + d
\]

8. C. Use TACTIC E1: the sum of the 4 numbers is 4 times their average:

\[
5 + 6 + 7 + w = 4 \times 8 = 32 \Rightarrow 18 + w = 32 \Rightarrow w = 14.
\]

Alternative solution. Use KEY FACT E2: 5 is 3 below 8, 6 is 2 below 8, and 7 is 1 below 8, for a total deviation of \(3 + 2 + 1 = 6\) below the average of 8. To compensate, \(w\) must be 6 more than 8: \(6 + 8 = 14\).

9. D. The average of the measures of the five angles is the sum of their measures divided by 5. The sum is \((5 - 2) \times 180 = 3 \times 180 = 540\) (see Section 14-K). So, the average is \(540 / 5 = 108\).

10. C. Since \(a + b + c + d = 360\), and \(e + f + g + h = 360\) (see Section 14-1), the sum of the measures of all 8 angles is \(360 + 360 = 720\), and their average is \(720 / 8 = 90\).

11. C. The average of \(2^10\) and \(2^{20}\) is

\[
\frac{2^{10} + 2^{20}}{2} = \frac{2^{10}}{2} + \frac{2^{20}}{2} = 2^9 + 2^{19}.
\]

12. D. Arrange the numbers in increasing order: 10, 20, 40, 70, 70, 90, 90, \(M\), the median, is the average of the middle two numbers: \(\frac{40 + 70}{2} = 55\); the mode, \(m\), is 70, the number that appears most frequently. The average of \(M\) and \(m\), therefore, is the average of 55 and 70, which is 62.5.

13. C. In any triangle, the sum of the measures of the three angles is 180°, and the average of their measures is \(180 / 3 = 60\).

14. D. From KEY FACT E1, we know only that at least one grade was above 80. In fact, there may have been only one (9 grades of 79 and 1 grade of 89, for example). But there could have been five or even nine (for example, 9 grades of 85 and 1 grade of 35).

Alternative solution. The ten students scored exactly 800 points. Ask, "Could they be equal?" Could there be exactly five grades above 80? Sure, five grades of 100 for 500 points and five grades of 60 for 300 points. Must they be equal? No, eight grades of 100 and two grades of 60 also total 800.

15. C. The average of \(2x\) and \(2y\) is \(\frac{2x + 2y}{2} = x + y\), which equals 180.

16. D. It is possible that no boy weighs over 150 (if every single boy weighs exactly 150); on the other hand, it is possible that almost every boy weighs over 150. The same is true for the girls.

17. B. Use TACTIC E1:

\[
22 + 38 + x + y = 4(15) = 60 \Rightarrow 60 + x + y = 60 \Rightarrow x + y = 0.
\]

Since it is given that \(x\) is positive, \(y\) must be negative.
18. B. Don’t calculate the averages. Each number in Column A (2, 4, 6, 8, 10) is less than the corresponding number in Column B (3, 5, 7, 9, 11), and so the Column A average must be less than the Column B average.

Alternative solution: Observe that the numbers in each column form an arithmetic sequence, so by KEY FACT E4 the averages are just the middle numbers (6 and 7).

19. A. You don’t have to calculate the averages. The average of the set of numbers in Column A is clearly positive, and by KEY FACT E3, adding 0 to that set must lower the average.

20. D. Use KEY FACT E3: if $x < y$, then the average of $x$ and $y$ is less than $y$, and surely less than 2y. So, $2y$ has to raise the average. On the other hand, if $x$ is much larger than $y$, then $2y$ would lower the average.

ALGEBRA

For the GRE you need to know only a small portion of the algebra normally taught in a high school elementary algebra course and none of the material taught in an intermediate or advanced algebra course. Sections 14-F, 14-G, and 14-H review only those topics that you absolutely need for the GRE.

14-F. POLYNOMIALS

Even though the terms monomial, binomial, trinomial, and polynomial are not used on the GRE, you must be able to work with simple polynomials, and the use of these terms will make it easier for us to discuss the important concepts.

A monomial is any number or variable product or product of numbers and variables. Each of the following is a monomial:

$$3 \quad -4 \quad x \quad y \quad 3xy \quad 5x^2 \quad 1.5xy^2 \quad 6h^4$$

The number that appears in front of the variables in a monomial is called the coefficient. The coefficient of $5x^2$ is 5. If there is no number, the coefficient is 1 or $-1$, because $x$ means $1x$ and $-xb^2$ means $-1ab^2$.

On the GRE, you could be asked to evaluate a monomial for specific values of the variables.

Example 1.

What is the value of $-3a^4b$ when $a = -4$ and $b = 0.5$?

(A) -72  (B) -24  (C) 24  (D) 48  (E) 72

SOLUTION. Rewrite the expression, replacing the letters $a$ and $b$ with the numbers $-4$ and $0.5$, respectively. Make sure to write each number in parentheses. Then evaluate:

$$-3(-4)^2(0.5) = -3(16)(0.5) = -24 \text{ (B)}.$$ 

CAUTION: Be sure you follow PEMDAS (see Section 14-A): handle exponents before the other operations. In Example 1, you cannot multiply $-4$ by $-3$, get $12$, and then square the $12$; you must first square $-4$.

A polynomial is a monomial or the sum of two or more monomials. Each monomial that makes up the polynomial is called a term of the polynomial. Each of the following is a polynomial:

$$2x^2 \quad 2x^2 + 3 \quad 3x^2 - 7 \quad x^2 + 5x - 1 \quad a^2b + b^2a \quad x^4 - y^4 \quad w^2 - zw + 1$$

The first polynomial in the above list is a monomial; the second, third, fifth, and sixth polynomials are called binomials, because each has two terms; the fourth and seventh polynomials are called trinomials, because each has three terms. Two terms are called like terms if they have exactly the same variables and exponents; they can differ only in their coefficients: $5a^2b$ and $-3a^2b$ are like terms, whereas $a^2b$ and $b^2a$ are not.

The polynomial $3x^2 + 4x + 5x + 2x^2 + x - 7$ has 6 terms, but some of them are like terms and can be combined:

$$3x^2 + 2x^2 = 5x^2 \quad \text{and} \quad 4x + 5x + x = 10x$$

So, the original polynomial is equivalent to the trinomial $5x^2 + 10x - 7$.

KEY FACT F1:

The only terms of a polynomial that can be combined are like terms.

Helpful Hint

To add, subtract, multiply, and divide polynomials, use the usual laws of arithmetic. To avoid careless errors, before performing any arithmetic operations, write each polynomial in parentheses.

KEY FACT F2:

To add two polynomials, put a plus sign between them, erase the parentheses, and combine like terms.

Example 2.

What is the sum of $5x^2 + 10x - 7$ and $3x^2 - 4x + 2$?
SOLUTION. \((5x^2 + 10x - 7) + (3x^2 - 4x + 2) = 5x^2 + 10x - 7 + 3x^2 - 4x + 2\) 
\[= (5x^2 + 3x^2) + (10x - 4x) + (-7 + 2)\] 
\[= 8x^2 + 6x - 5.\]

**KEY FACT F3:**

To subtract two polynomials, change the minus sign between them to a plus sign and change the sign of every term in the second parentheses. Then just use **KEY FACT F2** to add them: erase the parentheses and then combine like terms.

**CAUTION:** Make sure you get the order right in a subtraction problem.

**Example 3.**

Subtract \(3x^2 - 4x + 2\) from \(5x^2 + 10x - 7\).

SOLUTION. Be careful. Start with the second polynomial and subtract the first:

\[(5x^2 + 10x - 7) - (3x^2 - 4x + 2) = (5x^2 + 10x - 7) + (-3x^2 + 4x - 2) = 2x^2 + 14x - 9.\]

**Example 4.**

What is the average (arithmetic mean) of \(5x^2 + 10x - 7, 3x^2 - 4x + 2\), and \(4x^2 + 2\)?

SOLUTION. As in any average problem, add and divide:

\[\frac{(5x^2 + 10x - 7) + (3x^2 - 4x + 2) + (4x^2 + 2)}{3} = \frac{12x^2 + 6x - 3}{3} = 4x^2 + 2x - 1.\]

**KEY FACT F4:**

To multiply monomials, first multiply their coefficients, and then multiply their variables (letter by letter), by adding the exponents (see Section 12A).

**Example 5.**

What is the product of \(3xy^2z^3\) and \(-2x^3y^3z^3\)?

SOLUTION. \((3xy^2z^3)(-2x^3y^3z^3) = 3(-2)(x)(x^3)(y^2)(y^3)(z^3) = -6x^4y^5z^6.\)

All other polynomials are multiplied by using the distributive law.

**KEY FACT F5:**

To multiply a monomial by a polynomial, just multiply each term of the polynomial by the monomial.

**Example 6.**

What is the product of \(2a\) and \(3a^2 - 6ab + b^2\)?

SOLUTION. \(2a(3a^2 - 6ab + b^2) = 6a^3 - 12a^2b + 2ab^2.\)

On the GRE, the only other polynomials that you could be asked to multiply are two binomials.

**KEY FACT F6:**

To multiply two binomials, use the so-called FOIL method, which is really nothing more than the distributive law; Multiply each term in the first parentheses by each term in the second parentheses and simplify by combining terms, if possible.

\[(2x - 7)(3x + 2) = (2x)(3x) + (2x)(2) + (-7)(3x) + (-7)(2) = 6x^2 + 4x - 21x - 14 = 6x^2 - 17x - 14\]

**Example 7.**

What is the value of \((x - 2)(x + 3) - (x - 4)(x + 5)\)?

SOLUTION. First, multiply both pairs of binomials:

\[(x - 2)(x + 3) = x^2 + 3x - 2x - 6 = x^2 + x - 6\]
\[(x - 4)(x + 5) = x^2 + 5x - 4x - 20 = x^2 + x - 20\]

Now, subtract:

\[x^2 + x - 6 - x^2 - x + 20 = 14.\]

**KEY FACT F7:**

The three most important binomial products on the GRE are these:

- \((x - y)(x + y) = x^2 + xy - yx - y^2 = x^2 - y^2\)
- \((x - y)^2 = (x - y)(x - y) = x^2 - xy - yx + y^2 = x^2 - 2xy + y^2\)
- \((x + y)^2 = (x + y)(x + y) = x^2 + xy + yx + y^2 = x^2 + 2xy + y^2\)

**Helpful Hint**

If you memorize these, you won't have to multiply them out each time you need them.
Example 8.
If \( a - b = 7 \) and \( a + b = 13 \), what is the value of \( a^2 - b^2 \)?

(A) -120  (B) 20  (C) 91  (D) 120  (E) 218

SOLUTION. In Section 14-G, we will review how to solve such a pair of equations; but even if you know how, you should not do it here. You do not need to know the values of \( a \) and \( b \) to answer this question. The moment you see \( a^2 - b^2 \), you should think \( (a - b)(a + b) \). Then:

\[ a^2 - b^2 = (a - b)(a + b) = 7 \cdot 13 = 91 \] (C).

Example 9.
If \( x^2 + y^2 = 36 \) and \( (x + y)^2 = 64 \), what is the value of \( xy \)?

(A) 14  (B) 28  (C) 100  (D) 128  (E) 2304

SOLUTION.

\[ 64 = (x + y)^2 = x^2 + 2xy + y^2 = x^2 + y^2 + 2xy = 36 + 2xy. \]

Therefore, \( 2xy = 64 - 36 = 28 \Rightarrow xy = 14 \) (A).

On the GRE, the only division of polynomials you might have to do is to divide a polynomial by a monomial. You will not have to do long division of polynomials.

KEY FACT F8:

To divide a polynomial by a monomial, use the distributive law. Then simplify each term by reducing the fraction formed by the coefficients to lowest terms and applying the laws of exponents.

Example 10.
What is the quotient when \( 32a^2b + 12ab^2c \) is divided by \( 8ab \)?

SOLUTION. By the distributive law,

\[ \frac{32a^2b + 12ab^2c}{8ab} = \frac{32a^2b}{8ab} + \frac{12ab^2c}{8ab}. \]

Now reduce each fraction: \( 4a + \frac{3}{2}b^2c \).

On the GRE, the most important way to use the three formulas in KEY FACT F7 is to recognize them in reverse. In other words, whenever you see \( x^2 - y^2 \), you should realize that it can be rewritten as \( (x - y)(x + y) \). This process, which is the reverse of multiplication, is called factoring.

Column A  
Example 11.

The value of \( x^2 + 4x + 4 \) when \( x = 95.9 \)

Column B

The value of \( x^2 - 4x + 4 \) when \( x = 99.5 \)

SOLUTION. Obviously, you don’t want to plug in 95.9 and 99.5 (remember that the GRE never requires you to do tedious arithmetic). Recognize that \( x^2 + 4x + 4 \) is equal to \( (x + 2)^2 \) and that \( x^2 - 4x + 4 \) is equal to \( (x - 2)^2 \). So, Column A is just \( (95.9 + 2)^2 = 97.9^2 \), whereas Column B is \( (99.5 - 2)^2 = 97.5^2 \). Column A is greater.

Example 12.
What is the value of \( (1,000,001)^2 - (999,999)^2 \)?

SOLUTION. Do not even consider squaring 999,999. You know that there has to be an easier way to do this. In fact, if you stop to think, you can get the right answer in a few seconds. This is just \( a^2 - b^2 \) where \( a = 1,000,001 \) and \( b = 999,999 \), so change it to \( (a - b)(a + b) \):

\[ (1,000,001)^2 - (999,999)^2 = (1,000,001 - 999,999)(1,000,001 + 999,999) = (2)(2,000,000) = 4,000,000. \]

Although the coefficients of any of the terms in a polynomial can be fractions, as in \( \frac{2}{3}x^2 - \frac{1}{2}x \), the variable itself cannot be in the denominator. An expression such as \( \frac{3 + x}{x^2} \) which does have a variable in the denominator is called an algebraic fraction. Fortunately, you should have no trouble with algebraic fractions since they are handled just like regular fractions. The rules that you reviewed in Section 14-B for adding, subtracting, multiplying, and dividing fractions apply to algebraic fractions, as well.

Example 13.
What is the sum of the reciprocals of \( x^2 \) and \( y^2 \)?

SOLUTION. To add \( \frac{1}{x^2} + \frac{1}{y^2} \), you need a common denominator, which is \( x^2y^2 \).

Multiply the numerator and denominator of \( \frac{1}{x^2} \) by \( y^2 \) and the numerator and denominator of \( \frac{1}{y^2} \) by \( x^2 \), and then add:

\[ \frac{1}{x^2} + \frac{1}{y^2} = \frac{y^2}{x^2y^2} + \frac{x^2}{x^2y^2} = \frac{x^2 + y^2}{x^2y^2}. \]
Often, the way to simplify algebraic fractions is to factor the numerator or the denominator or both. Consider the following example, which is harder than anything you will see on the GRE, but still quite manageable.

**Example 14.**

What is the value of \( \frac{4x^3 - x}{(2x + 1)(6x - 3)} \) when \( x = 9999 \)?

**SOLUTION.** Don’t use FOIL to multiply the denominator. That’s going the wrong way. We want to simplify this fraction by factoring everything we can. First factor an \( x \) out of the numerator and notice what’s left is the difference of two squares, which can be factored. Then factor out the 3 in the second factor in the denominator:

\[
\frac{4x^3 - x}{(2x + 1)(6x - 3)} = \frac{x(4x^2 - 1)}{(2x + 1)(3(2x - 1))} = \frac{x(2x - 1)(2x + 1)}{3(2x + 1)(2x - 1)} = \frac{x}{3}
\]

So, instead of plugging 9999 into the original expression, plug it into \( \frac{x}{3} \): 9999 \( \div 3 = 3333 \).

---

**PRACTICE EXERCISES—POLYNOMIALS**

**Multiple-Choice Questions**

1. What is the value of \( \frac{a^2 - b^2}{a - b} \) when \( a = 117 \) and \( b = 118 \)?
   (A) -1 (B) 1 (C) 117.5 (D) 175 (E) 235

2. If \( a^2 - b^2 = 21 \) and \( a^2 + b^2 = 29 \), which of the following could be the value of \( ab \)?
   I. -10
   II. 5 \( \sqrt{2} \)
   III. 10
   (A) I only (B) II only (C) III only (D) I and III only (E) II and III only

3. What is the average (arithmetic mean) of \( x^2 + 2x - 3, 3x^2 - 2x - 3, \) and \( 30 - 4x^2 \)?
   (A) \( \frac{8x^2 + 4x + 24}{3} \) (B) \( \frac{8x^2 + 24}{3} \) (C) \( \frac{24 - 4x}{3} \)
   (D) -12 (E) 8

4. What is the value of \( x^2 + 12x + 36 \) when \( x = 994 \)?
   (A) 1,9228 (B) 98,836 (C) 100,000 (D) 988,036 (E) 1,000,000

5. If \( c^2 + d^2 = 4 \) and \( (c - d)^2 = 2 \), what is the value of \( cd \)?
   (A) 1 (B) \( \sqrt{2} \) (C) 2 (D) 3 (E) 4

6. What is the value of \( (2x + 3)(x + 6) - (2x - 5)(x + 10) \)?
   (A) 32 (B) 16 (C) 68 (D) 4x^2 + 30x + 68 (E) 4x^2 + 30x - 32

7. If \( \frac{1}{a} + \frac{1}{b} = \frac{1}{c} \) and \( ab = c \), what is the average of \( a \) and \( b \)?
   (A) 0 (B) \( \frac{1}{2} \) (C) 1 (D) \( \frac{c}{2} \) (E) \( \frac{a + b}{2c} \)

8. If \( x^2 - y^2 = 28 \) and \( x - y = 8 \), what is the average of \( x \) and \( y \)?
   (A) 1.75 (B) 3.5 (C) 7 (D) 8 (E) 10

9. Which of the following is equal to \( \left( \frac{1}{a} + a \right) - \left( \frac{1}{a} - a \right) \)?
   (A) 0 (B) 4 (C) \( \frac{1}{a^2} - a^2 \) (D) \( \frac{2}{a^2} - 2a^2 \)
   (E) \( \frac{1}{a^2} - 4 - a^2 \)

10. If \( \left( \frac{1}{a} + a \right)^2 = 100 \), what is the value of \( \frac{1}{a} + a^2 \)?
    (A) 10 (B) 64 (C) 98 (D) 100 (E) 102

**Quantitative Comparison Questions**

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>( -2n^2 )</td>
<td>( (-2n)^2 )</td>
</tr>
<tr>
<td>( d &lt; c )</td>
<td>( d - c )</td>
</tr>
<tr>
<td>( x = -3 ) and ( y = 2 )</td>
<td>( 0 )</td>
</tr>
<tr>
<td>( (r + s)(r - s) )</td>
<td>( r (s + r - s) )</td>
</tr>
<tr>
<td>( \frac{5x^2 - 20}{x - 2} )</td>
<td>( 4x + 8 )</td>
</tr>
</tbody>
</table>
Answer Key


Answer Explanations

1. E. \[
\frac{a^2 - b^2}{a - b} = \frac{(a-b)(a+b)}{a-b} = a + b = 117 + 118 = 235.
\]

2. D. Adding the two equations, we get that
\[2a^2 = 50 \Rightarrow a^2 = 25 \Rightarrow b^2 = 4.\] So, \(a = 5\) or \(-5\) and \(b = 2\) or \(-2.\) The only possibilities for their product are 10 and \(-10.\) (Only I and III are true.)

3. E. To find the average, take the sum of the three polynomials and then divide by 3. Their sum is
\[(x^2 + 2x - 3) + (3x^2 - 2x - 3) + (30 - 4x^2) = 24,
\]and 24 + 3 = 8.

4. E. You can avoid messy, time-consuming arithmetic if you recognize that \(x^2 + 12x + 36 = (x + 6)^2.\) The value is \((994 + 6)^2 = 1000^2 = 1,900,000.

5. A. Start by squaring \(c - d:\)
\[2 = (c - d)^2 = c^2 - 2cd + d^2 = c^2 + d^2 - 2cd = \frac{4 - 2cd}{4} - 2cd.
\]So, 2 = 4 - 2cd \(\Rightarrow 2cd = 2 \Rightarrow cd = 1.

6. C. First multiply out both pairs of binomials:
\[(2x + 3)(x + 6) = 2x^2 + 15x + 18
\]and \[(2x - 5)(x + 10) = 2x^2 + 15x - 50.
\]Now subtract:
\[(2x^2 + 15x + 18) - (2x^2 + 15x - 50) = 18 - (-50) = 68.
\]

7. B. \[
\frac{1}{c} = \frac{1}{a} + \frac{1}{b} = \frac{a + b}{ab} = \frac{a + b}{c} \Rightarrow 1 = a + b \Rightarrow \frac{a + b}{2} = \frac{1}{2}.
\]

8. A. \[x^2 - y^2 = (x - y)(x + y) \Rightarrow 28 = 8(x + y) \Rightarrow x + y = 28 \div 8 = 3.5.\]Finally, the average of \(x\) and \(y\) is \[
\frac{x + y}{2} = \frac{3.5}{2} = 1.75.
\]

9. B. Expand each square:
\[
\left(\frac{1}{a} + a\right)^2 = \frac{1}{a^2} + 2\left(\frac{1}{a}\right)(a) + a^2 = \frac{1}{a^2} + 2 + a^2.
\]
Similarly,
\[
\left(\frac{1}{a} - a\right)^2 = \frac{1}{a^2} - 2 + a^2.
\]
Subtract:
\[
\left(\frac{1}{a^2} + 2 + a^2\right) - \left(\frac{1}{a^2} - 2 + a^2\right) = 4.
\]

10. C. 100 = \[
\left(\frac{1}{a} + a\right)^2 = \frac{1}{a^2} + 2 + a^2 \Rightarrow \frac{1}{a^2} + a^2 = 98.
\]

11. B. Since \(n\) is negative, \(n^2\) is positive, and so \(-2n^2\) is negative. Therefore, Column A is negative, whereas Column B is positive.

12. D. \(c > d \Rightarrow c - d\) is positive, so divide each side by \(c - d:\)
\[c + d \quad c - d \quad \text{Subtract } c \text{ from each column:} \quad d - d.
\]If \(d = 0\) the columns are equal; if \(d = 1,\) they aren't.

\]

14. C. Column B: \(r(s + r) - s(r + s) = rs + r^2 - sr - s^2 = r^2 - s^2.
\]Column A: \((r + s)(r - s) = r^2 - s^2.
\]

15. D. Column A:
\[
\frac{5x^2 - 20}{x - 2} = \frac{5(x^2 - 4)}{x - 2} = \frac{5(x - 2)(x + 2)}{x - 2} = 5(x + 2).
\]Column B: \[4x + 8 = 4(x + 2).\] If \(x = -2,\) both columns are 0; for any other value of \(x\) the columns are unequal.
14-G. SOLVING EQUATIONS AND INEQUALITIES

The basic principle that you must adhere to in solving any equation is that you can manipulate it in any way, as long as you do the same thing to both sides. For example, you may always add the same number to each side; subtract the same number from each side; multiply or divide each side by the same number (except 0); square each side; take the square root of each side (if the quantities are positive); or take the reciprocal of each side. These comments apply to inequalities, as well, except you must be very careful, because some procedures, such as multiplying or dividing by a negative number and taking reciprocals, reverse inequalities (see Section 14-A).

Most of the equations and inequalities that you will have to solve on the GRE have only one variable and no exponents. The following simple six-step method can be used on all of them.

Example 1.
If \( \frac{1}{2} x + 3(x - 2) = 2(x + 1) + 1 \), what is the value of \( x \)?

SOLUTION. Follow the steps outlined in the following table.

<table>
<thead>
<tr>
<th>Step</th>
<th>What to Do</th>
<th>Example 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Get rid of fractions and decimals by multiplying both sides by the Lowest Common Denominator (LCD).</td>
<td>( \frac{1}{2} x + 6(x - 2) = 4(x + 1) + 2 ).</td>
</tr>
<tr>
<td>2</td>
<td>Get rid of all parentheses by using the distributive law.</td>
<td>( x + 6x - 12 = 4x + 4 + 2 ).</td>
</tr>
<tr>
<td>3</td>
<td>Combine like terms on each side.</td>
<td>( 7x - 12 = 4x + 6 ).</td>
</tr>
<tr>
<td>4</td>
<td>By adding or subtracting, get all the variables on one side.</td>
<td>Subtract 4x from each side: ( 3x - 12 = 6 ).</td>
</tr>
<tr>
<td>5</td>
<td>By adding or subtracting, get all the plain numbers on the other side.</td>
<td>Add 12 to each side: ( 3x = 18 ).</td>
</tr>
<tr>
<td>6</td>
<td>Divide both sides by the coefficient of the variable.</td>
<td>Divide both sides by 3: ( x = 6 ).</td>
</tr>
</tbody>
</table>

*Note: If you start with an inequality and in Step 6 you divide by a negative number, remember to reverse the inequality (see KEY FACT A24).

Example 1 is actually harder than any equation on the GRE, because it required all six steps. On the GRE that never happens. Think of the six steps as a list of questions that must be answered. Ask if each step is necessary. If it isn’t, move on to the next one; if it is, do it.

Let’s look at Example 2, which does not require all six steps.

Example 2.
For what real number \( n \) is it true that
\[
3(n - 20) = n
\]
(A) -10  (B) 0  (C) 10  (D) 20  (E) 30

SOLUTION. Do whichever of the six steps are necessary.

<table>
<thead>
<tr>
<th>Step</th>
<th>Question</th>
<th>Yes/No</th>
<th>What to Do</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Are there any fractions or decimals?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Are there any parentheses?</td>
<td>Yes</td>
<td>Get rid of them: ( 3n - 60 = n ).</td>
</tr>
<tr>
<td>3</td>
<td>Are there any like terms to combine?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Are there variables on both sides?</td>
<td>Yes</td>
<td>Subtract ( n ) from each side: ( 2n - 60 = 0 ).</td>
</tr>
<tr>
<td>5</td>
<td>Is there a plain number on the same side as the variable?</td>
<td>Yes</td>
<td>Add 60 to each side: ( 2n = 60 ).</td>
</tr>
<tr>
<td>6</td>
<td>Does the variable have a coefficient?</td>
<td>Yes</td>
<td>Divide both sides by 2: ( n = 30 ).</td>
</tr>
</tbody>
</table>

Tadik G1
Memorize the six steps in order and use this method whenever you have to solve this type of equation or inequality.

Example 3.
Three brothers divided a prize as follows. The oldest received \( \frac{2}{3} \) of it, the middle brother received \( \frac{1}{3} \) of it, and the youngest received the remaining $120. What was the value of the prize?
SOLUTION: If $x$ represents the value of the prize, then
\[
\frac{2}{5}x + \frac{1}{3}x + 120 = x.
\]
Solve this equation using the six-step method.

<table>
<thead>
<tr>
<th>Step</th>
<th>Question</th>
<th>Yes/No</th>
<th>What to Do</th>
</tr>
</thead>
</table>
| 1    | Are there any fractions or decimals? | Yes | To get rid of them, multiply by 15. \[
15\left(\frac{2}{5}x\right) + 15\left(\frac{1}{3}x\right) + 15(120) = 15(x) \\
6x + 5x + 1800 = 15x
\] |
| 2    | Are there any parentheses? | No | |
| 3    | Are there any like terms to combine? | Yes | Combine them: \[11x + 1800 = 15x.\] |
| 4    | Are there variables on both sides? | Yes | Subtract 11x from each side: \[1800 = 4x.\] |
| 5    | Is there a plain number on the same side as the variable? | No | |
| 6    | Does the variable have a coefficient? | Yes | Divide both sides by 4: \[x = 450.\] |

Sometimes on the GRE, you are given an equation with several variables and asked to solve for one of them in terms of the others.

**Tactic G2**

When you have to solve for one variable in terms of the others, treat all of the others as if they were numbers, and apply the six-step method.

**Example 4.**

If $a = 3b - c$, what is the value of $b$ in terms of $a$ and $c$?

SOLUTION. To solve for $b$, treat $a$ and $c$ as numbers and use the six-step method with $b$ as the variable.

<table>
<thead>
<tr>
<th>Step</th>
<th>Question</th>
<th>Yes/No</th>
<th>What to Do</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Are there any fractions or decimals?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Are there any parentheses?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Are there any like terms to combine?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Are there variables on both sides?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Is there a plain number on the same side as the variable?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Does the variable have a coefficient?</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Sometimes when solving equations, you may see a shortcut. For example, to solve $7(w - 3) = 42$, it saves time to start by dividing both sides by 7, getting $w - 3 = 6$, rather than by using the distributive law to eliminate the parentheses. Similarly, if you have to solve a proportion such as $\frac{x}{7} = \frac{3}{5}$, it is easier to to cross-multiply, getting $5x = 21$, than to multiply both sides by 35 to get rid of the fractions (although that’s exactly what cross-multiplying accomplishes). Other shortcuts will be illustrated in the problems at the end of the section. If you spot such a shortcut, use it; but if you don’t, be assured that the six-step method always works.

**Helpful Hint**

In applying the six-step method, you shouldn’t actually write out the table, as we did in Examples 1–4, since it would be too time consuming. Instead, use the method as a guideline and mentally go through each step, doing whichever ones are required.

**Example 5.**

If $x - 4 = 11$, what is the value of $x - 8$?

(A) -15  (B) -7  (C) -1  (D) 7  (E) 15

SOLUTION. Going immediately to Step 5, add 4 to each side: \[x = 15.\] But this is not the answer. You need the value not of $x$, but of $x - 8$: \[15 - 8 = 7\] (D).

As in Example 5, on the GRE you are often asked to solve for something other than the simple variable, In
Example 5, we could have been asked for the value of $x^2$ or $x + 4$ or $(x - 4)^2$, and so on.

**G3**

As you read each question on the GRE, on your scrap paper write down whatever you are looking for, and circle it. This way you will always be sure that you are answering the question that is asked.

**Helpful Hint**

Very often, solving the equation is *not* the quickest way to answer the question. Consider the following example.

**Example 6.**
If $2x - 5 = 98$, what is the value of $2x + 5$?

SOLUTION. The first thing you should do is write $2x + 5$ on your paper and circle it. The fact that you are asked for the value of something other than $x$ should alert you to look at the question carefully to see if there is a shortcut.

- The best approach here is to observe that $2x + 5$ is 10 more than $2x - 5$, so the answer is 108 (10 more than 98).
- Next best would be to do only one step of the six-step method, add 5 to both sides: $2x = 103$. Now, add 5 to both sides: $2x + 5 = 103 + 5 = 108$.
- The worst method would be to divide $2x = 103$ by 2, get $x = 51.5$, and then use that to calculate $2x + 5$.

**Example 7.**
If $w$ is an integer, and the average (arithmetic mean) of 3, 4, and $w$ is less than 10, what is the greatest possible value of $w$?

(A) 9 (B) 10 (C) 17 (D) 22 (E) 23

SOLUTION. Set up the inequality: \( \frac{3 + 4 + w}{3} < 10 \). Do Step 1 (get rid of fractions by multiplying by 3): $3 + 4 + w < 30$. Do Step 3 (combine like terms): $7 + w < 30$. Finally, do Step 5 (subtract 7 from each side): $w < 23$. Since $w$ is an integer, the most it can be is 22.

The six-step method also works when there are variables in denominators.

**Example 8.**

For what value of $x$ is $\frac{4}{x} + \frac{3}{x} = \frac{10}{x}$?

(A) 5 (B) 10 (C) 20 (D) 30 (E) 50

SOLUTION. Multiply each side by the LCD, $5x$:

$$5x\left(\frac{4}{x}\right) + 5x\left(\frac{3}{x}\right) = 5x\left(\frac{10}{x}\right) \Rightarrow 20 + 3x = 50.$$

Now solve normally: $20 + 3x = 50 \Rightarrow 3x = 30 \Rightarrow x = 10$ (B).

**Example 9.**
If $x$ is positive, and $y = 5x^2 + 3$, which of the following is an expression for $x$ in terms of $y$?

(A) $\sqrt{\frac{y - 3}{5}}$ (B) $\sqrt{\frac{y - 3}{5}}$ (C) $\sqrt{\frac{y + 3}{5}}$ (D) $\sqrt{\frac{y - 3}{5}}$ (E) $\sqrt{\frac{y + 3}{5}}$

SOLUTION. The six-step method works when there are no exponents. However, we can treat $x^2$ as a single variable, and use the method as far as possible:

$$y = 5x^2 + 3 \Rightarrow y - 3 = 5x^2 \Rightarrow \frac{y - 3}{5} = x^2.$$

Now take the square root of each side; since $x$ is positive, the only solution is $x = \sqrt{\frac{y - 3}{5}}$ (B).

**Example 10.**

If $\frac{1}{a} = \frac{1}{b} + \frac{1}{c}$, what is $a$ in terms of $b$ and $c$?

NOTE: You *cannot* just take the reciprocal of each term; the answer is *not* $a = b + c$. Here are two solutions.

**SOLUTION 1.** First add the fractions on the right hand side: $\frac{1}{a} = \frac{1}{b} + \frac{1}{c} = \frac{b + c}{bc}$. Now, take the reciprocal of each side: $a = \frac{bc}{b + c}$.

**SOLUTION 2.** Use the six-step method. Multiply each term by $abc$, the LCD: $abc\left(\frac{1}{a}\right) = abc\left(\frac{1}{b}\right) + abc\left(\frac{1}{c}\right) \Rightarrow bc = ac + ab = a(c + b) \Rightarrow a = \frac{bc}{c + b}$. 
Example 11.
If \( a > 0 \) and \( a^2 + b^2 = c^2 \), what is \( a \) in terms of \( b \) and \( c \)?

SOLUTION. \( a^2 + b^2 = c^2 \Rightarrow a^2 = c^2 - b^2 \). Be careful: you cannot now take the square root of each term and write, \( a = c - b \). Rather, you must take the square root of each side: \( a = \sqrt{c^2 - b^2} \).

There are a few other types of equations that you could have to solve on the GRE. Fortunately, they are quite easy. You probably will not have to solve a quadratic equation; however, if you do, you will not need the quadratic formula, and you will not have to factor a trinomial. Here are two examples.

Example 12.
If \( x \) is a positive number and \( x^2 + 64 = 100 \), what is the value of \( x \)?

(A) 6  (B) 12  (C) 13  (D) 14  (E) 36

SOLUTION. When there is an \( x^2 \)-term, but no \( x \)-term, we just have to take the square root:
\[ x^2 + 64 = 100 \Rightarrow x^2 = 36 \Rightarrow x = \sqrt{36} = 6 \ (A). \]

Example 13.
What is the largest value of \( x \) that satisfies the equation \( 2x^2 - 3x = 0 \)?

(A) 0  (B) 1.5  (C) 2  (D) 2.5  (E) 3

SOLUTION: When an equation has an \( x^2 \)-term and an \( x \)-term but no constant term, the way to solve it is to factor out the \( x \) and to use the fact that if the product of two numbers is 0, one of them must be 0 (KEY FACT A3):
\[ 2x^2 - 3x = 0 \Rightarrow x(2x - 3) = 0 \]
\[ x = 0 \text{ or } 2x - 3 = 0 \]
\[ x = 0 \text{ or } 2x = 3 \]
\[ x = 0 \text{ or } x = 1.5. \]

The largest value is 1.5 (B).

In another type of equation that occasionally appears on the GRE, the variable is in the exponent. These equations are particularly easy and are basically solved by inspection.

Example 14.
If \( 2^{x+2} = 32 \), what is the value of \( 3^{x + 2} \)?

(A) 5  (B) 9  (C) 27  (D) 81  (E) 125

SOLUTION. How many 2s do you have to multiply together to get 32? If you don’t know that it’s 5, just multiply and keep track. Count the 2s on your fingers as you say to yourself, “2 times 2 is 4, times 2 is 8, times 2 is 16, times 2 is 32.” Then

\[ 2^{x+2} = 32 \Rightarrow 2^x + 2^2 = 2^5 \Rightarrow x + 3 = 5 \Rightarrow x = 2. \]

Therefore, \( x + 2 = 4 \), and \( 3^{x + 2} = 3^4 = 3 \times 3 \times 3 \times 3 = 81 \ (D) \).

Occasionally, both sides of an equation have variables in the exponents. In that case, it is necessary to write both exponents with the same base.

Example 15. If \( 4^{x + 3} = 8^{x - 1} \), what is the value of \( x \)?

(A) 0  (B) 1  (C) 2  (D) 3  (E) 9

SOLUTION. Since it is necessary to have the same base on each side of the equation, write \( 4 = 2^2 \) and \( 8 = 2^3 \). Then
\[ 4^{x + 3} = (2^2)^{x + 3} = 2^{2x + 6} \text{ and } 8^{x - 1} = (2^3)^{x - 1} = 2^{3x - 3}. \]

So, \( 2^{2x + 6} = 2^{3x - 3} \Rightarrow 2w + 6 = 3w - 3 \Rightarrow w = 9 \ (E) \).

Systems of Linear Equations

The equations \( x + y = 10 \) and \( x - y = 2 \) each have lots of solutions (infinitely many, in fact). Some of them are given in the tables below.

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>6</th>
<th>4</th>
<th>1</th>
<th>1.2</th>
<th>10</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>9</td>
<td>8.8</td>
<td>0</td>
<td>-10</td>
</tr>
<tr>
<td>x + y</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>6</th>
<th>2</th>
<th>0</th>
<th>2.5</th>
<th>19</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>-2</td>
<td>.5</td>
<td>17</td>
<td>38</td>
</tr>
<tr>
<td>x - y</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

However, only one pair of numbers, \( x = 6 \) and \( y = 4 \), satisfy both equations simultaneously: \( 6 + 4 = 10 \) and \( 6 - 4 = 2 \). This then is the only solution of the system of equations: \[ \{ x + y = 10 \} \text{ and } \{ x - y = 2 \}. \]

A system of equations is a set of two or more equations involving two or more variables. To solve such a system, you must find values for each of the variables that will make each equation true. In an algebra course you learn several ways to solve systems of equations. On the GRE, the most useful way to solve them is to add or subtract (usually add) the equations. After demonstrating this method, we will show in Example 19 one other way to handle some systems of equations.
To solve a system of equations, add or subtract them. If there are more than two equations, add them.

**Example 16.**

\[ x + y = 10 \]
\[ x - y = 2 \]

**Column A**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
\[ x \]  \[ y \]

**Column B**

SOLUTION. Add the two equations:

\[ x + y = 10 \]
\[ + x - y = 2 \]
\[ 2x = 12 \]
\[ x = 6 \]

Replacing \( x \) with 6 in \( x + y = 10 \) yields \( y = 4 \). So, Column A is greater.

**Helpful Hint**

On the GRE, most problems involving systems of equations do not require you to solve the system. They usually ask for something other than the values of each variable. Read the questions very carefully, circle what you need, and do no more than is required.

**Example 17.**

If \( 3a + 5b = 10 \) and \( 5a + 3b = 30 \), what is the average (arithmetic mean) of \( a \) and \( b \)?

(A) 2.5  (B) 4  (C) 5  (D) 20  (E) It cannot be determined from the information given.

**SOLUTION.** Add the two equations:

\[ 3a + 5b = 10 \]
\[ + 5a + 3b = 30 \]
\[ 8a + 8b = 40 \]

Divide both sides by 8:

\[ a + b = 5 \]

The average of \( a \) and \( b \) is:

\[ \frac{a + b}{2} = \frac{5}{2} = 2.5 \text{ (A)} \]

Note: It is not only unnecessary to first solve for \( a \) and \( b \) (\( a = 7.5 \) and \( b = -2.5 \)). but, because that procedure is so much more time-consuming, it would be foolish to do so.

---

**Example 18.**

\[ 7a - 3b = 200 \]
\[ 7a + 3b = 100 \]

**Column A**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
\[ a \]  \[ b \]

**Column B**

SOLUTION. Don't actually solve the system. Add the equations: \( 14a = 300 \Rightarrow 7a = 150 \). So, replacing \( 7a \) with 150 in the second equation, we get \( 150 + 3b = 100 \); so \( 3b \), and hence \( b \), must be negative, whereas \( a \) is positive. Therefore, \( a > b \), and Column A is greater.

**Helpful Hint**

Remember TACTIC 5, Chapter 12. On quantitative comparison questions, you don't need to know the value of the quantity in each column; you only need to know which one is greater.

Occasionally on the GRE, it is as easy, or easier, to solve the system by substitution.

---

**Example 19.**

\[ x + y = 10 \]
\[ y = x - 2 \]

**Column A**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
\[ x \]  \[ y \]

**Column B**

SOLUTION. Since the second equation states that a single variable (\( y \)), is equal to some expression \( (x - 2) \), substitute that expression for \( y \) in the first equation:

\[ x + y = 10 \]
\[ x + (x - 2) = 10 \]
\[ 2x = 10 \]
\[ 2x = 12 \]
\[ x = 6 \]

As always, to find the value of the other variable (\( y \)), plug the value of \( x \) into one of the two original equations: \( y = 6 - 2 = 4 \). Column A is greater.
PRACTICE EXERCISES—EQUATIONS/INEQUALITIES

Multiple-Choice Questions

1. If $4x + 12 = 36$, what is the value of $x + 3$?
   (A) 3  (B) 6  (C) 9  (D) 12  (E) 18

2. If $7x + 10 = 44$, what is the value of $7x - 10$?
   (A) $-6\frac{6}{7}$  (B) $4\frac{6}{7}$  (C) $14\frac{6}{7}$  (D) 24  (E) 34

3. If $4x + 13 = 7 - 2x$, what is the value of $x$?
   (A) $-\frac{10}{3}$  (B) $-3$  (C) $-1$  (D) 1  (E) $\frac{10}{3}$

4. If $x - 4 = 9$, what is the value of $x^2 - 4$?
   (A) 21  (B) 77  (C) 81  (D) 165  (E) 169

5. If $ax - b = c - dx$, what is the value of $x$ in terms of $a$, $b$, $c$, and $d$?
   (A) $\frac{b+c}{a+d}$  (B) $\frac{c-b}{a-d}$  (C) $\frac{b+c-d}{a}$  (D) $\frac{c-b}{a+d}$  (E) $\frac{c-d}{b}$

6. If $\frac{1}{3}x + \frac{1}{6}x + \frac{1}{9}x = 33$, what is the value of $x$?
   (A) 3  (B) 18  (C) 27  (D) 54  (E) 72

7. If $3x - 4 = 11$, what is the value of $(3x - 4)^2$?
   (A) 22  (B) 36  (C) 116  (D) 121  (E) 256

8. If $64^{\frac{1}{2}} = 2^{x-1}$, what is the value of $a$?
   (A) 9  (B) 15  (C) 69  (D) 72  (E) 75

9. If the average (arithmetic mean) of $3a$ and $4b$ is less than 50, and $a$ is twice $b$, what is the largest possible integer value of $a$?
   (A) 9  (B) 10  (C) 11  (D) 19  (E) 20

10. If $\frac{1}{a-b} = 5$, then $a = $
    (A) $b + 5$  (B) $b - 5$  (C) $b + \frac{1}{5}$  (D) $b - \frac{1}{5}$  (E) $\frac{1-5b}{5}$

11. If $x = 3a + 7$ and $y = 9a^2$, what is $y$ in terms of $x$?
    (A) $(x - 7)^2$  (B) $3(x - 7)^2$  (C) $\frac{(x - 7)^2}{3}$  (D) $\frac{(x + 7)^2}{3}$  (E) $(x + 7)^2$

12. If $4y - 3x = 5$, what is the smallest integer value of $x$ for which $y > 100$?
    (A) 130  (B) 131  (C) 132  (D) 395  (E) 396

Quantitative Comparison Questions

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>$a + b = 13$</td>
<td>$a - b = 13$</td>
</tr>
<tr>
<td>$a + b = 1$</td>
<td>$b + c = 2$</td>
</tr>
</tbody>
</table>

13. $b$  13
14. $a$  $b$
15. $x$  1
16. $\frac{3x - 4y}{5} = 5$  $y = 2x$
17. $\frac{x}{2} - 2 > \frac{x}{3}$
18. $x$  12
19. $\frac{3r - 5s}{17}$  $\frac{2r - 6s}{7}$
20. $\frac{1}{c} = 1 + \frac{1}{d}$  $c$ and $d$ are positive
Answer Key


Answer Explanations

1. C. The easiest method is to recognize that \( x + 3 \) is \( \frac{1}{4} \) of \( 4x + 12 \) and, therefore, equals \( \frac{1}{4} \) of 36, which is 9. If you don't see that, solve normally: \( 4x + 12 = 36 \Rightarrow 4x = 24 \Rightarrow x = 6 \Rightarrow x + 3 = 9 \).

2. D. Subtracting 20 from each side of \( 7x + 10 = 44 \) gives \( 7x - 10 = 24 \). If you don't see that, subtract 10 from each side, getting \( 7x = 34 \). Then subtract 10 to get \( 7x - 10 = 24 \). The worst alternative is to divide both sides of \( 7x = 34 \) by 7 to get \( x = \frac{34}{7} \); then you have to multiply by 7 to get back to 34, and then subtract 10.

3. C. Add \( 2x \) to each side: \( 6x + 13 = 7 \). Subtract 13 from each side: \( 6x = -6 \). Divide by 6; \( x = -1 \).

4. D. \( x - 4 = 9 \Rightarrow x = 13 \Rightarrow x^2 = 169 \Rightarrow x^2 - 4 = 165 \).

5. A. Treat \( a, b, c, \) and \( d \) as constants, and use the six-step method to solve for \( x \):

\[
ax - b = c - dx \Rightarrow ax - b + dx = c \Rightarrow ax + dx = c + b \Rightarrow x(a + d) = b + c \Rightarrow x = \frac{b + c}{a + d}.
\]

6. D. Multiply both sides by 18, the LCD:

\[
18 \left( \frac{1}{3}x + \frac{1}{6}x + \frac{1}{9}x \right) = 18(33) \Rightarrow 6x + 3x + 2x = 594 \Rightarrow 11x = 594 \Rightarrow x = 54.
\]

It's actually easier not to multiply out 18 x 33; leave it in that form, and then divide by 11. \( \frac{18 \times 33}{11} = 3 \times 18 = 54 \).

7. D. Be alert. Since you are given the value of \( 3x - 4 \), and want the value of \( (3x - 4)^2 \), just square both sides: \( 11^2 = 121 \). If you don't see that, you'll waste time solving \( 3x - 4 = 11 \) (\( x = 5 \)), only to use that value to calculate that \( 3x - 4 \) is equal to 11, which you already knew.

8. E. \( 2^{x-1} = 64^{1/2} = (2^6)^{1/2} = 2^{7/2} \Rightarrow a - 3 = 72 \Rightarrow a = 75 \).

9. D. Since \( a = 2b, 2a = 4b \). Therefore, the average of \( 3a \) and \( 4b \) is the average of \( 3a \) and \( 2a \), which is \( 2.5a \). Therefore, \( 2.5a < 50 \Rightarrow a < 20 \). So the largest integer value of \( a \) is 19.

10. C. Taking the reciprocal of each side, we get \( a - b = \frac{1}{5} \). So \( a = b + \frac{1}{5} \).

11. A. \( x = 3a + 7 \Rightarrow x - 7 = 3a \Rightarrow a = \frac{x - 7}{3} \).

Therefore, \( y = 9a^2 = 9 \left( \frac{x - 7}{3} \right)^2 = 9 \left( \frac{x - 7}{3} \right)^2 = (x - 7)^2 \).

12. C. First, solve for \( y \) in terms of \( x \):

\( 4y - 3x = 5 \Rightarrow 4y = 5 + 3x \Rightarrow y = \frac{5 + 3x}{4} \).

Then, since \( y > 100 \):

\[
\frac{5 + 3x}{4} > 100 \Rightarrow 5 + 3x > 400 \Rightarrow 3x > 395 \Rightarrow x > 131.666.
\]

The smallest integer value of \( x \) is 132.

13. A. Adding the two equations, we get that \( 2a = 26 \). Therefore, \( a = 13 \) and \( b = 0 \).

14. A. Express each side of \( \frac{2^{x-1}}{2^b+1} = 8 \) as a power of 2:

\( 8 = 2^3 \) and \( \frac{2^{x-1}}{2^b+1} = 2^{a-1} \cdot (b+1) = 2^a \cdot b - 2 \).

Therefore, \( a - b - 2 = 3 \Rightarrow a = b + 5 \), and so \( a \) is greater.

15. B. \( 4x^2 = 3x \Rightarrow 4x^2 - 3x = 0 \Rightarrow x(4x - 3) = 0 \Rightarrow \)

\[
x = 0 \text{ or } 4x - 3 = 0 \Rightarrow x = 0 \text{ or } 4x = 3 \Rightarrow x = 0 \text{ or } x = \frac{3}{4}.
\]

There are two possible values of \( x \), both of which are less than 1.
16. C. When we add all three equations, we get
\[ 2a + 2b + 2c = 6 \Rightarrow a + b + c = 3 \Rightarrow \frac{a + b + c}{3} = 1. \]

17. A. Use substitution. Replace \( x \) in the first equation with \( 2x; 3x - 4(2x) = 5 \Rightarrow 3x - 8x = 5 \Rightarrow -5x = 5 \Rightarrow x = -1 \Rightarrow y = -2. \)

18. A. Multiply both sides by 6, the LCD:
\[ 6 \left( \frac{x}{2} - 2 \right) \geq 6 \left( \frac{x}{3} \right) \Rightarrow 3x - 12 > 2x \Rightarrow -12 > -x \Rightarrow x > 12. \]

19. B. The first thing to try is to add the equations. That yields \( 5r = 11s = 24 \), which does not appear to be useful. So now try to subtract the equations. That yields \( r + s = 10 \). So the average of \( r \) and \( s \) is \( \frac{10}{2} = 5. \)

20. B. Multiply both sides by \( cd \), the LCD of the fractions:
\[
\frac{1}{c} = \frac{1}{d} \Rightarrow d = cd + c = c(d + 1) \Rightarrow c = \frac{d}{d+1}
\]
Since \( d \) is positive, \( d + 1 > 1 \) \( \Rightarrow \frac{d}{d+1} < d. \)

**Example 1a.**
What is 4% of 4% of 40,000?

**Example 1b.**
In a lottery, 4% of the tickets printed can be redeemed for prizes, and 4% of those tickets have values in excess of $106. If the state prints 40,000 tickets, how many of them can be redeemed for more than $100?

**Example 2a.**
If \( x + 7 = 2(x - 8) \), what is the value of \( x \)?

**Example 2b.**
In 7 years Erin will be twice as old as she was 8 years ago. How old is Erin now?

Once you translate the words into arithmetic expressions or algebraic equations, Examples 1a and 1b and 2a and 2b are identical. The problem that many students have is doing the translation. It really isn't very difficult, and we'll show you how. First, though, look over the following English to algebra "dictionary."

<table>
<thead>
<tr>
<th>English Words</th>
<th>Mathematical Meaning</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is, was, will be, had, has, will have, is equal to, is the same as</td>
<td>Equals</td>
<td>=</td>
</tr>
<tr>
<td>Plus, more than, sum, increased by, added to, exceeds, received, got, older than, farther than, greater than</td>
<td>Addition</td>
<td>+</td>
</tr>
<tr>
<td>Minus, fewer, less than, difference, decreased by, subtracted from, younger than, gave, lost</td>
<td>Subtraction</td>
<td>-</td>
</tr>
<tr>
<td>Times, of, product, multiplied by</td>
<td>Multiplication</td>
<td>( \times )</td>
</tr>
<tr>
<td>Divided by, quotient, per, for</td>
<td>Division</td>
<td>( \div, \frac{a}{b} )</td>
</tr>
<tr>
<td>More than, greater than</td>
<td>Inequality</td>
<td>&gt;</td>
</tr>
<tr>
<td>At least</td>
<td>Inequality</td>
<td>( \geq )</td>
</tr>
<tr>
<td>Fewer than, less than</td>
<td>Inequality</td>
<td>&lt;</td>
</tr>
<tr>
<td>At most</td>
<td>Inequality</td>
<td>( \leq )</td>
</tr>
<tr>
<td>What, how many, etc.</td>
<td>Unknown quantity</td>
<td>( x ) (or some other variable)</td>
</tr>
</tbody>
</table>

Let's use our dictionary to translate some phrases and sentences.

**14-H. WORD PROBLEMS**

On a typical GRE you will see several word problems, covering almost every math topic for which you are responsible. In this chapter you have already seen word problems on consecutive integers in Section A; fractions and percents in Sections B and C; ratios and rates in Section D; and averages in Section E. Later in this chapter you will see word problems involving probability, circles, triangles, and other geometric figures. A few of these problems can be solved with just arithmetic, but most of them require basic algebra.

To solve word problems algebraically, you must treat algebra as a foreign language and learn to translate "word for word" from English into algebra, just as you would from English into French or Spanish or any other language. When translating into algebra, we use a single letter (often \( x \)) to represent the unknown quantity we are trying to determine. It is this translation process that causes difficulty for some students. Once translated, solving is easy using the techniques we have already reviewed. Consider the following pairs of typical GRE questions. The first ones in each pair (1a and 2a) would be considered easy, whereas the second ones (1b and 2b) would be considered harder.
1. The sum of 5 and some number is 13. \[ 5 + x = 13 \]
2. John was 2 years younger than Sam. \[ J = S - 2 \]
3. Bill has at most $100. \[ B \leq 100 \]
4. The product of 2 and a number exceeds that number by 5 (is 5 more than). \[ 2N = N + 5 \]

In translating statements, you first must decide what quantity the variable will represent. Often it's obvious. Other times there is more than one possibility.

Let's translate and solve the two questions from the beginning of this section, and then we'll look at a few new ones.

**Example 1b.**
In a lottery, 4% of the tickets printed can be redeemed for prizes, and 4% of those tickets have values in excess of $100. If the state prints 40,000 tickets, how many of them can be redeemed for more than $100?

**Solution.** Let \( x \) be the number of tickets worth more than $100. Then

\[
x = 4\% \text{ of } 40,000 = 0.04 \times 40,000 = 1600,
\]

which is also the solution to Example 1a.

**Example 2b.**
In 7 years Erin will be twice as old as she was 8 years ago. How old is Erin now?

**Solution.** Let \( x \) be Erin's age now. Then 8 years ago she was \( x - 8 \), and 7 years from now she will be \( x + 7 \). So,

\[
x + 7 = 2(x - 8) \Rightarrow x + 7 = 2x - 16 \Rightarrow 7 = x - 16 \Rightarrow x = 23,
\]

which is also the solution to Example 2a.

Most algebraic word problems on the GRE are not too difficult, and if you can do the algebra, that's usually the best way. But if, after studying this section, you still get stuck on a question during the test, don't despair. Use the tactics that you learned in Chapter 11, especially TACTIC 1—backsolving.

**Helpful Hint**
In all word problems on the GRE, remember to write down and circle what you are looking for. Don't answer the wrong question!

---

**Age Problems**

**Helpful Hint**
In problems involving age, remember that "years ago" means you need to subtract, and "years from now" means you need to add.

**Example 3.**
In 1980, Judy was 3 times as old as Adam, but in 1984 she was only twice as old as he was. How old was Adam in 1990?

(A) 4 \hspace{1cm} (B) 8 \hspace{1cm} (C) 12 \hspace{1cm} (D) 14 \hspace{1cm} (E) 16

**Solution.** Let \( x \) be Adam's age in 1980 and fill in the table below.

<table>
<thead>
<tr>
<th>Year</th>
<th>Judy</th>
<th>Adam</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>3x</td>
<td>x</td>
</tr>
<tr>
<td>1984</td>
<td>3x + 4</td>
<td>x + 4</td>
</tr>
</tbody>
</table>

Now translate: Judy's age in 1984 was twice Adam's age in 1984: \( 3x + 4 = 2(x + 4) \)

\[
x + 4 = 2x + 8 \Rightarrow x + 4 = 8 \Rightarrow x = 4
\]

So, Adam was 4 in 1990. However, 4 is not the answer to this question. Did you remember to circle what you're looking for? The question could have asked for Adam's age in 1980 (Choice A) or 1984 (Choice B) or Judy's age in any year whatsoever (Choice C is 1980 and Choice E is 1984); but it didn't. It asked for Adam's age in 1990. Since he was 4 in 1980, then 10 years later, in 1990, he was 14 (D).

**Distance Problems**

Distance problems all depend on three variations of the same formula:

\[
\text{distance} = \text{rate} \times \text{time} \hspace{1cm} \text{rate} = \frac{\text{distance}}{\text{time}} \hspace{1cm} \text{time} = \frac{\text{distance}}{\text{rate}}
\]

These are usually abbreviated, \( d = rt \), \( r = \frac{d}{t} \), and \( t = \frac{d}{r} \).
**Example 4.**

How much longer, in seconds, is required to drive 1 mile at 40 miles per hour than at 60 miles per hour?

**SOLUTION.** The time to drive 1 mile at 40 miles per hour is given by

\[ t = \frac{1}{40} \text{ hour} = \frac{3}{40} \times 60 \text{ minutes} = 1\frac{1}{2} \text{ minutes}. \]

The time to drive 1 mile at 60 miles per hour is given by

\[ t = \frac{1}{60} \text{ hour} = 1 \text{ minute}. \]

The difference is \( \frac{1}{2} \) minute = **30 seconds**.

Note that this solution used the time formula given, but required only arithmetic, not algebra. Example 5 requires an algebraic solution.

**Example 5.**

Avi drove from his home to college at 60 miles per hour. Returning over the same route, there was a lot of traffic, and he was only able to drive at 40 miles per hour. If the return trip took 1 hour longer, how many miles did he drive each way?

(A) 2 (B) 3 (C) 5 (D) 120 (E) 240

**SOLUTION.** Let \( x \) = the number of hours Avi took going to college and make a table.

<table>
<thead>
<tr>
<th></th>
<th>rate</th>
<th>time</th>
<th>distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Going</td>
<td>60</td>
<td>( x )</td>
<td>60( x )</td>
</tr>
<tr>
<td>Returning</td>
<td>40</td>
<td>( x + 1 )</td>
<td>40( x + 1 )</td>
</tr>
</tbody>
</table>

Since he drove the same distance going and returning,

\[ 60x = 40(x + 1) \Rightarrow 60x = 40x + 40 \Rightarrow 20x = 40 \Rightarrow x = 2. \]

Now be sure to answer the correct question. When \( x = 2 \), Choices A, B, and C are the time in hours that it took going, returning, and round-trip; Choices D and E are the distances each way and round-trip. You could have been asked for any of the five. If you circled what you're looking for, you won't make a careless mistake. Avi drove **120 miles** each way, and so the correct answer is **D**.

The \( d \) in \( d = rt \) stands for "distance," but it could really be any type of work that is performed at a certain rate, \( r \), for a certain amount of time, \( t \). Example 5 need not be about distance. Instead of driving 120 miles at 60 miles per hour for 2 hours, Avi could have read 120 pages at a rate of 60 pages per hour for 2 hours; or planted 120 flowers at the rate of 60 flowers per hour for 2 hours; or typed 120 words at a rate of 60 words per minute for 2 minutes.

Examples 6 and 7 illustrate two additional word problems of the type that you might find on the GRE.

**Example 6.**

Lindsay is trying to collect all the cards in a special commemorative set of baseball cards. She currently has exactly \( \frac{1}{4} \) of the cards in that set.

When she gets 10 more cards, she will then have \( \frac{1}{3} \) of the cards. How many cards are in the set?

(A) 30 (B) 60 (C) 120 (D) 180 (E) 240

**SOLUTION.** Let \( x \) be the number cards in the set.

First, translate this problem from English into algebra:

\[ \frac{x}{4} + 10 = \frac{x}{3}. \]

Now, use the six-step method of Section 14-G to solve the equation. Multiply by 12 to get, \( 3x + 120 = 4x \), and then subtract \( 3x \) from each side:

\[ x = 120 \text{ (D)}. \]

**Example 7.**

Jen, Ken, and Len have a total of $390. Jen has 5 times as much as Len, and Ken has \( \frac{3}{4} \) as much as Jen. How much money does Ken have?

(A) $40 (B) $78 (C) $150 (D) $195 (E) $200

**Helpful Hint**

You often have a choice as to what to let the variable represent. Don't necessarily let it represent what you're looking for; rather, choose what will make the problem easiest to solve.

Suppose, for example, that in this problem you let \( x \) represent the amount of money that Ken has. Then since Ken has \( \frac{3}{4} \) as much as Jen, Jen has \( \frac{4}{3} \) as much as Ken: \( \frac{4}{3} \times \frac{3}{4} \times x = \frac{4}{3} x \).

Ken: \( \frac{4}{3} x \), and Jen would have \( \frac{1}{5} \) of that: \( \frac{1}{5} \times \frac{4}{3} x \). It is much easier here to let \( x \) represent the amount of money Len has.

**SOLUTION.** Let \( x \) represent the amount of money Len has. Then \( 5x \) is the amount that Jen has, and \( \frac{3}{4} (5x) \) is the amount that Ken has. Since the total amount of money is $390,

\[ x + 5x + \frac{15}{4} x = 390. \]

Multiply by 4 to get rid of the fraction:

\[ 4x + 20x + 15x = 1560. \]

Combine like terms and then divide:

\[ 39x = 1560 \Rightarrow x = 40. \]

So Len has $40. Jen has \( 5 \times 40 = 200 \), and Ken has \( \frac{3}{4} (200) = 150 \text{ (C)}. \)
**PRACTICE EXERCISES—WORD PROBLEMS**

**Multiple-Choice Questions**

1. Howard has three times as much money as Ronald. If Howard gives Ronald $50, Ronald will then have three times as much money as Howard. How much money do the two of them have together?
   (A) $75  (B) $100  (C) $125  (D) $150  (E) $200

   9. If \( \frac{1}{2} \) years ago Adam was 12, and \( \frac{1}{2} \) years from now he will be 2x years old, how old will he be 3x years from now?
   (A) 18  (B) 24  (C) 30  (D) 54  (E) It cannot be determined from the information given.

   10. Since 1950, when Barry was discharged from the army, he has gained 2 pounds every year. In 1980 he was 40% heavier than in 1950. What percent of his 1995 weight was his 1980 weight?
   (A) 80  (B) 85  (C) 87.5  (D) 90  (E) 95

**Quantitative Comparison Questions**

11. Lindsay is twice as old as she was 10 years ago. Kimberly is half as old as she will be in 10 years.
   \( \begin{array}{c|c}
   \text{Column A} & \text{Column B} \\
   \hline
   \text{Lindsay's age now} & \text{Kimberly's age now} \\
   \end{array} \)
   \( \frac{1}{4} \) of Boris's take-home pay on Saturday and \( \frac{1}{3} \) of what was left on Sunday. The rest he put in his savings account.
   \( \begin{array}{c|c}
   \text{The amount of his take-home pay that he spent} & \text{The amount of his take-home pay that he saved} \\
   \hline
   \text{In 8 years, Tiffany will be 3 times as old as she is now.} & 16 \\
   \end{array} \)
   Rachel put exactly 50 cents worth of postage on an envelope using only 4-cent stamps and 7-cent stamps.
   \( \begin{array}{c|c}
   \text{The number of 4-cent stamps she used} & \text{The number of 7-cent stamps she used} \\
   \hline
   \text{Car A and Car B leave from the same spot at the same time. Car A travels due north at 40 mph. Car B travels due east at 30 mph.} & 450 miles \\
   \end{array} \)

   12. The number of shells in Judy's collection is 80% of the number in Justin's collection. If Justin has 80 more shells than Judy, how many shells do they have altogether?
   (A) 180  (B) 320  (C) 400  (D) 720  (E) 800

   13. A jar contains only red, white, and blue marbles. The number of red marbles is \( \frac{4}{5} \) the number of white ones, and the number of white ones is \( \frac{3}{4} \) the number of blue ones. If there are 470 marbles in all, how many of them are blue?
   (A) 120  (B) 135  (C) 150  (D) 184  (E) 200

   14. As a fund-raiser, the school band was selling two types of candy: lollipops for 40 cents each and chocolate bars for 75 cents each. On Monday, they sold 150 candies and raised $74 dollars. How many lollipops did they sell?
   (A) 75  (B) 90  (C) 96  (D) 110  (E) 120

   15. What is the greater of two numbers whose product is 990, if the sum of the two numbers exceeds their difference by 30?
   (A) 15  (B) 60  (C) 75  (D) 90  (E) 100

   8. On a certain project the only grades awarded were 80 and 100. If 10 students completed the project and the average of their grades was 94, how many earned 100?
   (A) 2  (B) 3  (C) 5  (D) 7  (E) 8
Answer Key

1. B  6. D  11. A

Answer Explanations

1. B.

<table>
<thead>
<tr>
<th>At the beginning</th>
<th>Ronald</th>
<th>Howard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x</td>
<td>3x</td>
</tr>
</tbody>
</table>

After the gift: x + 50 = 3x + 50 = 9x - 150
8x = 200 => x = 25.

So Ronald has $25 and Howard has $75, for a total of $100.

2. B.

Beth's average rate of reading is determined by dividing the total number of pages she read (200) by the total amount of time she spent reading. In the afternoon she read for \( \frac{100}{60} = \frac{5}{3} \) hours, and in the evening for \( \frac{100}{40} = \frac{5}{2} \) hours, for a total time of \( \frac{5}{3} + \frac{5}{2} = \frac{10 + 15}{6} = \frac{25}{6} \) hours. So, her average rate was \( 200 \times \frac{6}{25} = 48 \) pages per hour.

3. E.

Let the 5 consecutive integers be 
\( n, n+1, n+2, n+3, n+4 \). Then,
\[
S = n + n + 1 + n + 2 + n + 3 + n + 4 =
5n + 10 \Rightarrow 5n = S - 10 \Rightarrow n = \frac{S - 10}{5}.
\]

Choice A, therefore, is the smallest of the integers; the largest is
\[
n + 4 = \frac{S - 10}{5} + 4 = \frac{S - 10 + 20}{5} = \frac{S + 10}{5}.
\]

4. D.

If \( x \) is the number of shells in Justin's collection, then Judy has \( .80x \). Since Justin has 80 more shells than Judy,
\[
x = .80x + 80 \Rightarrow .20x = 80 \Rightarrow x = 80 \div .20 = 400.
\]
So Justin has 400 and Judy has 320; a total of 720.

5. E.

If \( b \) is the number of blue marbles, then there are \( \frac{3}{4} b \) white ones, and \( \frac{4}{5} \left( \frac{3}{4} b \right) = \frac{3}{5} b \) red ones. Therefore,
\[
470 = b + \frac{3}{4} b + \frac{3}{5} b = b \left( 1 + \frac{3}{4} + \frac{3}{5} \right) = \frac{47}{20} b.
\]
So, \( b = 470 \div \frac{47}{20} = \frac{10}{9} \times \frac{20}{47} = 200 \).

6. D.

Let \( x \) represent the number of chocolate bars sold; then \( 150 - x \) is the number of lollipops sold. We must use the same units, so we could write 75 cents as .75 dollars or 74 dollars as 7400 cents. Let's avoid the decimals: \( x \) chocolates sold for 75x cents and \( (150 - x) \) lollipops sold for 40(150 - x) cents. So,
\[
7400 = 75x + 40(150 - x) = 75x + 6000 - 40x = 6000 + 35x \Rightarrow
1400 = 35x \Rightarrow x = 40 \text{ and } 150 - 40 = 110.
\]

7. B.

If \( x \) represents the greater and \( y \) the smaller of the two numbers, then \( (x + y) = 30 + (x - y) \Rightarrow y = 30 - y \Rightarrow 2y = 30 \Rightarrow y = 15 \) and since \( xy = 900, x = 900 \div 15 = 60 \).

8. D.

If \( x \) represents the number of students earning 100, then \( 10 - x \) is the number of students earning 80. So
\[
94 = \frac{100x + 80(10 - x)}{10} \Rightarrow
94 = \frac{100x + 800 - 80x}{10} \Rightarrow
94 \times 10 = 940 = 20x + 800 \Rightarrow
140 \times 20 \Rightarrow x = 7.
\]

9. D.

Since \( \frac{1}{2} x \) years ago, Adam was 12, he is now \( 12 + \frac{1}{2} x \). So \( \frac{1}{2} x \) years from now, he will be
\[
12 + \frac{1}{2} x + \frac{1}{2} x = 12 + x. \text{ But, we are told that at that time he will be } 2x \text{ years old. So,}
12 + x = 2x \Rightarrow x = 12. \text{ Thus, he is now}
12 + 6 = 18, \text{ and } 3x \text{ or 36 years from now he will be } 18 + 36 = 54.
10. Let \( x \) be Barry's weight in 1950. By 1980, he had gained 60 pounds (2 pounds per year for 30 years) and was 40% heavier: \( 60 = 0.40x \Rightarrow x = 60 / 0.4 = 150 \). So in 1990, he weighed 210. Fifteen years later, in 2005, he weighed \( 240 / 8 = 7 \times 8 = 87.5\% \).

11. A. You can do the simple algebra, but you should realize that Lindsay is as old now as Kimberly will be in 10 years. If \( x \) represents Lindsay's age now, \( x = 2(x - 10) \Rightarrow x = 2x - 20 \Rightarrow x = 20 \). Similarly, Kimberly is now 10 and will be 20 in 10 years.

12. C. Let \( x \) represent the amount of Boris's take-home pay. On Saturday, he spent \( \frac{1}{4}x \) and still had \( \frac{3}{4}x \); but on Sunday, he spent \( \frac{1}{3} \) of that: \( \frac{1}{3} \left( \frac{3}{4}x \right) = \frac{1}{4}x \). So he spent \( \frac{1}{4} \) of his take-home pay each day. He spent \( \frac{1}{2} \) and saved \( \frac{1}{2} \).

13. A. If \( x \) represents Tiffany's age now, then \( x + 8 \) is her age in 8 years, and so \( x + 8 = 3x \Rightarrow 8 = 2x \Rightarrow x = 4 \). Tiffany will be 6 times as old 26 years from now, when she will be 24.

14. D. If \( x \) and \( y \) represent the number of 4-cent stamps and 7-cent stamps that Rachel used, respectively, then \( 4x + 7y = 50 \). There are infinitely many solutions to this equation, but there are only 2 solutions in which \( x \) and \( y \) are both positive integers: \( y = 2 \) and \( x = 9 \) or \( y = 6 \) and \( x = 2 \).

15. C. Draw a diagram. In 9 hours Car A drove 360 miles north and Car B drove 270 miles east. These are the legs of a right triangle, whose hypotenuse is the distance between them. You can use the Pythagorean theorem if you don't recognize that this is just a 3-4-5 right triangle; the legs are 90 \( \times \) 3 and 90 \( \times \) 4, and the hypotenuse is 90 \( \times \) 5 = 450.

GEOMETRY

Although about 30% of the math questions on the GRE have to do with geometry, there are only a relatively small number of facts you need to know—far less than you would learn in a geometry course—and, of course, there are no proofs. In the next six sections we will review all of the geometry that you need to know to do well on the GRE. We will present the material exactly as it appears on the GRE, using the same vocabulary and notation, which might be slightly different from the terminology you learned in your high school math classes. In particular, the word "congruent" and the symbol "\( \equiv \)" are not used—angles or line segments that have the same measure are considered "equal." The numerous multiple-choice and quantitative comparison examples will show you exactly how these topics are treated on the GRE.

14-I. LINES AND ANGLES

An angle is formed by the intersection of two line segments, rays, or lines. The point of intersection is called the vertex. On the GRE, angles are always measured in degrees.

**KEY FACT 1:**

Angles are classified according to their degree measures.

- An acute angle measures less than 90\(^\circ\).
- A right angle measures 90\(^\circ\).
- An obtuse angle measures more than 90\(^\circ\) but less than 180\(^\circ\).
- A straight angle measures 180\(^\circ\).

![Diagram of angles](image)

NOTE: The small square in the second angle in the figure above is always used to mean that the angle is a right angle. On the GRE, if an angle has a square in it, it must measure exactly 90\(^\circ\), whether or not you think that the figure has been drawn to scale.

**KEY FACT 2:**

If two or more angles form a straight angle, the sum of their measures is 180\(^\circ\).
Example 1.
In the figure below, \( R, S, \) and \( T \) are all on line \( \ell \).
What is the average of \( a, b, c, d, \) and \( e \)?

SOLUTION. Since \( \angle RST \) is a straight angle, by KEY FACT 12, the sum of \( a, b, c, d, \) and \( e \) is 180, and so their average is \( \frac{180}{5} = 36 \) (B).

In the figure at the right, since \( a + b + c + d = 180 \) and \( e + f + g = 180 \),
\[ a + b + c + d + e + f + g = 180 + 180 = 360. \]

It is also true that \( u + v + w + x + y + z = 360 \), even though none of the angles forms a straight angle.

KEY FACT 13:
The sum of all the measures of all the angles around a point is 360°.

Note: This fact is particularly important when the point is the center of a circle, as we shall see in Section 14-L.

When two lines intersect, four angles are formed. The two angles in each pair of opposite angles are called **vertical angles**.

EXAMPLE 2.
In the figure at the right, what is the value of \( x \)?

(A) 6 (B) 8 (C) 10 (D) 20 (E) 40

SOLUTION. Since the measures of vertical angles are equal,
\[ 3x + 10 = 5(x - 2) \Rightarrow 3x + 10 = 5x - 10 \Rightarrow 3x + 20 = 5x \Rightarrow 20 = 2x \Rightarrow x = 10 \] (C).

KEY FACT 15:
If one of the angles formed by the intersection of two lines (or line segments) is a right angle, then all four angles are right angles.

Two lines that intersect to form right angles are called **perpendicular**.

In the figures below, line \( \ell \) divides \( \angle ABC \) into two equal parts, and line \( k \) divides line segment \( DE \) into two equal parts. Line \( \ell \) is said to bisect the angle, and line \( k \) **bisects** the line segment, Point \( M \) is called the midpoint of segment \( DE \).

Example 3.
In the figure at the right, lines \( k \), \( \ell \), and \( m \) intersect at \( O \). If line \( m \) bisects \( \angle AOB \), what is the value of \( x \)?

(A) 25 (B) 35 (C) 45 (D) 50 (E) 60
SOLUTION. \( m\angle AOB = 130^\circ \Rightarrow m\angle AOB = 50^\circ \); and since \( m \) bisects \( \angle AOB \), \( x = 25 \) (A).

Two lines that never intersect are said to be \textit{parallel}. Consequently, parallel lines form no angles. However, if a third line, called a \textit{transversal}, intersects a pair of parallel lines, eight angles are formed, and the relationships among these angles are very important.

**KEY FACT 16:**

If a pair of parallel lines is cut by a transversal that is perpendicular to the parallel lines, all eight angles are right angles.

**KEY FACT 17:**

If a pair of parallel lines is cut by a transversal that is not perpendicular to the parallel lines,

- Four of the angles are acute and four are obtuse;
- The four acute angles are equal: \( a = c = e = g \);
- The four obtuse angles are equal: \( b = d = f = h \);
- The sum of any acute angle and any obtuse angle is 180°; for example, \( d + e = 180^\circ \), \( e + f = 180^\circ \), \( b + g = 180^\circ \), ....

**KEY FACT 18:**

If a pair of lines that are not parallel is cut by a transversal, \textit{none} of the properties listed in KEY FACT 17 is true.

You must know KEY FACT 17—virtually every GRE has at least one question based on it. However, you do not need to know the special terms you learned in high school for these pairs of angles; those terms are not used on the GRE.

**Example 4.**

In the figure below, \( AB \) is parallel to \( CD \). What is the value of \( x \)?

\[
\begin{array}{c}
\text{(A) } 37 \quad \text{(B) } 45 \quad \text{(C) } 53 \quad \text{(D) } 63 \quad \text{(E) } 143
\end{array}
\]

SOLUTION. Let \( y \) be the measure of \( \angle BED \). Then by KEY FACT 12:

\[
37 + 90 + y = 180 \Rightarrow 127 + y = 180 \Rightarrow y = 53.
\]

Since \( AB \) is parallel to \( CD \), by KEY FACT 17, \( x = y \Rightarrow x = 53 \) (C).

**Example 5.**

In the figure below, lines \( \ell \) and \( k \) are parallel. What is the value of \( a + b \)?

\[
\begin{array}{c}
\text{(A) } 45 \quad \text{(B) } 60 \quad \text{(C) } 75 \quad \text{(D) } 90 \quad \text{(E) } 135
\end{array}
\]

SOLUTION. It is impossible to determine the value of either \( a \) or \( b \). We can, however, find the value of \( a + b \). We draw a line through the vertex of the angle parallel to \( \ell \) and \( k \). Then, looking at the top two lines, we see that \( a = x \), and looking at the bottom two lines, we see that \( b = y \). So, \( a + b = x + y = 45 \) (A).

Alternative solution. Draw a different line and use a Key Fact from Section 14-J on triangles. Extend one of the line segments to form a triangle. Since \( \ell \) and \( k \) are parallel, the measure of the third angle in the triangle equals \( a \). Now, use the fact that the sum of the measures of the three angles in a triangle is 180° or, even easier, that the given 45° angle is an external angle of the triangle, and so is equal to the sum of \( a \) and \( b \).
Multiple-Choice Questions

1. In the figure below, what is the average (arithmetic mean) of the measures of the five angles?

(A) 36 (B) 45 (C) 60 (D) 72 (E) 90

2. In the figure below, what is the value of $\frac{b + a}{b - a}$?

(A) 1 (B) 10 (C) 11 (D) 30 (E) 36

3. In the figure below, what is the value of $b$?

(A) 9 (B) 18 (C) 27 (D) 36 (E) 45

4. In the figure below, what is the value of $x$ if $y:x = 3:2$?

(A) 18 (B) 27 (C) 36 (D) 45 (E) 54

5. What is the measure of the angle formed by the minute and hour hands of a clock at 1:50?

(A) 90° (B) 95° (C) 105° (D) 115° (E) 120°

6. Concerning the figure below, if $a = b$, which of the following statements must be true?

- $c = d$
- $\ell$ and $k$ are parallel
- $m$ and $\ell$ are perpendicular

(A) none (B) I only (C) I and II only (D) I and III only (E) I, II, and III

7. In the figure below, $a:b = 3:5$ and $c:b = 2:1$. What is the measure of the largest angle?

(A) 30 (B) 45 (C) 50 (D) 96 (E) 100

8. A, B, and C are points on a line with B between A and C. Let M and N be the midpoints of AB and BC, respectively. If $AB:BC = 3:1$, what is $MN:BC$?

(A) 1:2 (B) 2:3 (C) 1:1 (D) 3:2 (E) 2:1

9. In the figure below, lines $k$ and $\ell$ are parallel. What is the value of $y - x$?

(A) 15 (B) 30 (C) 45 (D) 60 (E) 75

10. In the figure below, line $m$ bisects $\angle AOC$ and line $\ell$ bisects $\angle AOB$. What is the measure of $\angle DOE$?

(A) 75 (B) 90 (C) 100 (D) 105 (E) 120
Quantitative Comparison Questions

11. \( x \) \hspace{1cm} 90°

12. \( a \) \hspace{1cm} \( b \)

13. \( a + b + c + d \) \hspace{1cm} \( 2a + 2b \)

14. \( a + b + c + d \) \hspace{1cm} \( e + f + g + h \)

15. \( z \) \hspace{1cm} \( x + y \)

Answer Key


Answer Explanations

1. D. The markings in the five angles are irrelevant. The sum of the measures of the five angles is 360°, and 360 \( \div 5 = 72 \). If you calculated the measure of each angle you should have gotten 36, 54, 72, 90, and 108; but you would have wasted time.

2. C. From the diagram, we see that 6\( a \) = 180, which implies that \( a = 30 \), and that 5\( b \) = 180, which implies that \( b = 36 \). So, 16 \( = \frac{b + a}{b - a} = \frac{36 + 30}{36 - 30} = \frac{66}{6} = 11 \).

3. D. Since vertical angles are equal, the two unmarked angles are 2\( b \) and 4\( a \). Since the sum of all six angles is 360°,
\[ 360 = 4a + 2b + 2a + 4a + 2b + b = 10a + 5b. \]
However, since vertical angles are equal, \( b = 2a \Rightarrow 5b = 10a \). Hence,
\[ 360 = 10a + 5b = 10a + 10a = 20a \Rightarrow a + 18 \Rightarrow b = 36. \]
4. C. Since \( x + y + 90 = 180 \), \( x + y = 90 \). Also, since \( y : x = 3 : 2 \), \( y = 3t \) and \( x = 2t \). Therefore,
   \[
   \frac{3t + 2t}{2} = 90 \Rightarrow 5t = 90 \Rightarrow t = 18 \Rightarrow x = 2(18) = 36.
   \]

5. D. For problems such as this, always draw a diagram. The measure of each of the 12 central angles from one number to the next on the clock is 30°. At 1:50 the minute hand is pointing at 10, and the hour hand has gone \( \frac{50}{60} = \frac{5}{6} \) of the way from 1 to 2. So from 10 to 1 on the clock is 90°, and from 1 to the hour hand is \( \frac{5}{6} \times (30°) = 25° \), for a total of 90° + 25° = 115°.

6. B. No conclusions can be made about the lines; they could form any angles whatsoever. (II and III are both false.) I is true:
   \[c = 180 - a = 180 - b = d.\]

7. E. Since \( a : b = 3 : 5 \), then \( c = 3x \) and \( b = 5x \); and since \( c : b = c : 5x = 2 : 1 \), \( c = 10x \). Then,
   \[3x + 5x + 10x = 180 \Rightarrow 18x = 180 \Rightarrow x = 10 \Rightarrow c = 10x = 100.\]

8. E. If a diagram is not provided on a geometry question, draw one on your scrap paper. From the figure below, you can see that \( MN : BC = 2 : 1.\)
   
   ![Diagram](image)

9. C. Since the lines are parallel, the angle marked \( y \) and the sum of the angles marked \( x \) and 45 are equal: \( y = x + 45 \Rightarrow y - x = 45.\)

10. B. Let \( x = \frac{1}{2} \angle AOC \), and \( y = \frac{1}{2} \angle AOB \). Then,
   
   \[x + y = \frac{1}{2} \angle AOC + \frac{1}{2} \angle AOB = \frac{1}{2}(180) = 90.\]

11. D. No conclusion can be made: \( x \) could equal 50 or be more or less.

12. B. Since \( m \angle A + 32 + 75 = 180 \), \( m \angle A = 73 \); and since \( AB \) is parallel to \( CD \), \( a = 75 \), whereas, because vertical angles are equal, \( b = 75 \).

13. D. Column A  
   \[\begin{array}{c}
   \text{Column A} \\
   a + b + c + d \\
   \text{Column B}
   \end{array}\]
   
   Subtract \( a \) and \( b \) from each column: \( c + d \quad a + b \)
   
   Since \( b = d \),
   subtract them:
   \[c \quad a\]
   
   There is no way to determine whether \( a \) is less than, greater than, or equal to \( c \).

14. C. Whether the lines are parallel or not,
   
   \[a + b = c + d = e + f = g + h = 180.\]
   
   Each column is equal to 360.

15. C. Extend line segment \( AB \) to form a transversal. Since \( w + z = 180 \) and \( w + (x + y) = 180 \), it follows that \( z = x + y \).

14-J. TRIANGLES

More geometry questions on the GRE pertain to triangles than to any other topic. To answer them, there are several important facts that you need to know about the angles and sides of triangles. The KEY FACTS in this section are extremely useful. Read them carefully, a few times if necessary, and make sure you learn them all.

**KEY FACT J1:**

In any triangle, the sum of the measures of the three angles is 180°:
\[x + y + z = 180.\]
KEY FACT J2:

The measure of an exterior angle of a triangle is equal to the sum of the measures of the two opposite interior angles.

KEY FACT J3:

In any triangle:

- the longest side is opposite the largest angle;
- the shortest side is opposite the smallest angle;
- sides with the same length are opposite angles with the same measure.

CAUTION: In KEY FACT J3 the condition "in any triangle" is crucial. If the angles are not in the same triangle, none of the conclusions hold. For example, in the figure below, $AB$ and $DE$ are not equal even though they are each opposite a $90^\circ$ angle, and $QS$ is not the longest side in the figure, even though it is opposite the largest angle in the figure.

Consider triangles $ABC$, $JKL$, and $RST$ in Figure 1.

- In $\triangle ABC$: $BC$ is the longest side since it is opposite angle $A$, the largest angle ($71^\circ$). Similarly, $AB$ is the shortest side since it is opposite angle $C$, the smallest angle ($54^\circ$). So $AB < AC < BC$.
- In $\triangle JKL$: angles $J$ and $L$ have the same measure ($45^\circ$), so $JK = KL$.
- In $\triangle RST$: since all three angles have the same measure ($60^\circ$), all three sides have the same length: $RS = ST = TR$.

Example 3.

Which of the following statements concerning the length of side $YZ$ is true?

(A) $YZ < 9$
(B) $YZ = 9$
(C) $9 < YZ < 10$
(D) $YZ = 10$
(E) $YZ > 10$

In Example 2, $\angle BCD$, which is formed by one side of $\triangle ABC$ and the extension of another side, is called an exterior angle. Note that to find $a$ we did not have to first find $b$: we could have just added the other two angles: $a = 75 + 45 = 120$. This is a useful fact to remember.
SOLUTION.
- By KEY FACT J1, $m\angle X + 70 + 58 = 180 \Rightarrow m\angle X = 52$.
- So, X is the smallest angle.
- Therefore, by KEY FACT J3, YZ is the shortest side. So
  $$YZ < 9 \text{ (A)}.$$ 

**Classification of Triangles**

<table>
<thead>
<tr>
<th>Name</th>
<th>Lengths of the Sides</th>
<th>Measures of the Angles</th>
<th>Examples from Figure 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>scalene</td>
<td>all 3 different</td>
<td>all 3 different</td>
<td>ABC, DEF, GHI</td>
</tr>
<tr>
<td>isosceles</td>
<td>2 the same</td>
<td>2 the same</td>
<td>JKL</td>
</tr>
<tr>
<td>equilateral</td>
<td>all 3 the same</td>
<td>all 3 the same</td>
<td>RST</td>
</tr>
</tbody>
</table>

**Acute triangles** are triangles such as ABC and RST, in which all three angles are acute. An acute triangle could be scalene, isosceles, or equilateral.

**Obtuse triangles** are triangles such as DEF, in which one angle is obtuse and two are acute. An obtuse triangle could be scalene or isosceles.

**Right triangles** are triangles such as GHI and JKL, which have one right angle and two acute ones. A right triangle could be scalene or isosceles. The side opposite the 90° angle is called the hypotenuse, and by KEY FACT J3, it is the longest side. The other two sides are called the legs.

If $x$ and $y$ are the measures of the acute angles of a right triangle, then by KEY FACT J1,
$$90 + x + y = 180 \Rightarrow x + y = 90.$$ 

**KEY FACT J4:**
In any right triangle, the sum of the measures of the two acute angles is 90°.

**Solution.** Since the diagram indicates that $\triangle ABC$ is a right triangle, then, by KEY FACT J1, $x + y = 90$. So the average of $x$ and $y$ is $\frac{x + y}{2} = \frac{90}{2} = 45$.

The columns are equal (C).

The most important facts concerning right triangles are the **Pythagorean theorem** and its converse, which are given in KEY FACT J5 and repeated as the first line of KEY FACT J6.

**KEY FACT J5:**
Let $a$, $b$, and $c$ be the sides of $\triangle ABC$, with $a \leq b \leq c$.
- If $\triangle ABC$ is a right triangle, $a^2 + b^2 = c^2$; and if $a^2 + b^2 > c^2$, then $\triangle ABC$ is a right triangle.

**KEY FACT J6:**
Let $a$, $b$, and $c$ be the sides of $\triangle ABC$, with $a \leq b \leq c$.
- $a^2 + b^2 = c^2$ if and only if angle $C$ is a right angle. ($\triangle ABC$ is a right triangle.)
- $a^2 + b^2 < c^2$ if and only if angle $C$ is obtuse. ($\triangle ABC$ is an obtuse triangle.)
- $a^2 + b^2 > c^2$ if and only if angle $C$ is acute. ($\triangle ABC$ is an acute triangle.)

**Example 5.**
Which of the following are not the sides of a right triangle?
(A) $3, 4, 5$  (B) $1, 1, \sqrt{2}$  (C) $1, \sqrt{3}, 2$
(D) $\sqrt{3}, \sqrt{4}, \sqrt{5}$  (E) $30, 40, 50$

**SOLUTION.** Just check each choice.

A: $3^2 + 4^2 = 9 + 16 = 25 = 5^2$ These are the sides of a right triangle.
B: $1^2 + 1^2 = 1 + 1 = 2 = (\sqrt{2})^2$ These are the sides of a right triangle.
C: \(1^2 + (\sqrt{3})^2 = 1 + 3 = 4 = 2^2\) These are the sides of a right triangle.

D: \((\sqrt{3})^2 + (\sqrt{4})^2 = 3 + 4 = 7 \neq (\sqrt{5})^2\) These are not the sides of a right triangle.

E: \(90^2 + 40^2 = 900 + 1600 = 2500 = 50^2\) These are the sides of a right triangle.

The answer is D.

Below are the right triangles that appear most often on the GRE. You should recognize them immediately whenever they come up in questions. Carefully study each one, and memorize KEY FACTS J7–J11.

(A) \[
\begin{align*}
4 & \quad 5 \\
3 & \quad 4 \quad .
\end{align*}
\]

(B) \[
\begin{align*}
4x & \quad 5x \\
3x & \quad 4x \quad 5x
\end{align*}
\]

(C) \[
\begin{align*}
12 & \quad 13 \\
5 & \quad 12 \quad 13
\end{align*}
\]

(D) \[
\begin{align*}
\sqrt{2} & \quad x \\
x & \quad \sqrt{2}
\end{align*}
\]

(E) \[
\begin{align*}
\sqrt{2} & \quad h \\
\sqrt{2} & \quad h
\end{align*}
\]

On the GRE, the most common right triangles whose sides are integers are the 3-4-5 triangle (A) and its multiples (B).

**KEY FACT J7:**

For any positive number \(x\), there is a right triangle whose sides are \(3x, 4x, 5x\).

For example:
\[
\begin{align*}
x &= 1 & 3, 4, 5 \\
x &= 2 & 6, 8, 10 \\
x &= 3 & 9, 12, 15 \\
x &= 4 & 12, 16, 20 \\
x &= .5 & 1.5, 2.5
\end{align*}
\]

NOTE: KEY FACT J7 applies even if \(x\) is not an integer. For example,
\[
\begin{align*}
x &= \pi & 3\pi, 4\pi, 5\pi
\end{align*}
\]

The only other right triangle with integer sides that you should recognize immediately is the one whose sides are 5, 12, 13, (C).

Let \(x\) = length of each leg, and \(h\) = length of the hypotenuse, of an isosceles right triangle (D). By the Pythagorean theorem (KEY FACT J9), \(x^2 + x^2 = h^2\).

So, \(2x^2 = h^2\), and \(h = \sqrt{2x^2} = x\sqrt{2}\).

**KEY FACT J8:**

In a 45-45-90 right triangle, the sides are \(x, x, \) and \(x\sqrt{2}\).

So,

- by multiplying the length of a leg by \(\sqrt{2}\), you get the hypotenuse.
- by dividing the hypotenuse by \(\sqrt{2}\), you get the length of each leg.

**KEY FACT J9:**

The diagonal of a square divides the square into two isosceles right triangles.

The last important right triangle is the one whose angles measure 30°, 60°, and 90°. (E)

**KEY FACT J10:**

An altitude divides an equilateral triangle into two 30-60-90 right triangles.

Let \(2x\) be the length of each side of equilateral \(\triangle ABC\) in which altitude \(AD\) is drawn. Then \(\triangle ABD\) is a 30-60-90 right triangle, and its sides are \(x, 2x,\) and \(h\).

By the Pythagorean theorem, \(x^2 + h^2 = (2x)^2 = 4x^2\).

So \(h^2 = 3x^2\), and \(h = \sqrt{3x^2} = x\sqrt{3}\).
**KEY FACT J11:**

In a 30-60-90 right triangle the sides are $x$, $x\sqrt{3}$, and $2x$.

1. If you know the length of the shorter leg ($x$):
   - multiply it by $\sqrt{3}$ to get the longer leg, and
   - multiply it by 2 to get the hypotenuse.

2. If you know the length of the longer leg ($a$):
   - divide it by $\sqrt{3}$ to get the shorter leg, and
   - multiply the shorter leg by 2 to get the hypotenuse.

3. If you know the length of the hypotenuse ($h$):
   - divide it by 2 to get the shorter leg, and
   - multiply the shorter leg by $\sqrt{3}$ to get the longer leg.

**Example 6.**

What is the area of a square whose diagonal is 10?
(A) 20  (B) 40  (C) 50  (D) 100  (E) 200

**SOLUTION.** Draw a diagonal in a square of side $s$, creating a 45-45-90 right triangle. By KEY FACT J8:

\[ s = \frac{10}{\sqrt{2}} \quad \text{and} \quad A = s^2 = \left(\frac{10}{\sqrt{2}}\right)^2 = \frac{100}{2} = 50. \]

The answer is C.

**Example 7.**

In the diagram at the right, if $BC = \sqrt{6}$, what is the value of $CD$?

(A) $2\sqrt{2}$  (B) $4\sqrt{2}$  (C) $2\sqrt{3}$  (D) $2\sqrt{6}$  (E) 4

**SOLUTION.** Since $\triangle ABC$ and $\triangle DAC$ are 30-60-90 and 45-45-90 right triangles, respectively, use KEY FACTS J11 and J8.

- Divide the longer leg, $BC$, by $\sqrt{3}$ to get the shorter leg, $AB$: $\frac{\sqrt{6}}{\sqrt{3}} = \sqrt{2}$.
- Multiply $AB$ by 2 to get the hypotenuse: $AC = 2\sqrt{2}$.
- Since $AC$ is also a leg ofisosceles right $\triangle DAC$, to get hypotenuse $CD$, multiply $AC$ by $\sqrt{2}$:

\[ CD = 2\sqrt{2} \times \sqrt{2} = 2 \times 2 = 4 \quad \text{(E)}. \]

**KEY FACT J12:**

**Triangle Inequality**

The sum of the lengths of any two sides of a triangle is greater than the length of the third side.

The best way to remember this is to see that $x + y$, the length of the path from $A$ to $C$ through $B$, is greater than $z$, the length of the direct path from $A$ to $C$.

\[ x + y > z \]

NOTE: If you subtract $x$ from each side of $x + y > z$, you see that $z - x < y$.

**Example 8.**

If the lengths of two of the sides of a triangle are 6 and 7, which of the following could be the length of the third side?

I. 1
II. 5
III. 15

(A) None  (B) I only  (C) II only  (D) I and II only  (E) I, II, and III

**SOLUTION.** Use KEY FACTS J12 and J13.

- The third side must be less than 6 + 7 = 13. (II is false.)
- The third side must be greater than 7 - 6 = 1. (I is false.)
- Any number between 1 and 13 could be the length of the third side. (I is true.)

The answer is C.
The following diagram illustrates several triangles, two of whose sides have lengths of 6 and 7.

(3) In a right triangle, either leg can be the base and the other the height.

(4) The height may be outside the triangle. (See the figure at right.)

In the figure at the right:

• If \( AC \) is the base, \( BD \) is the height.

• If \( AB \) is the base, \( CE \) is the height.

• If \( BC \) is the base, \( AF \) is the height.

Example 9.
In the figure at the right, what is the perimeter of \( \triangle ABC \)?

(A) 20 + 10\( \sqrt{2} \)
(B) 20 + 10\( \sqrt{3} \)
(C) 25
(D) 30
(E) 40

SOLUTION. First, use KEY FACTS J3 and J1 to find the measures of the angles.

• Since \( AB = AC \), \( m\angle B = m\angle C \). Represent each of them by \( x \).

Then, \( x + x + 60 = 180 \Rightarrow 2x = 120 \Rightarrow x = 60 \).

• Since the measure of each angle of \( \triangle ABC \) is 60, the triangle is equilateral.

• So \( BC = 10 \), and the perimeter is \( 10 + 10 + 10 = 30 \) (D).

KEY FACT J14:
The area of a triangle is given by \( A = \frac{1}{2}bh \), where \( b \) is the base and \( h \) is the height.

NOTE:
(1) Any side of the triangle can be taken as the base.

(2) The height or altitude is a line segment drawn to the base or, if necessary, an extension of the base from the opposite vertex.

Example 10.
What is the area of an equilateral triangle whose sides are 10?

(A) 30 (B) 25\( \sqrt{3} \) (C) 50 (D) 50\( \sqrt{3} \) (E) 100

SOLUTION: Draw an equilateral triangle and one of its altitudes.

• By KEY FACT J10, \( \triangle ABD \) is a 30-60-90 right triangle.

• By KEY FACT J11, \( BD = 5 \) and \( AD = 5\sqrt{3} \).

• The area of \( \triangle ABC = \frac{1}{2}(10)(5\sqrt{3}) = 25\sqrt{3} \) (B).

Replacing 10 by \( s \) in Example 10 yields a very useful result.

KEY FACT J15:
If \( A \) represents the area of an equilateral triangle with side \( s \), then \( A = \frac{s^2\sqrt{3}}{4} \).
Multiple-Choice Questions

1. In the triangle above, what is the value of $x$?
   (A) 20 (B) 30 (C) 40 (D) 50 (E) 60

2. If the difference between the measures of the two smaller angles of a right triangle is 8°, what is the measure, in degrees, of the smallest angle?
   (A) 37 (B) 41 (C) 42 (D) 49 (E) 53

3. What is the area of an equilateral triangle whose altitude is 6?
   (A) 18 (B) $12\sqrt{3}$ (C) $18\sqrt{3}$ (D) 36 (E) $24\sqrt{3}$

4. Two sides of a right triangle are 12 and 13. Which of the following could be the length of the third side?
   I. 5
   II. 11
   III. $\sqrt{313}$
   (A) I only (B) II only (C) I and II (D) I and III (E) I, II, and III

5. What is the value of $PS$ in the triangle above?
   (A) $5\sqrt{2}$ (B) 10 (C) 11 (D) 13 (E) $12\sqrt{2}$

6. If the measures of the angles of a triangle are in the ratio of 1:2:3, and if the length of the smallest side of the triangle is 10, what is the length of the longest side?
   (A) $10\sqrt{2}$ (B) $10\sqrt{3}$ (C) 15 (D) 20 (E) 30

7. What is the value of $x$ in the figure above?
   (A) 80 (B) 100 (C) 115 (D) 120 (E) 130

8. In the figure above, what is the value of $w$?
   (A) 100 (B) 110 (C) 120 (D) 130 (E) 140

Questions 9-10 refer to the following figure.

9. What is the area of $\triangle BDE$?
   (A) 12 (B) 24 (C) 36 (D) 48 (E) 60

10. What is the perimeter of $\triangle BDE$?
    (A) $19 + 5\sqrt{2}$ (B) 28 (C) $17 + \sqrt{185}$ (D) 32 (E) 36

Questions 11-12 refer to the following figure.

11. What is the area of $\triangle DFH$?
    (A) 3 (B) 4.5 (C) 6 (D) 7.5 (E) 10

12. What is the perimeter of $\triangle DFH$?
    (A) $8 + \sqrt{41}$ (B) $8 + \sqrt{58}$ (C) 16 (D) 17 (E) 18
Questions 13–14 refer to the following figure.

13. What is the perimeter of ∆ABC?
   (A) 48  (B) 48 + 12\sqrt{2}  (C) 48 + 12\sqrt{3}
   (D) 60  (E) 60 + 6\sqrt{3}

14. What is the area of ∆ABC?
   (A) 108  (B) 54 + 72\sqrt{2}  (C) 54 + 72\sqrt{3}
   (D) 198  (E) 216

15. Which of the following expresses a true relationship between x and y in the figure above?
   (A) y = 60 - x  (B) y = x  (C) x + y = 90
   (D) y = 180 - 3x  (E) x = 90 - 3y

Quantitative Comparison Questions

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The lengths of two sides of a triangle are 7 and 11.</td>
<td></td>
</tr>
<tr>
<td><strong>The length of the third side</strong></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>The ratio of the diagonal to a side of a square</td>
<td>\sqrt{2}</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The perimeter of ∆ABC</strong></td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Questions 19–20 refer to the following figure.

19. The length of AB                                                            7

20. The perimeter of ∆AOB                                                       20

21. The area of an equilateral triangle whose sides are 10
    The area of an equilateral triangle whose altitude is 10

Questions 22–23 refer to the following figure in which the horizontal and vertical lines divide square ABCD into 16 smaller squares.

22. The perimeter of the shaded region                                           The perimeter of the square

23. The area of the shaded region                                                The area of the white region

24. a + b                                                                     c

25. PR                                                                        QR
Answer Key


Answer Explanations

1. D.  \(x + 2x + 30 = 180 \Rightarrow 3x + 30 = 180 \Rightarrow 3x = 150 \Rightarrow x = 50\).

2. B.  Draw a diagram and label it.

\[
\begin{align*}
\text{Then write the equations: } & \quad x + y = 90 \text{ and } \\
& \quad x - y = 8.
\end{align*}
\]

Add the equations:
\[
\begin{align*}
x + y &= 90 \\
x - y &= 8 \\
2x &= 98
\end{align*}
\]

So \(x = 49\) and \(y = 90 - 49 = 41\).

3. B.  Draw altitude \(AD\) in equilateral \(\triangle ABC\).

\[
\begin{align*}
\text{By KEY FACT} \ J11, BD &= \frac{\sqrt{3}}{2} \times 6 = 3\sqrt{3}, \\
\text{and } BD \text{ is one half the base. So, the area is} \\
2\cdot \frac{\sqrt{3}}{2} \times 6 &= 12\sqrt{3}.
\end{align*}
\]

4. D.  If the triangle were not required to be a right triangle, by KEY FACTS J11 and J12 any number greater than 1 and less than 25 could be the length of the third side. But for a right triangle, there are only two possibilities:
- If 13 is the hypotenuse, then the legs are 12 and 5. (1 is true.) (If you didn't recognize the 5-12-13 triangle, use the Pythagorean theorem: \(12^2 + x^2 = 13^2\), and solve.)
- If 12 and 13 are the two legs, then use the Pythagorean theorem to find the hypotenuse: \(12^2 + 13^2 = c^2 \Rightarrow c = \sqrt{144 + 169} = \sqrt{313} \Rightarrow c = \sqrt{313}\). (II is true.)

An 11-12-13 triangle is not a right triangle. So II is false.

5. D.  Use the Pythagorean theorem twice, unless you recognize the common right triangles in this figure (which you should). Since \(PR = 20\) and \(QR = 16\), \(\triangle PQR\) is a 5x-4x-3x right triangle with \(x = 4\). So \(PQ = 12\), and \(\triangle PQS\) is a right triangle whose legs are 5 and 12. The hypotenuse, \(PS\), therefore, is 13.

6. D.  If the measures of the angles are in the ratio of 1:2:3,
\[
x + 2x + 3x = 180 \Rightarrow 6x = 180 \Rightarrow x = 30,
\]
So the triangle is a 30-60-90 right triangle, and the sides are \(a, 2a, \text{ and } a\sqrt{3}\). Since \(a = 10\), then \(2a\), the length of the longest side, is 20.

7. C.  Label the other angles in the triangle.

\[
\begin{align*}
50^\circ + a + b &= 180 \Rightarrow a + b = 130, \\
\text{and since the triangle is isosceles, } a &= b. \\
\text{Therefore, } a \text{ and } b \text{ are each 65, and } \\
x &= 180 - 65 = 115.
\end{align*}
\]

8. B.  Here, \(50 + 90 + a = 180 \Rightarrow a = 40\), and since vertical angles are equal, \(b = 40\). Then, \(40 + 30 + w = 180 \Rightarrow w = 110\).

9. B.  You could calculate the area of the rectangle and subtract the area of the two white right triangles, but you shouldn't. It is easier to solve this problem if you realize that the shaded area is a triangle whose base is 4 and whose height is 12. The area is \(\frac{1}{2}(4)(12) = 24\).

10. D.  Since both \(BD\) and \(ED\) are the hypotenuses of right triangles, their lengths can be calculated by the Pythagorean theorem, but these are triangles you should recognize: the sides of \(\triangle DCE\) are 5-12-13, and those of \(\triangle BAD\) are 9-12-15 (3x-4x-5x, with \(x = 3\)). So the perimeter of \(\triangle BDE\) is 4 + 13 + 15 = 32.
11. B. Since \( \triangle DGH \) is a right triangle whose hypotenuse is 5 and one of whose legs is 3, the other leg, \( GH \), is 4. Since \( GF = DE \) is 7, \( HF \) is 3. Now, \( \triangle DGH \) has a base of 3 (\( HF \)) and a height of 3 (\( DG \)), and its area is 
\[
\frac{1}{2} \times 3 \times 3 = 4.5.
\]

12. B. In \( \triangle DGH \), we already have that \( DH = 5 \) and \( HF \approx 3 \); we need only find \( DF \), which is the hypotenuse of \( \triangle DEF \). By the Pythagorean theorem,
\[
(DF)^2 = 3^2 + 7^2 = 9 + 49 = 58 \Rightarrow DF = \sqrt{58}.
\]
So the perimeter is
\[
3 + 5 + \sqrt{58} \approx 8 + \sqrt{58}.
\]

13. C. \( \triangle ABD \) is a right triangle whose hypotenuse is 15 and one of whose legs is 9, so this is a 3x-4x-5x triangle with \( x = 3 \), so \( AD = 12 \). Now \( \triangle ADC \) is a 30-60-90 triangle, whose shorter leg is 12. Hypotenuse \( AC \) is 24, and leg \( CD \) is \( 12\sqrt{3} \). So the perimeter is
\[
24 + 15 + 9 + 12\sqrt{3} = 48 + 12\sqrt{3}.
\]

14. C. From the solution to 13, we have the base \((9 + 12\sqrt{3})\) and the height \((12)\) of \( \triangle ABC \). Then, the area is
\[
\frac{1}{2} \times (9 + 12\sqrt{3}) \times 12 = 54 + 72\sqrt{3}.
\]

15. A. \( x + 2x + 3y = 180 \Rightarrow 3x + 3y = 180 \Rightarrow x + y = 60 \Rightarrow y = 60 - x. \)

16. A. Any side of a triangle must be greater than the difference of the other two sides (KEY FACT J13), so the third side is greater than \( 11 - 7 = 4 \).

17. C. Draw a diagram. A diagonal of a square is the hypotenuse of each of the two 45-45-90 right triangles formed. The ratio of the hypotenuse to a leg in such a triangle is \( \sqrt{2}:1 \), so the columns are equal.

18. D. \( BC \) can be any positive number less than 20 (by KEY FACTS J12 and J13, \( BC > 10 - 10 = 0 \) and \( BC < 10 + 10 = 20 \)). So the perimeter can be any number greater than 20 and less than 40.

19. A. Since \( OA \) and \( OB \) are radii, they are each equal to 5. With no restrictions on \( x \), \( AB \) could be any positive number less than 10, and the bigger \( x \) is, the bigger \( AB \) is. If \( x \) were 90, \( AB \) would be \( 5\sqrt{2} \), but we are told that \( x > 90 \), so \( AB > 5\sqrt{2} > 7 \).

20. B. Since \( AB \) must be less than 10, the perimeter is less than 20.

21. B. Don’t calculate either area. The length of a side of an equilateral triangle is greater than the length of an altitude. So the triangle in Column B is larger (its sides are greater than 10).

22. A. Column A: The perimeter of the shaded region consists of 12 line segments, each of which is the hypotenuse of a 45-45-90 right triangle whose legs are \( \sqrt{2} \). So each line segment is \( \sqrt{2} \), and the perimeter is \( 12\sqrt{2} \).

Column B: The perimeter of the square is 16. To compare \( 12\sqrt{2} \) and 16, square them:
\[
(12\sqrt{2})^2 = 144 \times 2 = 288, \quad 16^2 = 256.
\]

23. A. The white region consists of 12 right triangles, each of which has an area of \( \frac{1}{2} \), for a total area of 6. Since the area of the large square is 16, the area of the shaded region is 16 - 6 = 10.

24. C. Since \( a = 180 - 145 = 35 \) and \( b = 180 - 125 = 55 \), \( a + b = 35 + 55 = 90 \). Therefore, 180 = \( a + b + c = 90 + c \Rightarrow c = 90 \).

25. B. Since \( 65 + 45 = 110 \), m\( \angle P \) = 70. Since \( \angle P \) is the largest angle, \( QR \), the side opposite it, is the largest side.

14-K. **QUADRILATERALS AND OTHER POLYGONS**

A **polygon** is a closed geometric figure made up of line segments. The line segments are called **sides** and the endpoints of the line segments are called **vertices** (each one is called a **vertex**). Line segments drawn from one vertex to another are called **diagonals**. The simplest polygons, which have three sides, are the triangles, which you just studied in Section J. A polygon with four sides is called a **quadrilateral**. The only other terms you should be familiar with are **pentagon**, **hexagon**, **octagon**, and **decagon**, which are the names for polygons with five, six, eight, and ten sides, respectively.
In this section we will present a few facts about polygons and quadrilaterals in general, but the emphasis will be on reviewing the key facts you need to know about four special quadrilaterals.

Every quadrilateral has two diagonals. If you draw in either one, you will divide the quadrilateral into two triangles. Since the sum of the measures of the three angles in each of the triangles is 180°, the sum of the measures of the angles in the quadrilateral is 360°.

**KEY FACT K1:**

In any quadrilateral, the sum of the measures of the four angles is 360°.

In exactly the same way, any polygon can be divided into triangles by drawing in all of the diagonals emanating from one vertex.

Notice that the pentagon is divided into three triangles, and the hexagon is divided into four triangles. In general, an n-sided polygon is divided into \((n - 2)\) triangles, which leads to KEY FACT K2.

**KEY FACT K2:**

The sum of the measures of the \(n\) angles in a polygon with \(n\) sides is \((n - 2) \times 180°\).

**Example 1.**

In the figure below, what is the value of \(x\)?

![Diagram of a polygon with angles labeled](image)

(A) 60  (B) 90  (C) 100  (D) 120  (E) 150

**SOLUTION.** Since \(\triangle DEF\) is equilateral, all of its angles measure 60°; also, since the two angles at vertex \(D\) are vertical angles, their measures are equal. Therefore, the measure of \(\angle D\) in quadrilateral \(ABCD\) is 60°. Finally, since the sum of the measures of all four angles of \(ABCD\) is 360°,

\[
60 + 90 + 90 + x = 360 \Rightarrow 240 + x = 360 \Rightarrow x = 120 \quad (D).
\]

In the polygons in the figure that follows, one exterior angle has been drawn at each vertex. Surprisingly, if you add the measures of all of the exterior angles in any of the polygons, the sums are equal.

![Diagram of exterior angles](image)

**KEY FACT K3:**

In any polygon, the sum of the exterior angles, taking one at each vertex, is 360°.

A *regular polygon* is a polygon in which all of the sides are the same length and each angle has the same measure. KEY FACT K4 follows immediately from this definition and from KEY FACTS K2 and K3.

**KEY FACT K4:**

In any regular polygon the measure of each interior angle is \(\frac{(n - 2) \times 180°}{n}\), and the measure of each exterior angle is \(\frac{360°}{n}\).

**Example 2.**

What is the measure of each interior angle in a regular decagon?

(A) 36  (B) 72  (C) 108  (D) 144  (E) 180

**SOLUTION 1.** The measure of each of the 10 interior angles is

\[
\frac{(10 - 2) \times 180°}{10} = \frac{8 \times 180°}{10} = 1440° = 144 \quad (D).
\]
SOLUTION 2. The measure of each of the 10 exterior angles is 36 \((360 + 10)\). Therefore, the measure of each interior angle is \(180 - 36 = 144\).

A parallelogram is a quadrilateral in which both pairs of opposite sides are parallel.

KEY FACT K5:
Parallelograms have the following properties:
- Opposite sides are equal: \(AB = CD\) and \(AD = BC\).
- Opposite angles are equal: \(a = c\) and \(b = d\).
- Consecutive angles add up to 180°: \(a + b = 180\), \(b + c = 180\), \(c + d = 180\), and \(a + d = 180\).
- The two diagonals bisect each other: \(AE = EC\) and \(BE = ED\).
- A diagonal divides the parallelogram into two triangles that have the exact same size and shape. (The triangles are congruent.)

KEY FACT K6:
Since a rectangle is a parallelogram, all of the properties listed in KEY FACT K5 hold for rectangles. In addition:
- The measure of each angle in a rectangle is 90°.
- The diagonals of a rectangle have the same length: \(AC = BD\).

KEY FACT K7:
Since a square is a rectangle, all of the properties listed in KEY FACTS K5 and K6 hold for squares. In addition:
- All four sides have the same length.
- Each diagonal divides the square into two 45-45-90 right triangles.
- The diagonals are perpendicular to each other: \(AC \perp BD\).

Example 3.
\[
\text{Column A} \quad \text{Column B}
\]

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
</tr>
</thead>
</table>

\(ABCD\) is a parallelogram.

SOLUTION. In \(\triangle ABD\) the larger angle is opposite the larger side (KEY FACT J2); so \(x > m\angle ABD\). However, since \(AB\) and \(CD\) are parallel sides cut by transversal \(BD\), \(y = m\angle ABD\). Therefore, \(x > y\). Column A is greater.

A rectangle is a parallelogram in which all four angles are right angles. Two adjacent sides of a rectangle are usually called the length \((l)\) and the width \((w)\). Note in the right-hand figure that the length is not necessarily greater than the width.

Example 4.
What is the length of each side of a square if its diagonals are 10?

(A) 5 (B) 7 (C) \(5\sqrt{2}\) (D) \(10\sqrt{2}\) (E) \(10\sqrt{3}\)

SOLUTION. Draw a diagram. In square \(ABCD\), diagonal \(AC\) is the hypotenuse of a 45-45-90 right triangle, and side \(AB\) is a leg of that triangle. By KEY FACT J7,

\[
AB = \frac{AC}{\sqrt{2}} = \frac{10}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{10\sqrt{2}}{2} = 5\sqrt{2}.
\]
A trapezoid is a quadrilateral in which one pair of sides is parallel and the other pair of sides is not parallel. The parallel sides are called the bases of the trapezoid. The two bases are never equal. In general, the two non-parallel sides are not equal, if they are the trapezoid is called an isosceles trapezoid.

Example 5.
The length of a rectangle is 7 more than its width. If the perimeter of the rectangle is the same as the perimeter of a square of side 8.5, what is the length of a diagonal of the rectangle?

(A) 12  (B) 13  (C) 17  (D) 34  (E) 169

SOLUTION. Don't do anything until you have drawn a diagram.

Since the perimeter of the square is $4 \times 8.5 = 34$; the perimeter of the rectangle is also 34: $2(\ell + w) = 34 \Rightarrow \ell + w = 17$. Replacing $\ell$ by $w + 7$, we get:

\[ w + 7 + w = 17 \Rightarrow 2w + 7 = 17 \Rightarrow 2w = 10 \Rightarrow w = 5 \]

Then $\ell = 5 + 7 = 12$. Finally, realize that the diagonal is the hypotenuse of a 5-12-13 triangle, or use the Pythagorean theorem:

\[ d^2 = 5^2 + 12^2 = 25 + 144 = 169 \Rightarrow d = 13 \text{ (B).} \]

In Section 14-J we reviewed the formula for the area of a triangle. The only other figures for which you need to know area formulas are the parallelogram, rectangle, square, and trapezoid.

**KEY FACT K9:**

Here are the area formulas you need to know:

- For a parallelogram: $A = bh$.
- For a rectangle: $A = lw$.
- For a square: $A = s^2$ or $A = \frac{1}{2}d^2$.
- For a trapezoid: $A = \frac{1}{2}(b_1 + b_2)h$.
Example 6.

In the figure below, the area of parallelogram $ABCD$ is 40. What is the area of rectangle $AFCE$?

(A) 20  (B) 24  (C) 28  (D) 32  (E) 36

SOLUTION. Since the base, $CD$, is 10 and the area is 40, the height, $AE$, must be 4. Then $\triangle AED$ must be a 3-4-5 right triangle with $DE = 3$, which implies that $EC = 7$. So the area of the rectangle is $7 \times 4 = 28$ (C).

Two rectangles with the same perimeter can have different areas, and two rectangles with the same area can have different perimeters. These facts are a common source of questions on the GRE.

**KEY FACT K10:**

For a given perimeter, the rectangle with the largest area is a square. For a given area, the rectangle with the smallest perimeter is a square.

### Example 7.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The area of a rectangle whose perimeter is 12</td>
<td>The area of a rectangle whose perimeter is 14</td>
</tr>
</tbody>
</table>

### Example 8.

<table>
<thead>
<tr>
<th>Column A</th>
</tr>
</thead>
<tbody>
<tr>
<td>The area of a rectangle whose perimeter is 12</td>
</tr>
</tbody>
</table>
| 10

SOLUTION 7. Draw any rectangles whose perimeters are 12 and 14 and compute their areas. As drawn below, Column $A = 8$ and Column $B = 12$.

<table>
<thead>
<tr>
<th>A = 8</th>
<th>A = 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

This time Column B is greater. Is it always? Draw a different rectangle whose perimeter is 14.

<table>
<thead>
<tr>
<th>A = 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

The one drawn here has an area of 6. Now Column B isn't greater. The answer is D.

SOLUTION 8. There are many rectangles of different areas whose perimeters are 12. But the largest area is 9, when the rectangle is a $3 \times 3$ square. Column $B$ is greater.
Practice Exercises—Quadrilaterals

Multiple-Choice Questions

1. If the length of a rectangle is 4 times its width, and if its area is 144, what is its perimeter?
   (A) 6  (B) 24  (C) 30  (D) 60  (E) 96

Questions 2–3 refer to the diagram below in which the diagonals of square ABCD intersect at E.

![Diagram of square ABCD with diagonals intersecting at E]

2. What is the area of \( \triangle DEC \)?
   (A) \( \frac{1}{2} \)  (B) 1  (C) \( \sqrt{2} \)  (D) 2  (E) \( 2\sqrt{2} \)

3. What is the perimeter of \( \triangle DEC \)?
   (A) \( 1 + \sqrt{2} \)  (B) \( 2 + \sqrt{2} \)  (C) 4  (D) \( 2 + 2\sqrt{2} \)  (E) 6

4. If the angles of a five-sided polygon are in the ratio of \( 2:3:3:5:5 \), what is the measure of the smallest angle?
   (A) 20  (B) 40  (C) 60  (D) 80  (E) 90

5. If in the figures below, the area of rectangle ABCD is 100, what is the area of rectangle EFGH?
   ![Diagram of rectangle ABCD with vertices labeled]

   (A) 98  (B) 100  (C) 102  (D) 104  (E) 106

Questions 6–7 refer to a rectangle in which the length of each diagonal is 12, and one of the angles formed by the diagonal and a side measures 30°.

6. What is the area of the rectangle?
   (A) 18  (B) 72  (C) \( 18\sqrt{3} \)  (D) \( 36\sqrt{3} \)  (E) 36 \( \sqrt{2} \)

7. What is the perimeter of the rectangle?
   (A) 18  (B) 24  (C) \( 12 + 12\sqrt{3} \)  (D) \( 18 + 6\sqrt{3} \)  (E) \( 24\sqrt{2} \)

8. How many sides does a polygon have if the measure of each interior angle is 8 times the measure of each exterior angle?
   (A) 8  (B) 9  (C) 10  (D) 12  (E) 18

9. The length of a rectangle is 5 more than the side of a square, and the width of the rectangle is 5 less than the side of the square. If the area of the square is 45, what is the area of the rectangle?
   (A) 20  (B) 25  (C) 45  (D) 50  (E) 70

Questions 10–11 refer to the following figure, in which M, N, O, and P are the midpoints of the sides of rectangle ABCD.

![Diagram of rectangle ABCD with midpoints M, N, O, and P]

10. What is the perimeter of quadrilateral MNOP?
    (A) 24  (B) 32  (C) 40  (D) 48  (E) 60

11. What is the area of quadrilateral MNOP?
    (A) 48  (B) 60  (C) 72  (D) 96  (E) 108

12. In the figure at the right, what is the sum of the measures of all of the marked angles?
    (A) 360  (B) 540  (C) 720  (D) 900  (E) 1080

13. In quadrilateral WXYZ, the measure of angle Z is 10 more than twice the average of the measures of the other three angles. What is the measure of angle Z?
    (A) 100  (B) 105  (C) 120  (D) 135  (E) 150

Questions 14–15 refer to the following figure, in which M and N are the midpoints of two of the sides of square ABCD.

![Diagram of square ABCD with midpoints M and N]
14. What is the perimeter of the shaded region?
   (A) 3   (B) $2 + 3\sqrt{2}$   (C) $3 + 2\sqrt{2}$   (D) 5   (E) 8

15. What is the area of the shaded region?
   (A) 1.5   (B) 1.75   (C) 3   (D) $2\sqrt{2}$   (E) $3\sqrt{2}$

Quantitative Comparison Questions

Column A

- The perimeter of a 30-60-90 right triangle whose shorter leg is $2x$

Column B

- The perimeter of an octagon, each of whose sides is $x$

18.

19.

The perimeter of a rectangle whose area is 50

28

In parallelogram $PQRS$, $TR$ bisects $\angle QRS$.

20. $a$   $2b$

Answer Key


Answer Explanations

1. D. Draw a diagram and label it.

Since the area is 144, then
$144 = 4x^2 \Rightarrow x^2 = 36 \Rightarrow x = 6$.
So the width is 6, the length is 24, and the perimeter is 60.

2. B. The area of the square is $2^4 = 4$, and each triangle is one-fourth of the square. So the area of $\triangle DEC$ is 1.

3. D. $\triangle DEC$ is a 45-45-90 right triangle whose hypotenuse, $DC$, is 2. Therefore, each of the legs is $\frac{2}{\sqrt{2}} = \sqrt{2}$, so the perimeter is $2 + 2\sqrt{2}$.

4. C. The sum of the angles of a five-sided polygon is $(5 - 2) \times 180 = 3 \times 180 = 540$. Therefore,
$540 = 2x + 3x + 3x + 5x + 5x = 18x \Rightarrow x = \frac{540}{18} = 30$.
The measure of the smallest angle is $2x = 2 \times 30 = 60$.

5. C. The area of rectangle $ABCD = (x + 1)(x + 4) = x^2 + 5x + 4$. The area of rectangle $EFGH = (x + 2)(x + 3) = x^2 + 5x + 6$, which is exactly 2 more than the area of rectangle $ABCD$.

100 + 2 = 102.
6. D. Draw a picture and label it. Since \( \triangle BCD \) is a 30-60-90 right triangle, \( BC = 6 \) (half the hypotenuse) and \( CD = 6\sqrt{3} \). So the area is \( \ell w = 6(6\sqrt{3}) = 36\sqrt{3} \).

7. C. The perimeter of the rectangle is \( 2(\ell + w) = 2(6 + 6\sqrt{3}) = 12 + 12\sqrt{3} \).

8. E. The sum of the degree measures of an interior and exterior angle is 180, so \( 180 = 8x + x = 9x \Rightarrow x = 20 \). Since the sum of the measures of all the exterior angles is 360, there are \( 360 + 20 = 18 \) angles and 18 sides.

9. A. Let \( x \) represent the side of the square. Then the dimensions of the rectangle are \((x + 5)\) and \((x - 5)\), and its area is \((x + 5)(x - 5) = x^2 - 25\). Since the area of the square is 45,
\[
x^2 = 45 \Rightarrow x^2 - 25 = 45 - 25 = 20.
\]

10. C. Each triangle surrounding quadrilateral \( MNOP \) is a 6-8-10 right triangle. So each side of the quadrilateral is 10, and its perimeter is 40.

11. D. The area of each of the triangles is \( \frac{1}{2} \times (6)(8) = 24 \), so together the four triangles have an area of 96. The area of the rectangle is \( 16 \times 12 = 192 \). Therefore, the area of quadrilateral \( MNOP \) is \( 192 - 96 = 96 \).

Note: Joining the midpoints of the four sides of any quadrilateral creates a parallelogram whose area is one-half the area of the original quadrilateral.

12. C. Each of the 10 marked angles is an exterior angle of the pentagon. If we take one angle at each vertex, the sum of those five angles is 360; the sum of the other five is also 360: \( 360 + 360 = 720 \).

13. E. Let \( W, X, Y, \) and \( Z \) represent the measures of the four angles. Since \( W + X + Y + Z = 360 \), \( W + X + Y = 360 - Z \). Also,
\[
Z = 10 + 2\left(\frac{W + X + Y}{3}\right) = 10 + 2\left(\frac{360 - Z}{3}\right).
\]
So \( Z = 10 + \frac{2}{3}(360) - \frac{2}{3}Z = 10 + 240 - \frac{2}{3}Z \)
\[
\Rightarrow \frac{5}{3}Z = 250 \Rightarrow Z = 150.
\]

14. B. Since \( M \) and \( N \) are midpoints of sides of length 2, \( AM, MB, AN, \) and \( ND \) are all 1, \( MN = \sqrt{2} \), since it's the hypotenuse of an isosceles right triangle whose legs are 1; and \( BD = 2\sqrt{2} \), since it's the hypotenuse of an isosceles right triangle whose legs are 2. So the perimeter of the shaded region is \( 1 + \sqrt{2} + 2 + 2\sqrt{2} = 2 + 3\sqrt{2} \).

15. A. The area of \( \triangle ABD = \frac{1}{2}(2)(2) = 2 \), and the area of \( \triangle AMN = \frac{1}{2}(1)(1) = 0.5 \). So the area of the shaded region is \( 2 - 0.5 = 1.5 \).

16. C. The area of \( \triangle AED \) is \( \frac{1}{2} \times \left(\frac{\ell}{2}\right) = \frac{\ell w}{4} \). The area of \( \triangle EDC \) is \( \frac{1}{2} \times \left(\frac{\ell}{2}\right) = \frac{\ell w}{4} \). Note: Each of the four small triangles has the same area.

17. B. By KEY FACT J5, since \( \angle Z \) is acute and \( \angle Y \) is obtuse, \((WY)^2 < a^2 + b^2\), whereas \((XZ)^2 > a^2 + b^2\).

18. A. Since an octagon has eight sides, Column B is 8x.

Column A: By KEY FACT J10, the hypotenuse of the triangle is 4x, and the longer leg is \( 2\sqrt{3} \). So the perimeter is \( 2x + 4x + 2\sqrt{3} \). Since \( \sqrt{3} > 1 \), then
\[
2x + 4x + 2\sqrt{3} > 2x + 4x + 2x = 8x.
\]

19. A. The perimeter of a rectangle of area 50 can be as large as we like, but the least it can be is when the rectangle is a square. In that case, each side is \( \sqrt{50} \), which is greater than 7, and so the perimeter is greater than 28.

20. C. \( TP \) is a transversal cutting the parallel sides \( PQ \) and \( RS \). So \( b = x \) and \( 2b = 2x \). But since the opposite angles of a parallelogram are equal, \( \angle a = 2x \). So \( a = 2b \).
14-L. CIRCLES

A circle consists of all the points that are the same distance from one fixed point called the center. That distance is called the radius of the circle. The figure below is a circle of radius 1 unit whose center is at the point O. A, B, C, D, and E, which are each 1 unit from O, are all points on circle O. The word radius is also used to represent any of the line segments joining the center and a point on the circle. The plural of radius is radii. In circle O, below, OA, OB, OC, OD, and OE are all radii. If a circle has radius r, each of the radii is r units long.

KEY FACT L1:
Any triangle, such as \( \triangle COD \) in the figure above, formed by connecting the endpoints of two radii, is isosceles.

Example 1.
If P and Q are points on circle O, what is the value of x?

(A) 35 \hspace{1cm} (B) 45 \hspace{1cm} (C) 55
(D) 65 \hspace{1cm} (E) 70

SOLUTION. Since \( \triangle POQ \) is isosceles, angles P and Q have the same measure. Then, \( 70 + x + x = 180 \Rightarrow 2x = 110 \Rightarrow x = 55 \) (C).

A line segment, such as CD in circle O at the beginning of this section, both of whose endpoints are on a circle is called a chord. A chord such as BE, which passes through the center of the circle, is called a diameter. Since BE is the sum of two radii, OB and OE, it is twice as long as a radius.

KEY FACT L2:
If d is the diameter and r the radius of a circle, \( d = 2r \).

KEY FACT L3:
A diameter is the longest chord that can be drawn in a circle.

Column A

Example 2.

The radius of the circle is 0.1.

\[ AB + BC + CD + DE + EA \]

Column B

1

SOLUTION. Since the radius of the circle is 0.1, the diameter is 0.2. Therefore, the length of each of the five line segments is less than 0.2, and the sum of their lengths is less than \( 5 \times 0.2 = 1 \). The answer is B.

The total length around a circle, from A to B to C to D to E and back to A, is called the circumference of the circle. In every circle the ratio of the circumference to the diameter is exactly the same and is denoted by the symbol \( \pi \) (the Greek letter "pi").

KEY FACT L4:
- \( \pi = \frac{\text{circumference}}{\text{diameter}} = \frac{C}{d} \)
- \( C = \pi d \)
- \( C = 2\pi r \)

KEY FACT L5:
The value of \( \pi \) is approximately 3.14.

On GRE questions that involve circles, you are expected to leave your answer in terms of \( \pi \). So never multiply by 3.14. If you are ever stuck on a problem whose answers involve \( \pi \), try to estimate the answer, and then use 3 as an approximation of \( \pi \) to test the answers. For example, assume that you think that an answer is about 50, and the answer choices are 4\( \pi \), 6\( \pi \), 12\( \pi \), 16\( \pi \), and 24\( \pi \). Since \( \pi \) is slightly greater than 3, these choices are a little greater than 12, 18, 36, 48, and 72. The answer must be 16\( \pi \). (To the nearest hundredth, 16\( \pi \) is actually 50.27, but approximating it by 48 was close enough.)

Column A

Example 3.

- The circumference of a circle whose diameter is 12

Column B

- The perimeter of a square whose side is 12
SOLUTION. Column A: \( C = \pi d = \pi (12) \).
Column B: \( P = 4 s = 4 (12) \). Since \( 4 > \pi \), Column B is greater. (Note: \( 12 \pi = 12 (3.14) = 37.68 \), but you should not have wasted any time calculating this.)

An arc consists of two points on a circle and all the points between them. On the GRE, arc \( AB \) always refers to the small arc joining \( A \) and \( B \). If we wanted to refer to the large arc going from \( A \) to \( B \) through \( P \) and \( Q \), we would refer to it as arc \( AFB \) or arc \( AQB \). If two points, such as \( P \) and \( Q \) in circle \( O \), are the endpoints of a diameter, they divide the circle into two arcs called semicircles.

![Diagram of a circle with points P, A, B, and O, and a semicircle shown]

An angle whose vertex is at the center of a circle is called a central angle.

**KEY FACT L6:**
The degree measure of a complete circle is 360°.

![Diagram of a circle divided into 180° and 360° angles]

**KEY FACT L7:**
The degree measure of an arc equals the degree measure of the central angle that intercepts it.

![Diagram of an arc with central angle 72°]

CAUTION: Degree measure is not a measure of length. In the circles above, arc \( AB \) and arc \( CD \) each measure 72°, even though arc \( CD \) is much longer.

How long is arc \( CD \)? Since the radius of Circle P is 10, its diameter is 20, and its circumference is \( 20 \pi \). Since \( 360^\circ \) in a circle, arc \( CD \) is \( \frac{72}{360} \) or \( \frac{1}{5} \) of the circumference: \( \frac{1}{5} (20 \pi) = 4 \pi \).

**KEY FACT L8:**
The formula for the area of a circle of radius \( r \) is \( A = \pi r^2 \).

The area of Circle P, in KEY FACT L7, is \( \pi (10)^2 = 100 \pi \) square units. The area of sector \( CPD \) is \( \frac{1}{5} \) of the area of the circle: \( \frac{1}{5} (100 \pi) = 20 \pi \).

**KEY FACT L9:**
If an arc measures \( x^\circ \), the length of the arc is \( \frac{x}{360} (2\pi r) \), and the area of the sector formed by the arc and 2 radii is \( \frac{x}{360} (\pi r^2) \).

Examples 4 and 5 refer to the circle below.

![Diagram of a circle with points O, D, C, and A, and a sector shown]

**Example 4.**
What is the area of the shaded region?
(A) \( 144 \pi - 144 \sqrt{3} \) \( \quad \) (B) \( 144 \pi - 36 \sqrt{3} \)
(C) \( 144 - 72 \sqrt{3} \) \( \quad \) (D) \( 24 \pi - 36 \sqrt{3} \)
(E) \( 24 \pi - 72 \sqrt{3} \)

**Example 5.**
What is the perimeter of the shaded region?
(A) \( 12 + 4 \pi \) \( \quad \) (B) \( 12 + 12 \pi \) \( \quad \) (C) \( 12 + 24 \pi \)
(D) \( 12 \sqrt{2} + 4 \pi \) \( \quad \) (E) \( 12 \sqrt{2} + 24 \pi \)

SOLUTION 4. The area of the shaded region is equal to the area of sector \( COD \) minus the area of \( \triangle COD \). The area of the circle is \( \pi (12)^2 = 144 \pi \).

Since \( \frac{60}{360} = \frac{1}{6} \), the area of sector \( COD \) is \( \frac{1}{6} (144 \pi) = 24 \pi \). Since \( m \angle O = 60^\circ \), \( m \angle C + m \angle D = 120^\circ \); but \( \triangle COD \) is isosceles, so \( m \angle C = m \angle D \). Therefore, they each measure 60°, and the triangle is equilateral. By KEY FACT J15,
area of \( \triangle COD = \frac{\sqrt{3}}{4} \cdot 12^2 \cdot \sqrt{3} = \frac{144 \cdot \sqrt{3}}{4} = 36 \cdot \sqrt{3} \),
so the area of the shaded region is \( 24\pi - 36 \cdot \sqrt{3} \) (D).

**SOLUTION 5.** Since \( \triangle COD \) is equilateral, \( CD = 12 \).
Since the circumference of the circle = \( 2\pi(12) = 24\pi \),
arc \( CO = \frac{1}{6} \cdot (24\pi) = 4\pi \). So the perimeter is \( 12 + 4\pi \) (A).

Suppose that in Example 5 you see that \( CD = 12 \), but
you don't remember how to find the length of arc \( CD \).
From the diagram, it is clear that it is slightly longer than \( CD \), say 13. So you know that the perimeter is about 25.
Now, approximate the value of each of the choices and
see which one is closest to 25. Only Choice A is even close.

A line and a circle or two circles are **tangent** if they
have only one point of intersection. A circle is **inscribed**
in a triangle or square if it is tangent to each side. A
polygon is **inscribed** in a circle if each vertex is on the
circle.

![Diagram of circles and tangents]

**Example 6.**
A is the center of a circle whose radius is 8, and
B is the center of a circle whose diameter is 8. If
these two circles are tangent to one another, what
is the area of the circle whose diameter is \( AB \)?
(A) \( 12\pi \) (B) \( 36\pi \) (C) \( 64\pi \) (D) \( 144\pi \)
(E) \( 256\pi \)

**SOLUTION.** Draw a diagram. Since the diameter, \( AB \), of
the dotted circle is 12, its radius is 6 and the area is
\( \pi(6)^2 = 36\pi \) (B).

---

**PRACTICE EXERCISES—CIRCLES**

**Multiple-Choice Questions**

1. What is the circumference of a circle whose area is
   \( 100\pi \)?
   (A) 10  (B) 20  (C) 10\pi  (D) 20\pi  (E) 25\pi

2. What is the area of a circle whose circumference
   is \( \pi \)?
   (A) \( \frac{\pi}{4} \)  (B) \( \frac{\pi}{2} \)  (C) \( \pi \)  (D) 2\pi  (E) 4\pi

3. What is the area of a circle that is inscribed in a
   square of area 2?
   (A) \( \frac{\pi}{4} \)  (B) \( \frac{\pi}{2} \)  (C) \( \pi \)  (D) \( \pi \sqrt{2} \)  (E) 2\pi

4. A square of area 2 is inscribed in a circle. What is
   the area of the circle?
   (A) \( \frac{\pi}{4} \)  (B) \( \frac{\pi}{2} \)  (C) \( \pi \)  (D) \( \pi \sqrt{2} \)  (E) 2\pi
5. A $5 \times 12$ rectangle is inscribed in a circle. What is the radius of the circle?
(A) 6.5  (B) 7  (C) 8.5  (D) 13  (E) 17

6. If in the figure below, the area of the shaded sector is $85\%$ of the area of the entire circle, what is the value of $w$?

(A) 15  (B) 30  (C) 45  (D) 54  (E) 60

Questions 7–8 refer to the following figure.

7. What is the length of arc $RS$?
(A) 8  (B) 20  (C) $8\pi$  (D) $20\pi$  (E) $40\pi$

8. What is the area of the shaded sector?
(A) 8  (B) 20  (C) $8\pi$  (D) $20\pi$  (E) $40\pi$

9. The circumference of a circle is $a\pi$ units, and the area of the circle is $b\pi$ square units. If $a = b$, what is the radius of the circle?
(A) 1  (B) 2  (C) 3  (D) $\pi$  (E) $2\pi$

10. In the figure above, what is the value of $x$?
(A) 30  (B) 36  (C) 45  (D) 54  (E) 60

11. If $A$ is the area and $C$ the circumference of a circle, which of the following is an expression for $A$ in terms of $C$?
(A) $\frac{C^2}{4\pi}$  (B) $\frac{C^2}{4\pi^2}$  (C) $2C$  (D) $2C^2/\sqrt{\pi}$  (E) $\frac{C^2}{4\sqrt{\pi}}$

12. What is the area of a circle whose radius is the diagonal of a square whose area is 4?
(A) $2\pi$  (B) $2\sqrt{2}$  (C) $4\pi$  (D) $8\pi$  (E) $16\pi$
### Answer Key

1. D  
2. A  
3. B  
4. C  
5. A  
6. D  
7. C  
8. E  
9. B  
10. D  
11. A  
12. D  
13. B  
14. D  
15. B  
16. A  
17. B  
18. C  
19. C  
20. A

### Answer Explanations

1. D. \( A = \pi r^2 = 100\pi \Rightarrow r^2 = 100 \Rightarrow r = 10 \Rightarrow C = 2\pi r = 2\pi(10) = 20\pi. \)

2. A. \( C = 2\pi r = \pi \Rightarrow 2r = 1 \Rightarrow r = \frac{1}{2} \Rightarrow A = \pi r^2 = \pi \left(\frac{1}{2}\right)^2 = \frac{1}{4}\pi = \frac{\pi}{4} \).

3. B. Draw a diagram.

Since the area of square \(ABCD\) is 2, \(AD = \sqrt{2}\). Then diameter \(EF = \sqrt{2}\) and radius \(OE = \frac{\sqrt{2}}{2}\). Then the area of the circle = \(\pi \left(\frac{\sqrt{2}}{2}\right)^2 = \frac{2}{4}\pi = \frac{\pi}{2}\).

4. C. Draw a diagram.

Since the area of square \(ABCD\) is 2, \(AD = \sqrt{2}\). Then, since \(\triangle ABD\) is an isosceles right triangle, diagonal \(BD = \sqrt{2} \times \sqrt{2} = 2\). But \(BD\) is also a diameter of the circle. So the diameter is 2 and the radius is 1. Therefore, the area is \(\pi(1)^2 = \pi\).

5. A. Draw a diagram.

By the Pythagorean theorem (or by recognizing a 5-12-13 triangle), we see that diagonal \(AC\) is 13. But \(AC\) is also a diameter of the circle, so the diameter is 13 and the radius is 6.5.
6. D. Since the shaded area is 85% of the circle, the white area is 15% of the circle. So, \( w = 0.15 \times 360^\circ = 54^\circ \).

7. C. The length of arc \( RS \) is \( \frac{144}{360} \) of the circumference:
\[
\left( \frac{144}{360} \right) 2\pi(10) = \left( \frac{2}{5} \right) 20\pi = 8\pi.
\]

8. E. The area of the shaded sector is \( \left( \frac{144}{360} \right) \) of the area of the circle:
\[
\left( \frac{144}{360} \right) \pi(10)^2 = \left( \frac{2}{5} \right) 100\pi = 40\pi.
\]

9. B. Since \( C = a\pi = b\pi = A \), we have
\[
2\pi r = \pi r^2 \Rightarrow 2r = r^2 \Rightarrow r = 2.
\]

10. D. Since two of the sides are radii of the circles, the triangle is isosceles. So the unmarked angle is also \( x \):
\[
x = 180 - 72 + 2x \Rightarrow 2x = 108 \Rightarrow x = 54.
\]

11. A. \( C = 2\pi r \Rightarrow r = \frac{C}{2\pi} \)
\[
A = \pi \left( \frac{C^2}{2\pi^2} \right) = \pi \left( \frac{C^2}{4\pi} \right) = \frac{C^2}{4\pi}.
\]

12. D. If the area of the square is 4, each side is 2, and the length of a diagonal is \( 2\sqrt{2} \). The area of a circle whose radius is \( 2\sqrt{2} \) is \( \pi(2\sqrt{2})^2 = 8\pi \).

13. B. There’s nothing to calculate here. Each arc of the circle is clearly longer than the corresponding chord, which is a side of the pentagon. So the circumference, which is the sum of all the arcs, is greater than the perimeter, which is the sum of all the chords.

14. D. Column A: \( \frac{C}{A} = \frac{2\pi r}{\pi r^2} = \frac{2}{r} \)
Column B: \( \frac{A}{C} = \frac{r}{C} \)
If \( r = 2 \), the columns are equal; otherwise, they’re not.

15. B. Column A: \( A = \pi(2)^2 = 4\pi \),
Column B: The area of a semicircle of radius 3 is \( \frac{1}{2} \pi(3)^2 = \frac{1}{2} (9\pi) = 4.5\pi \).

16. A. By KEY FACT L4, \( \pi = \frac{C}{d} = \frac{C}{2r} \Rightarrow \frac{C}{r} = 2\pi \), which is greater than 6.

17. B. The area of sector \( A \) is \( \frac{40}{360} (16\pi) = \frac{16\pi}{9} \). The area of sector \( B \) is \( \frac{20}{360} (64\pi) = \frac{64\pi}{18} = \frac{32\pi}{9} \).

So sector \( B \) is twice as big as sector \( A \).

18. C. Since the triangles are equilateral, the two white central angles each measure 60°, and their sum is 120°. So the white area is \( \frac{120}{360} = \frac{1}{3} \) of the circle, and the shaded area is \( \frac{2}{3} \) of the circle. The area of the circle is \( \pi(3)^2 = 9\pi \), so the shaded area is \( \frac{2}{3} (9\pi) = 6\pi \).

19. C. In Figure 1, since the radius of each circle is 3, the area of each circle is 9\pi, and the total area of the 4 circles is 36\pi. In Figure 2, the radius of each circle is 2, and so the area of each circle is 4\pi, and the total area of the 9 circles is 36\pi. In the two figures, the white areas are equal, as are the shaded areas.

20. A. Let \( A \) represent the area of the square and the circle.
Column A: \( A = s^2 \Rightarrow s = \sqrt{A} \Rightarrow P = 4\sqrt{A} \),
Column B: \( A = \pi r^2 \Rightarrow r = \sqrt{\frac{A}{\pi}} \Rightarrow C = 2\pi \sqrt{\frac{A}{\pi}} = 2\sqrt{\pi \cdot A} \).
Since \( \pi < 4, \sqrt{\pi} < 2 \Rightarrow 2\sqrt{\pi < 4} \).

**14-M. SOLID GEOMETRY**

There are very few solid geometry questions on the GRE, and they cover only a few elementary topics. Basically, all you need to know are the formulas for the volume and surface areas of rectangular solids (including cubes) and cylinders.

A **rectangular solid** or **box** is a solid formed by six rectangles, called **faces**. The sides of the rectangles are called **edges**. As shown in the diagram below, the edges are called the **length**, **width**, and **height**. A **cube** is a rectangular solid in which the length, width, and height are equal; so all the edges are the same length.

![Rectangular Solid Diagram](image-url)
CUBE

The volume of a solid is the amount of space it takes up and is measured in cubic units. One cubic unit is the amount of space occupied by a cube all of whose edges are one unit long. In the figure above, if each edge of the cube is 1 inch long, then the area of each face is 1 square inch, and the volume of the cube is 1 cubic inch.

**KEY FACT M1:**

- The formula for the volume of a rectangular solid is \( V = \ell \times w \times h \).
- The formula for the volume of a cube is \( V = e^3 \).

**Example 1.**

The base of a rectangular tank is 12 feet long and 8 feet wide; the height of the tank is 30 inches. If water is pouring into the tank at the rate of 2 cubic feet per second, how many minutes will be required to fill the tank?

(A) 1  (B) 2  (C) 10  (D) 120  (E) 240

SOLUTION. Draw a diagram. In order to express all of the dimensions of the tank in the same units, convert 30 inches to 2.5 feet. Then the volume of the tank is \( 12 \times 8 \times 2.5 = 240 \) cubic feet. At 2 cubic feet per second, it will take \( 240 \div 2 = 120 \) seconds = 2 minutes to fill the tank (B).

The surface area of a rectangular solid is the sum of the areas of the six faces. Since the top and bottom faces are equal, the front and back faces are equal, and the left and right faces are equal, we can calculate the area of one from each pair and then double the sum. In a cube, each of the six faces has the same area.

**KEY FACT M2:**

- The formula for the surface area of a rectangular solid is \( A = 2(\ell w + \ell h + wh) \).
- The formula for the surface area of a cube is \( A = 6e^2 \).

**Example 2.**

The volume of a cube is \( v \) cubic yards, and its surface area is \( a \) square feet. If \( v = a \), what is the length in inches of each edge?

(A) 12  (B) 36  (C) 144  (D) 648  (E) 1944

SOLUTION. Draw a diagram. If \( e \) is the length of the edge in yards, \( 3e \) is the length in feet, and \( 36e \) is the length in inches. Therefore, \( v = e^3 \) and \( a = 6(3e)^2 = 6(9e^2) = 54e^2 \). Since \( v = a \), \( e^3 = 54e^2 \Rightarrow e = 54 \), so the length is \( 36(54) = 1944 \) inches (E).

A diagonal of a box is a line segment joining a vertex on the top of the box to the opposite vertex on the bottom. A box has 4 diagonals, all the same length. In the box below they are line segments AG, BH, CE, and DF.

**KEY FACT M3:**

A diagonal of a box is the longest line segment that can be drawn between two points on the box.

**KEY FACT M4:**

If the dimensions of a box are \( \ell \), \( w \), and \( h \), and if \( d \) is the length of a diagonal, then \( d^2 = \ell^2 + w^2 + h^2 \).

For example, in the box below:

\[ d^2 = 3^2 + 4^2 + 12^2 = 9 + 16 + 144 = 169 \Rightarrow d = 13. \]
This formula is really just an extended Pythagorean theorem. \( EG \) is the diagonal of rectangular base \( EFGH \). Since the sides of the base are 3 and 4, \( EG \) is 5. Now, \( \triangle CGE \) is a right triangle whose legs are 12 and 5, so diagonal \( CE \) is 13.

**Example 3.**
What is the length of a diagonal of a cube whose edges are 1?

(A) 1  (B) 2  (C) 3  (D) \( \sqrt{2} \)  (E) \( \sqrt{3} \)

**SOLUTION.** Use the formula:

\[ d^2 = 1^2 + 1^2 + 1^2 = 3 \Rightarrow d = \sqrt{3} \text{ (E)}. \]

Without the formula you would draw a diagram and label it. Since the base is a \( 1 \times 1 \) square, its diagonal is \( \sqrt{2} \). Then the diagonal of the cube is the hypotenuse of a right triangle whose legs are \( \sqrt{2} \) and 1, so

\[ d^2 = 1^2 + (\sqrt{2})^2 = 1 + 2 = 3, \text{ and } d = \sqrt{3}. \]

A cylinder is similar to a rectangular solid except that the base is a circle instead of a rectangle. The volume of a cylinder is the area of its circular base \((\pi r^2)\) times its height \(h\). The surface area of a cylinder depends on whether you are envisioning a tube, such as a straw, without a top or bottom, or a can, which has both a top and a bottom.

**Example 4.**
The radius of cylinder I equals the height of cylinder II. The height of cylinder II equals the radius of cylinder I.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The volume of cylinder I</td>
<td>The volume of cylinder II</td>
</tr>
</tbody>
</table>

**SOLUTION.** Let \( r \) and \( h \) be the radius and height, respectively, of cylinder I. Then

\[ \pi r^2 h \quad \pi h^2 r \]

Divide each column by \( \pi rh \):

\[ \frac{\pi r^2 h}{\pi rh} \quad \frac{\pi h^2 r}{\pi rh} \]

Either \( r \) or \( h \) could be greater, or the two could be equal. The answer is (D).

These are the only formulas you need to know. Any other solid geometry questions that might appear on the GRE would require you to visualize a situation and reason it out, rather than to apply a formula.

**Example 5.**
How many small cubes are needed to construct the tower in the figure at the right?

(A) 25  (B) 28  (C) 35  (D) 44  (E) 67

**SOLUTION.** You need to "see" the answer. The top level consists of 1 cube, the second and third levels consist of 9 cubes each, and the bottom layer consists of 25 cubes. The total is \( 1 + 9 + 9 + 25 = 44 \text{ (D)}. \)

**KEY FACT M5:**

- The formula for the volume, \( V \), of a cylinder whose circular base has radius \( r \) and whose height is \( h \) is \( V = \pi r^2 h \).

- The surface area, \( A \), of the side of the cylinder is the circumference of the circular base times the height: \( A = 2\pi rh \).
PRACTICE EXERCISES—SOLID GEOMETRY

Multiple-Choice Questions

1. The sum of the lengths of all the edges of a cube is 6 centimeters. What is the volume, in cubic centimeters, of the cube?
   (A) $\frac{1}{8}$  (B) $\frac{1}{4}$  (C) $\frac{1}{2}$  (D) 1  (E) 8

2. What is the volume of a cube whose surface area is 150?
   (A) 25  (B) 100  (C) 125  (D) 1000  (E) 15,625

3. What is the surface area of a cube whose volume is 64?
   (A) 16  (B) 64  (C) 96  (D) 128  (E) 384

4. What is the number of cubic inches in one cubic foot?
   (A) 12  (B) 24  (C) 144  (D) 684  (E) 1728

5. A solid metal cube of edge 3 feet is placed in a rectangular tank whose length, width, and height are 3, 4, and 5 feet, respectively. What is the volume, in cubic feet, of water that the tank can now hold?
   (A) 20  (B) 27  (C) 33  (D) 48  (E) 60

6. The height, h, of a cylinder is equal to the edge of a cube. If the cylinder and cube have the same volume, what is the radius of the cylinder?
   (A) $\frac{h}{\sqrt{\pi}}$  (B) $h\sqrt{\pi}$  (C) $\frac{\sqrt{\pi}}{h}$  (D) $\frac{h^2}{\pi}$  (E) $\pi h^2$

7. A rectangular tank has a base that is 10 centimeters by 5 centimeters and a height of 20 centimeters. If the tank is half full of water, by how many centimeters will the water level rise if 325 cubic centimeters of water are poured into the tank?
   (A) 3.25  (B) 6.5  (C) 16.25  (D) 32.5  (E) 65

8. A 5-foot-long cylindrical pipe has an inner diameter of 6 feet and an outer diameter of 8 feet. If the total surface area (inside and out, including the ends) is $k\pi$, what is the value of k?
   (A) 7  (B) 40  (C) 48  (D) 70  (E) 84

9. If the height of a cylinder is 4 times its circumference, what is the volume of the cylinder in terms of its circumference, $C$?
   (A) $\frac{C^3}{\pi}$  (B) $2\frac{C^3}{\pi}$  (C) $\frac{2C^3}{\pi^2}$  (D) $\frac{\pi C^2}{4}$  (E) $4\pi C^3$

10. Three identical balls fit snugly into a cylindrical can; the radius of the spheres equals the radius of the can, and the balls just touch the bottom and the top of the can. If the formula for the volume of a sphere is $V = \frac{4}{3}\pi r^3$, what fraction of the volume of the can is taken up by the balls?
    (A) $\frac{1}{6}$  (B) $\frac{1}{3}$  (C) $\frac{1}{2}$  (D) $\frac{2}{3}$  (E) $\frac{3}{4}$

Quantitative Comparison Questions

11. Jack and Jill each roll a sheet of 9 x 12 paper to form a cylinder. Jack taps the two 9-inch edges together. Jill taps the two 12-inch edges together.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The volume of Jack's cylinder</td>
<td>The volume of Jill's cylinder</td>
</tr>
</tbody>
</table>

12. A is the surface area of a rectangular box in square units. $V$ is the volume of the same box in cubic units.

<table>
<thead>
<tr>
<th>A</th>
<th>V</th>
</tr>
</thead>
</table>

13. $P$ is a point on edge $GH$ of cube $ABCDEFGH$. Each edge of the cube is 1.

   | The area of $\triangle ABP$ | 1 |
   | The volume of a sphere whose radius is 1 | The volume of a cube whose edge is 1 |
Answer Key

1. A  6. A  11. A
5. C  10. D  15. A

Answer Explanations

1. A. Since a cube has 12 edges, we have
   \[12e = 6 \Rightarrow e = \frac{1}{2}\.
   
   Therefore,
   \[V = e^3 = \left(\frac{1}{2}\right)^3 = \frac{1}{8}.
   
2. C. Since the surface area is 150, each of the 6 faces is a square whose area is 150 \(\div 6 = 25\). So the edges are all 5, and the volume is
   \[5^3 = 125.
   
3. C. Since the volume of the cube is 64, we have
   \[e^3 = 64 \Rightarrow e = 4.
   
   The surface area is
   \[6e^2 = 6 \times 16 = 96.
   
4. E. The volume of a cube whose edges are 1 foot can be expressed in either of two ways:
   \[(1 \text{ foot})^3 = 1 \text{ cubic foot or (12 inches)}^3 = 1728 \text{ cubic inches}.
   
5. C. The volume of the tank is \(3 \times 4 \times 5 = 60\) cubic units, but the solid cube is taking up \(3^3 = 27\) cubic units. Therefore, the tank can hold
   \[60 - 27 = 33\] cubic units of water.

6. A. Since the volumes are equal, \(\pi r^2 h = e^3 = h^3\).
   
   Therefore,
   \[\pi r^2 = h^2 \Rightarrow r^2 = \frac{h^2}{\pi} \Rightarrow r = \frac{h}{\sqrt{\pi}}.
   
7. B. Draw a diagram. Since the area of the base is
   \[5 \times 10 = 50\] square centimeters, each 1 centimeter of depth has a volume of 50 cubic centimeters. Therefore, 325 cubic centimeters will raise the water level 325 \(\div 50 = 6.5\) centimeters.

8. E. Draw a diagram and label it. Since the surface area of a cylinder is given by \(A = 2\pi rh\), the area of the exterior is \(2\pi(4)(5) = 40\pi\), and the area of the interior is \(2\pi(3)(5) = 30\pi\). The area of each shaded end is the area of the outer circle minus the area of the inner circle: \(16\pi - 9\pi = 7\pi\), so total surface area
   \[40\pi + 30\pi + 7\pi + 7\pi = 84\pi \Rightarrow k = 84\.

9. A. Since \(V = \pi r^2 h\), we need to express \(r\) and \(h\) in terms of \(C\). It is given that \(h = 4C\); and since
   \[C = 2\pi r,\] then \(r = \frac{C}{2\pi}\). Therefore,
   \[V = \pi \left(\frac{C}{2\pi}\right)^2 (4C) = \pi \left(\frac{C^2}{4\pi^2}\right) (4C) = \frac{C^3}{\pi}.
   
10. D. To avoid using \(r\), assume that the radii of the spheres and the can are 1. Then the volume of each ball is
   \[\frac{4}{3}\pi(1)^3 = \frac{4}{3}\pi,\] and the total
   volume of the 3 balls is \(3 \left(\frac{4}{3}\pi\right) = 4\pi\). Since
   the height of the can is 6 (the diameter of each
sphere is 2), the volume of the can is 
\( \pi(1)^2(6) = 6\pi \). So the balls take up \( \frac{4\pi}{6\pi} = \frac{2}{3} \) of the can.

11. A. Drawing a diagram makes it easier to visualize the problem. The volume of a cylinder is \( \pi r^2 h \).
In each case, we know the height but have to determine the radius in order to calculate the volume.

Jack's cylinder has a circumference of 12:

\[
2\pi r = 12 \implies r = \frac{12}{2\pi} = \frac{6}{\pi} \implies \\
V = \pi \left( \frac{6}{\pi} \right)^2 (9) = \pi \left( \frac{36}{\pi^2} \right) (9) = \frac{324}{\pi}.
\]

Jill's cylinder has a circumference of 9:

\[
2\pi r = 9 \implies r = \frac{9}{2\pi} \implies \\
V = \pi \left( \frac{9}{2\pi} \right)^2 (12) = \pi \left( \frac{81}{4\pi^2} \right) (12) = \frac{243}{\pi}.
\]

12. A. Column A: \( V = 6^3 = 216 \).
Column B: \( V = 5 \times 6 \times 7 = 210 \).

13. D. There is no relationship between the two columns. If the box is a cube of edge 1, \( A = 6 \) and \( V = 1 \). If the box is a cube of edge 10, \( A = 600 \) and \( V = 1000 \).

14. B. The base, \( AB \), of \( \triangle ABP \) is 1. Since the diagonal is the longest line segment in the cube, the height, \( h \), of the triangle is definitely less than the diagonal, which is \( \sqrt{1^2 + 1^2 + 1^2} = \sqrt{3} \). So the area of the triangle is less than \( \frac{1}{2} \sqrt{3} \), which is less than 1. (You could also have just calculated the area:

\[ h = BG = \sqrt{2} \], so the area is \( \frac{1}{2} \sqrt{2} \times .71 \).)

15. A. You probably don’t know how to find the volume of a sphere; fortunately, you don’t need to. You should be able to visualize that the sphere is much bigger than the cube. (In fact, it is more than 4 times the size.)

14-N. COORDINATE GEOMETRY

The GRE has very few questions on coordinate geometry. Almost always they deal with the coordinates of points and occasionally with the slopes of a line. You will never have to draw a graph; nor will you have to provide the equation for a given graph.

The coordinate plane is formed by two perpendicular number lines called the \textit{x-axis} and \textit{y-axis}, which intersect at the \textit{origin}. The axes divide the plane into four \textit{quadrants}, labeled I, II, III, and IV.

Each point in the plane is assigned two numbers, an \textit{x-coordinate} and a \textit{y-coordinate}, which are written as an ordered pair, \((x, y)\).

- Points to the right of the \textit{y-axis} have positive \textit{x}-coordinates, and those to the left have negative \textit{x}-coordinates.

- Points above the \textit{x-axis} have positive \textit{y}-coordinates, and those below it have negative \textit{y}-coordinates.

- If a point is on the \textit{x-axis}, its \textit{y}-coordinate is 0.

- If a point is on the \textit{y-axis}, its \textit{x}-coordinate is 0.

For example, point A in the following figure is labeled \((2, 3)\), since it is 2 units to the right of the \textit{y-axis} and 3 units above the \textit{x-axis}. Similarly, \((5, -3)\) is in Quadrant III, 3 units to the left of the \textit{y-axis} and 5 units below the \textit{x-axis}. 
SOLUTION 1. Since \((a, b)\) lies on the x-axis, \(b = 0\). Since \((c, d)\) lies on the y-axis, \(c = 0\). The answer is C.

SOLUTION 2. Since \((r, s)\) is in Quadrant II, \(r\) is negative and \(s\) is positive. The answer is B.

Often a question requires you to calculate the distance between two points. This is easiest when the points lie on the same horizontal or vertical line.

**KEY FACT N1:**
- All the points on a horizontal line have the same y-coordinate. To find the distance between them, subtract their x-coordinates.

**HELPFUL HINT**
If the points have been plotted on a graph, you can find the distance between them by counting boxes.

The distance from A to C is 6 - 1 = 5. The distance from B to C is 4 - 1 = 3.

It is a little more difficult to find the distance between two points that are not on the same horizontal or vertical line. In this case, use the Pythagorean theorem. For example, in the figure above, if \(d\) represents the distance from A to B, \(d^2 = 5^2 + 3^2 = 25 + 9 = 34 \Rightarrow d = \sqrt{34}\).

**CAUTION:** You cannot count boxes unless the points are on the same horizontal or vertical line. The distance between A and B is 5, not 4.

**KEY FACT N2:**
The distance, \(d\), between two points, \(A(x_1, y_1)\) and \(B(x_2, y_2)\), can be calculated using the distance formula:

\[
d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}.
\]
Helpful Hint

The "distance formula" is nothing more than the Pythagorean theorem. If you ever forget the formula, and you need the distance between two points that do not lie on the same horizontal or vertical line, do as follows:

1. Create a right triangle by drawing a horizontal line through one of the points and a vertical line through the other, and then use the Pythagorean theorem.

So the perimeter is: \(6 + 5 + \sqrt{13} = 11 + \sqrt{13}\) (D).

The slope of a line is a number that indicates how steep the line is.

**KEY FACT N3:**

- **Vertical lines do not have slopes.**
- To find the slope of any other line proceed as follows:
  1. Choose any two points \(A(x_1, y_1)\) and \(B(x_2, y_2)\) on the line.
  2. Take the differences of the \(y\)-coordinates, \(y_2 - y_1\), and the \(x\)-coordinates, \(x_2 - x_1\).
  3. Divide: \(\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}\).

We will illustrate the next **KEY FACT** by using this formula to calculate the slopes of \(RS\), \(RT\), and \(ST\) from Example 3: \(R(-2, 1)\), \(S(4, 1)\), \(T(0, 4)\).

**KEY FACT N4:**

- The slope of any horizontal line is 0:
  \[\text{slope of } RS = \frac{1 - 1}{4 - (-2)} = \frac{0}{6} = 0\]

- The slope of any line that goes up as you move from left to right is positive: \(\text{slope of } RT = \frac{4 - 1}{0 - (-2)} = \frac{3}{2}\)

- The slope of any line that goes down as you move from left to right is negative: \(\text{slope of } ST = \frac{1 - 4}{4 - 0} = \frac{-3}{4} = -\frac{3}{4}\)

---

**Example 3.**

What is the area of \(\triangle RST\)?

(A) 6  (B) 9  (C) 12  (D) 15  (E) 18

**SOLUTION.** \(R(-2, 1)\) and \(S(4, 1)\) lie on the same horizontal line, so \(RS = 4 - (-2) = 6\). Let that be the base of the triangle. Then the height is the distance along the vertical line from \(T\) to \(RS\): \(4 - 1 = 3\). The area is \(\frac{1}{2} \times 6 \times 3 = 9\) (B).

**Example 4.**

What is the perimeter of \(\triangle RST\)?

(A) 13  (B) 14  (C) 16  (D) 11 + \sqrt{13}  (E) 11 + \sqrt{61}

**SOLUTION.** The perimeter is \(RS + ST + RT\). From the solution to Example 3, you know that \(RS = 6\). Also, \(ST = 5\), since it is the hypotenuse of a 3-4-5 right triangle. To calculate \(RT\), either use the distance formula:

\[
\sqrt{(-2 - 0)^2 + (1 - 4)^2} = \sqrt{(-2)^2 + (-3)^2} = \sqrt{4 + 9} = \sqrt{13}
\]

or the Pythagorean theorem:

\[RT^2 = 2^2 + 3^2 = 4 + 9 = 13 \Rightarrow RT = \sqrt{13}.
\]
Multiple-Choice Questions

1. What is the slope of the line that passes through points (0, -2) and (3, 0)?
   (A) $\frac{3}{2}$  (B) $\frac{2}{3}$  (C) 0  (D) $\frac{2}{3}$  (E) $\frac{3}{2}$

2. If the coordinates of $\triangle RST$ are $R(0, 0)$, $S(7, 0)$, and $T(2, 5)$, what is the sum of the slopes of the three sides of the triangle?
   (A) -1.5  (B) 0  (C) 1.5  (D) 2.5  (E) 3.5

3. If $A(-1, 1)$ and $B(3, -1)$ are the endpoints of one side of square $ABCD$, what is the area of the square?
   (A) 12  (B) 16  (C) 20  (D) 25  (E) 36

4. If the area of circle $O$ above is $k\pi$, what is the value of $k$?
   (A) 3  (B) 6  (C) 9  (D) 18  (E) 27

5. If $P(2, 1)$ and $Q(8, 1)$ are two of the vertices of a rectangle, which of the following could not be another of the vertices?
   (A) (2, 8)  (B) (8, 2)  (C) (2, -8)  (D) (-2, 8)  (E) (8, 8)

6. A circle whose center is at (6, 8) passes through the origin. Which of the following points is not on the circle?
   (A) (12, 0)  (B) (6, -2)  (C) (16, 8)  (D) (-2, 12)  (E) (-4, 8)

Questions 7-8 concern parallelogram $JKLM$, whose coordinates are $J(-5, 2)$, $K(-2, 6)$, $L(5, 6)$, $M(2, 2)$.

7. What is the area of parallelogram $JKLM$?
   (A) 35  (B) 28  (C) 24  (D) 20  (E) 12

8. What is the perimeter of parallelogram $JKLM$?
   (A) 35  (B) 28  (C) 24  (D) 20  (E) 12

9. What is the slope of the line that passes through $(a, b)$ and $\left(\frac{1}{a}, \frac{1}{b}\right)$?
   (A) 0  (B) $\frac{1}{b}$  (C) $\frac{1-a^2}{a}$  (D) $\frac{a^2-1}{a}$  (E) undefined

10. If $c \neq 0$ and the slope of the line passing through $(-c, c)$ and $(3c, 0)$ is 1, which of the following is an expression for $a$ in terms of $c$?
    (A) $-3c$  (B) $-\frac{c}{3}$  (C) $2c$  (D) $3c$  (E) $5c$

Quantitative Comparison Questions

Column A         Column B

$\frac{m}{2}$    1

$\frac{m}{2}$    0

The slope of line $k$ is $-0.8$.

The distance from $(b, 5)$ to $(c, -3)$ is 10.

$c - b$    6
Answer Key


Answer Explanations

1. D. If you sketch the line, you see immediately that the slope of the line is positive. Without even knowing the slope formula, therefore, you can eliminate Choices A, B, and C. To determine the actual slope, use the formula:
\[
\frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - (-2)}{3 - 0} = \frac{2}{3}
\]

2. C. Sketch the triangle, and then calculate the slopes.

Since RS is horizontal, its slope is 0.
The slope of RT = \(\frac{5 - 0}{2 - 0} = \frac{5}{2} = 2.5\).
The slope of ST = \(\frac{5 - 0}{2 - 7} = \frac{5}{-5} = -1\).
Now add: 0 + 2.5 + (-1) = 1.5

3. C. Draw a diagram and label it. The area of square ABCD is \(s^2\), where \(s = AB = \) length of a side. By the Pythagorean theorem:
\[s^2 = 2^2 + 4^2 = 4 + 16 = 20\]

4. D. Since the line segment joining (3, 3) and (0, 0) is a radius of the circle, \(r^2 = 3^2 + 3^2 = 18\). Therefore, area = \(\pi r^2 = 18\pi \Rightarrow k = 18\). Note that you do not actually have to find that the value of \(r\) is \(3\sqrt{2}\).

5. D. Draw a diagram. Any point whose x-coordinate is 2 or 8 could be another vertex. Of the choices, only (-2, 8) is not possible.

6. D. Draw a diagram. The radius of the circle is 10 (since it's the hypotenuse of a 6-8-10 right triangle). Which of the choices are 10 units from (6, 8)? First, check the easy ones: (-4, 8) and (16, 8) are 10 units to the left and right of (6, 8), and (6, -2) is 10 units below. What
remains is to check (12, 0), which works, and
(−2, 12), which doesn’t.

Here is the diagram for solutions 7 and 8.

7. B. The base is 7 and the height is 4. So, the area
is $7 \times 4 = 28$.

8. C. Sides JM and KL are each 7, and sides JK
and LM are each the hypotenuse of a 3-4-5
right triangle, so they are 5. The perimeter is
$2(7 + 5) = 24$.

9. A. The formula for the slope is $\frac{y_2 - y_1}{x_2 - x_1}$, but
before using it, look. Since the y-coordinates
are equal, the numerator, and thus the fraction,
equals 0.

10. E. The slope is equal to

$$
\frac{y_2 - y_1}{x_2 - x_1} = \frac{a - c}{3c - (−c)} = \frac{a - c}{4c} = 1 \Rightarrow
$$

$$
a - c = 4c \Rightarrow a = 5c.
$$

11. D. If the sides of the square are horizontal and
vertical, then $m$ is 1 or −1, and $m^2$ is 1. But the
square could be positioned any place, and the
slope of a diagonal could be any number.

12. A. Line $\ell$, which goes through (0, 0) and (1, 1),
also goes through (a, a), and since (a, b) is
below (a, a), $b < a$. Therefore, $a - b$ is
positive.

13. A. The line going through (−3, 3) and (0, 0) has
slope −1. Since $\ell$ is steeper, its slope is a
number such as −2 or −7; since $k$ is less steep,
its slope is a number such as −0.5 or −0.3.
Therefore, the slope of $k$ is greater.

14. A. Since (a, b) is on the y-axis, $a = 0$; and since
(c, d) is on the x-axis, $d = 0$. Then by the slope
formula,

$$
-0.8 = \frac{0 - b}{c - 0} = -\frac{b}{c} \Rightarrow b = .8c \Rightarrow b < c.
$$

15. C. Draw a diagram. Since the distance between
the two points is 10, by the distance formula:

$$
10 = \sqrt{(c - b)^2 + (−3 - 5)^2} = \sqrt{(c - b)^2 + (−8)^2} =
\sqrt{(c - b)^2 + 64}.
$$

Squaring both sides gives

$$
100 = (c - b)^2 + 64 \Rightarrow (c - b)^2 = 36 \Rightarrow
$$

$$
c - b = 6.
$$
14-O. COUNTING AND PROBABILITY

Some questions on the GRE begin, "How many...?". In these problems you are being asked to count something: how many apples can she buy, how many dollars did he spend, how many pages did she read, how many numbers satisfy a certain property, or how many ways are there to complete a particular task. Sometimes these problems can be handled by simple arithmetic. Other times it helps to use TACTIC 8 from Chapter 10 and systematically make a list. Occasionally it helps to know the counting principle and other strategies that we will review in this section.

COUNTING

Using Arithmetic to Count

The following three examples require only arithmetic. But be careful; they are not the same.

Example 1.
Brian bought some apples. If he entered the store with $113 and left with $109, how much did the apples cost?

Example 2.
Scott was selling tickets for the school play. One day he sold tickets numbered 109 through 113. How many tickets did he sell that day?

Example 3.
Brian is the 109th person in a line and Scott is the 113th person. How many people are there between Brian and Scott?

SOLUTIONS 1–3.

- It may seem that each of these examples requires a simple subtraction: 113 - 109 = 4. In Example 1, Brian did spend $4 on apples; in Example 2, however, Scott sold 5 tickets; and in Example 3, only 3 people are on line between Brian and Scott!

- Assume that Brian went into the store with 113 one-dollar bills, numbered 1 through 113; he spent the 4 dollars numbered 113, 112, 111, and 110, and still had the dollars numbered 1 through 109; Scott sold the 5 tickets numbered 110, 111, 112, 113, and 114; and between Brian and Scott the 110th, 111th, and 112th persons—3 people—were on line.

In Example 1, you just needed to subtract: 113 - 109 = 4. In Example 2, you need to subtract and then add 1: 113 - 109 + 1 = 4 + 1 = 5. And in Example 3, you need to subtract and then subtract 1 more: 113 - 109 - 1 = 3. Although Example 1 is too easy for the GRE, questions such as Examples 2 and 3 do appear, because they’re not as obvious and they require that little extra thought. When do you have to add or subtract 1?

The issue is whether or not the first and last numbers are included. In Example 1, Brian spent dollar number 113, but he still had dollar number 109 when he left the store. In Example 2, Scott sold both ticket number 109 and ticket 113. In Example 3, neither Scott (the 113th person) nor Brian (the 109th person) was to be counted.

KEY FACT O1:

To count how many integers there are between two integers, follow these rules:

- If exactly one of the endpoints is included, subtract.
- If both endpoints are included, subtract and add 1.
- If neither endpoint is included, subtract and subtract 1 more.

Example 4.
From 1:09 to 1:13, Adam read pages 109 through 113 in his English book. What was his rate of reading, in pages per minute?

(A) \( \frac{3}{5} \)  (B) \( \frac{3}{4} \)  (C) \( \frac{4}{5} \)  (D) 1 (E) \( \frac{5}{4} \)

SOLUTION. Since Adam read both pages 109 and 113, he read 113 - 109 + 1 = 5 pages. He started reading during the minute that started at 1:09 (and ended at 1:10). Since he stopped reading at 1:13, he did not read during the minute that began at 1:13 (and ended at 1:14). So he read for 1:13 - 1:09 = 4 minutes. He read at the rate of \( \frac{5}{4} \) pages per minute.

Systematically Making a List

Tactic O1

When a question asks "How many...?" and the numbers in the problem are small, just systematically list all of the possibilities.

Proper use of TACTIC O1 eliminates the risk of making an error in arithmetic. In Example 4, rather than even thinking about whether or not to add 1 or subtract 1 after subtracting the number of pages, you could have just quickly jotted down the numbers of the pages Adam read (109, 110, 111, 112, 113), and then counted them.

Example 5.
Ariel has 4 paintings in the basement. She is going to bring up 2 of them and hang 1 in her den and 1 in her bedroom. In how many ways can she choose which paintings go in each room?

(A) 4  (B) 6  (C) 12  (D) 16  (E) 24
The Counting Principle

**KEY FACT 02:**

If two jobs need to be completed and there are \( m \) ways to do the first job and \( n \) ways to do the second job, then there are \( m \times n \) ways to do one job followed by the other. This principle can be extended to any number of jobs.

In Example 5, the first job was to pick 1 of the 4 paintings and hang it in the bedroom. That could be done in 4 ways. The second job was to pick a second painting to hang in the den. That job could be accomplished by choosing any of the remaining 3 paintings. So there are \( 4 \times 3 = 12 \) ways to hang 2 of the paintings.

Now, assume that there are 10 paintings to be hung in 4 rooms. The first job is to choose one of the 10 paintings for the bedroom. The second job is to choose one of the 9 remaining paintings to hang in the den. The third job is to choose one of the 8 remaining paintings for the living room. Finally, the fourth job is to pick one of the 7 remaining paintings for the dining room. These 4 jobs can be completed in \( 10 \times 9 \times 8 \times 7 = 5040 \) ways.

**Example 6.**

How many integers are there between 100 and 1000 all of whose digits are odd?

**SOLUTION.** We're looking for three-digit numbers, such as 135, 711, 353, and 999, in which all three digits are odd. Note that we are not required to use three different digits. Although you certainly wouldn't want to list all of them, you could count them by listing some of them and seeing if a pattern develops. In the 100s there are 5 numbers that begin with 1: 111, 113, 115, 117, 119. Similarly, there are 5 numbers that begin with 3: 313, 315, 317, 319; 5 that begin with 5; 5 that begin with 7; and 5 that begin with 9, for a total of \( 5 \times 5 \times 5 = 125 \) in the 100s. In the same way there are 25 in the 300s, 25 in the 500s, 25 in the 700s, and 25 in the 900s, for a grand total of \( 5 \times 25 \times 25 = 125 \). You can actually do this in less time than it takes to read this paragraph.

The best way to solve Example 8, however, is to use the counting principle. Think of writing a three-digit number as three jobs that need to be done. The first job is to select one of the five odd digits and use it as the digit in the hundreds place. The second job is to select one of the five odd digits to be the digit that goes in the tens place. Finally, the third job is to select one of the five odd digits to be the digit in the units place. Each of these jobs can be done in 5 ways. So the total number of ways is \( 5 \times 5 \times 5 = 125 \).

**Example 7.**

How many different arrangements are there of the letters \( A, B, C, \) and \( D \)?

(A) 4 (B) 6 (C) 8 (D) 12 (E) 24

Since from the choices given, we know that the answer is a relatively small number, we could just use TACTIC 01 and systematically list them: \( ABCD, ABDC, ACBD, \) ... However, this method would not be suitable if you had to arrange as few as 5 or 6 letters and would be practically impossible if you had to arrange 10 or 20 letters.

**SOLUTION.** Think of the act of arranging the four letters as four jobs that need to be done, and use the counting principle. The first job is to choose one of the four letters to write in the first position; there are 4 ways to complete that job. The second job is to choose one of the remaining three letters to write in the second position; there are 3 ways to complete that job. The third job is to choose one of the two remaining letters to write in the third position; there are 2 ways to complete that job. Finally, the fourth job is to choose the only remaining letter and to write it: \( 4 \times 3 \times 2 \times 1 = 24 \).

**Venn Diagrams**

A **Venn diagram** is a figure with two or three overlapping circles, usually enclosed in a rectangle, which is used to solve certain counting problems. To illustrate this, assume that a school has 100 seniors. The following Venn diagram, which divides the rectangle into four regions, shows the distribution of those students in the band and the orchestra.

The 32 written in the part of the diagram where the two circles overlap represents the 32 seniors who are in both band and orchestra. The 18 written in the circle on the right represents the 18 seniors who are in band but not in orchestra, while the 37 written in the left circle...
represents the 37 seniors who are in orchestra but not in band. Finally, the 13 written in the rectangle outside of the circles represents the 13 seniors who are in neither band nor orchestra. The numbers in all four regions must add up to the total number of seniors: 32 + 18 + 37 + 13 = 100. Note that there are 50 seniors in the band—32 who are also in the orchestra and 18 who are not in the orchestra. Similarly, there are 32 + 37 = 69 seniors in the orchestra. Be careful: the 50 names on the band roster and the 69 names on the orchestra roster add up to 119 names—more than the number of seniors. That's because 32 names are on both lists and so have been counted twice. The number of seniors who are in band or orchestra is only 119 - 32 = 87. Those 87 together with the 13 seniors who are in neither make up the total of 100.

On the GRE, Venn diagrams are used in two ways. It is possible to be given a Venn diagram and asked a question about it, as in Example 7. More often, you will come across a problem, such as Example 8, that you will be able to solve more easily if you think to draw a Venn diagram.

Example 7.
If the integers from 1 through 15 are each placed in the diagram at the right, which regions are empty?

(A) D only  (B) F only  (C) G only  (D) F and G only  (E) D and G only

SOLUTION. The easiest way is just to put each of the numbers 1 through 15 in the appropriate region. The empty regions are F and G only (D).

Example 8.
Of the 410 students at H. S. Truman High School, 240 study Spanish and 180 study French. If 25 students study neither language, how many study both?

(A) 25  (B) 35  (C) 60  (D) 170  (E) 230

SOLUTION. Draw a Venn diagram. Let x represent the number of students who study both languages, and write x in the part of the diagram where the two circles overlap. Then the number who study only Spanish is 240 - x, and the number who study only French is 180 - x. The number who study at least one of the languages is 410 - 25 = 385, so we have

\[ 385 = (240 - x) + x + (180 - x) = 420 - x \]
\[ x = 420 - 385 = 35 \text{ students who study both (B).} \]

Note: No problem requires the use of a Venn diagram. On some problems you might even find it easier not to use one. In Example 8, you could have reasoned that if there were 410 students in the school and 25 didn't study either language, then there were 410 - 25 = 385 students who studied at least one language. There are 240 names on the Spanish class lists and 180 on the French class lists, a total of 240 + 180 = 420 names. But those 420 names belong to only 385 students. It must be that 420 - 385 = 35 names were repeated. In other words, 35 students are in both French and Spanish classes.

PROBABILITY

The probability that an event will occur is a number between 0 and 1, usually written as a fraction, which indicates how likely it is that the event will happen. For example, if you spin the spinner below, there are 4 possible outcomes. It is equally likely that the spinner will stop in any of the 4 regions. There is 1 chance in 4 that it will stop in the region marked 2. So we say that the probability of spinning a 2 is one-fourth and write \( P(2) = \frac{1}{4} \). Since 2 is the only even number on the spinner we could also say \( P(\text{even}) = \frac{1}{4} \). There are 3 chances in 4 that the spinner will land in a region with an odd number in it, so \( P(\text{odd}) = \frac{3}{4} \).
KEY FACT 03:

If \( E \) is any event, the probability that \( E \) will occur is given by \( P(E) = \frac{\text{number of favorable outcomes}}{\text{total number of possible outcomes}} \), assuming that the possible outcomes are all equally likely.

In the preceding example, each of the 4 regions is the same size, so it is equally likely that the spinner will land on the 2, 3, 5, or 7. Therefore,

\[
P(\text{odd}) = \frac{\text{number of ways of getting an odd number}}{\text{total number of possible outcomes}} = \frac{3}{4}.
\]

Note that the probability of not getting an odd number is 1 minus the probability of getting an odd number:

\[
1 - \frac{3}{4} = \frac{1}{4}.
\]
Let's look at some other probabilities associated with spinning this spinner once.

\[
P(\text{number > 10}) = \frac{\text{number of ways of getting a number > 10}}{\text{total number of possible outcomes}} = \frac{0}{4} = 0.
\]

\[
P(\text{prime number}) = \frac{\text{number of ways of getting a prime number}}{\text{total number of possible outcomes}} = \frac{4}{4} = 1.
\]

\[
P(\text{number < 4}) = \frac{\text{number of ways of getting a number < 4}}{\text{total number of possible outcomes}} = \frac{2}{4} = \frac{1}{2}.
\]

KEY FACT 04:

Let \( E \) be an event, and \( P(E) \) the probability it will occur.

- If \( E \) is impossible (such as getting a number greater than 10), \( P(E) = 0 \).
- If it is certain that \( E \) will occur (such as getting a prime number), \( P(E) = 1 \).
- In all cases \( 0 \leq P(E) \leq 1 \).
- The probability that event \( E \) will not occur is \( 1 - P(E) \).
- If 2 or more events constitute all the outcomes, the sum of their probabilities is 1.

\[
\text{For example, } P(\text{even}) + P(\text{odd}) = \frac{1}{4} + \frac{3}{4} = 1.
\]

The more likely it is that an event will occur, the higher its probability (the closer to 1 it is); the less likely it is that an event will occur, the lower its probability (the closer to 0 it is).

Even though probability is defined as a fraction, we can write probabilities as decimals or percents, as well. Instead of writing \( P(E) = \frac{1}{2} \), we can write \( P(E) = .50 \) or \( P(E) = 50\% \).

Example 9.

An integer between 100 and 999, inclusive, is chosen at random. What is the probability that all the digits of the number are odd?

SOLUTION. By KEY FACT 01, since both endpoints are included, there are \( 999 - 100 + 1 = 900 \) integers between 100 and 999. In Example 6, we saw that there are 125 three-digit numbers all of whose digits are odd. So the probability is

\[
\frac{\text{number of favorable outcomes}}{\text{total number of possible outcomes}} = \frac{125}{900} = \frac{5}{36}.
\]

KEY FACT 05:

If an experiment is done two (or more) times, the probability that the first event will occur and then a second event will occur is the product of the probabilities.

Example 10.

A fair coin is flipped three times. What is the probability that the coin lands heads each time?

SOLUTION. When a fair coin is flipped:

\[
P(\text{head}) = \frac{1}{2} \text{ and } P(\text{tail}) = \frac{1}{2}.
\]

By KEY FACT 05, \( P(3 \text{ heads}) = P(\text{head 1st time}) \times P(\text{head 2nd time}) \times P(\text{head 3rd time}) = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8} \).

Another way to handle problems such as Example 10 is to make a list of all the possible outcomes. For example, if a coin is tossed three times, the possible outcomes are

\[
\begin{array}{cccc}
\text{head, head, head} & \text{head, head, tail} & \text{head, tail, head} & \text{tail, head, head} \\
\text{head, tail, tail} & \text{tail, head, tail} & \text{tail, tail, head} & \text{tail, tail, tail}
\end{array}
\]

On the GRE, of course, if you choose to list the outcomes on your scrap paper, you should abbreviate and just write HHH, HHT, and so on. In any event, there are eight possible outcomes, and only one of them (HHH) is favorable. So the probability is \( \frac{1}{8} \).

Column A | Column B
---|---
The probability of getting more heads than tails | The probability of getting more tails than heads
The probability of getting more heads than tails | The probability of getting more tails than heads

Example 11.
SOLUTION. From the list of the 8 possible outcomes mentioned, you can see that in 4 of them (HHH, HHT, HTH, THH) there are more heads than tails, and that in 4 of them (TTT, TTH, THT, TTT) there are more tails than heads. Each probability is \( \frac{4}{8} \). The answer is C.

In Example 11, it wasn’t even necessary to calculate the two probabilities. Since heads and tails are equally likely, when several coins are flipped, it is just as likely to have more heads as it is to have more tails. This is typical of quantitative comparison questions on probability; you usually can tell which of the two probabilities is greater without having to calculate either one. This is another instance where TACTIC 5 from Chapter 13 (don’t calculate, compare) is useful.

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**PRACTICE EXERCISES—COUNTING AND PROBABILITY**

**Multiple-Choice Questions**

1. Alyssa completed exercises 6–20 on her math review sheet in 30 minutes. At this rate, how long, in minutes, will it take her to complete exercises 29–57?
   - (A) 56
   - (B) 57
   - (C) 58
   - (D) 60
   - (E) 65

2. A diner serves a lunch special, consisting of soup or salad, a sandwich, coffee or tea, and a dessert. If the menu lists 3 soups, 2 salads, 7 sandwiches, and 8 desserts, how many different lunches can you choose? (Note: Two lunches are different if they differ in any aspect.)
   - (A) 22
   - (B) 280
   - (C) 336
   - (D) 560
   - (E) 672

3. Dwight Eisenhower was born on October 14, 1890 and died on March 28, 1969. What was his age, in years, at the time of his death?
   - (A) 77
   - (B) 78
   - (C) 79
   - (D) 80
   - (E) 81

4. How many four-digit numbers have only even digits?
   - (A) 96
   - (B) 128
   - (C) 256
   - (D) 500
   - (E) 625

5. There are 27 students on the college debate team. What is the probability that at least 3 of them have their birthdays in the same month?
   - (A) 0
   - (B) \( \frac{3}{27} \)
   - (C) \( \frac{3}{12} \)
   - (D) \( \frac{1}{2} \)
   - (E) 1

6. There are 100 people on a line. Aviva is the 37th person and Naomi is the 67th person. If a person on line is chosen at random, what is the probability that the person is standing between Aviva and Naomi?
   - (A) \( \frac{1}{100} \)
   - (B) \( \frac{29}{100} \)
   - (C) \( \frac{3}{10} \)
   - (D) \( \frac{31}{100} \)
   - (E) \( \frac{1}{2} \)

7. Let \( A \) be the set of primes less than 6, and \( B \) be the set of positive odd numbers less than 6. How many different sums of the form \( a + b \) are possible, if \( a \) is in \( A \) and \( b \) is in \( B \)?
   - (A) 6
   - (B) 7
   - (C) 8
   - (D) 9
   - (E) 10

8. A jar has 5 marbles, 1 of each of the colors red, white, blue, green, and yellow. If 4 marbles are removed from the jar, what is the probability that the yellow one was removed?
   - (A) \( \frac{1}{20} \)
   - (B) \( \frac{1}{5} \)
   - (C) \( \frac{1}{4} \)
   - (D) \( \frac{4}{5} \)
   - (E) \( \frac{5}{4} \)

9. Josh works on the second floor of a building. There are 10 doors to the building and 8 staircases from the first to the second floor. Josh decided that each day he would enter by one door and leave by a different one, and go up one staircase and down another. How many days could Josh do this before he had to repeat a path he had previously taken?
   - (A) 80
   - (B) 640
   - (C) 800
   - (D) 5040
   - (E) 6400

10. A jar contains 20 marbles: 4 red, 6 white, and 10 blue. If you remove marbles one at a time, randomly, what is the minimum number that must be removed to be certain that you have at least 2 marbles of each color?
    - (A) 6
    - (B) 10
    - (C) 12
    - (D) 16
    - (E) 18

11. At the audition for the school play, \( n \) people tried out. If \( k \) people went before Judy, who went before Liz, and \( n \) people went after Liz, how many people tried out between Judy and Liz?
    - (A) \( n - m - k - 2 \)
    - (B) \( n - m - k - 1 \)
    - (C) \( n - m - k + 1 \)
    - (D) \( n - m - k + 1 \)
    - (E) \( n - m - k + 2 \)
12. In a group of 100 students, more students are on the fencing team than are members of the French club. If 70 are in the club and 20 are neither on the team nor in the club, what is the minimum number of students who could be both on the team and in the club?
(A) 10  (B) 49  (C) 50  (D) 60  (E) 61

13. In a singles tennis tournament that has 125 entrants, a player is eliminated whenever he loses a match. How many matches are played in the entire tournament?
(A) 62  (B) 63  (C) 124  (D) 125  (E) 246

Questions 14–15 refer to the following diagram. A is the set of positive integers less than 20; B is the set of positive integers that contain the digit 7; and C is the set of primes.

14. How many numbers are in the region labeled x?
(A) 4  (B) 5  (C) 6  (D) 7  (E) 8

15. What is the sum of all the numbers less than 50 that are in the region labeled y?
(A) 24  (B) 37  (C) 47  (D) 84  (E) 108

Answer Key


Answer Explanations

1. C. Alyssa completed 20 – 6 + 1 = 15 exercises in 30 minutes, which is a rate of 1 exercise every 2 minutes. Therefore, to complete 57 – 29 + 1 = 29 exercises would take her 58 minutes.

2. D. You can choose your soup or salad in any of 5 ways, your beverage in any of 2 ways, your sandwich in 7 ways, and your dessert in 8 ways. The counting principle says to multiply: 5 x 2 x 7 x 8 = 560. (Note that if you got soup
3. B. His last birthday was in October 1968, when he turned 78: 1968 - 1890 = 78

4. D. The easiest way to solve this problem is to use the counting principle. The first digit can be chosen in any of 4 ways (2, 4, 6, 8), whereas the second, third, and fourth digits can be chosen in any of 5 ways (0, 2, 4, 6, 8). Therefore, the total number of four-digit numbers all of whose digits are even is $4 \times 5 \times 5 \times 5 = 500$.

5. E. If there were no month in which at least 3 students had a birthday, then each month would have the birthdays of at most 2 students. But that's not possible. Even if there were 2 birthdays in January, 2 in February, ..., and 2 in December, that would account for only 24 students. It is guaranteed that with more than 24 students, at least one month will have 3 or more birthdays. The probability is 1.

6. B. There are $67 - 37 - 1 = 29$ people between Aviva and Naomi, so, the probability that one of them is chosen is $\frac{29}{100}$.

7. B. $A = \{2, 3, 5\}$ and $B = \{1, 3, 5\}$. Any of the 3 numbers in $A$ could be added to any of the 3 numbers in $B$, so there are 9 sums that could be formed. However, there could be some duplication. List the sums systematically; first add 1 to each number in $A$, then 3, and then 5: 3, 4, 6; 5, 6, 10; 7, 8, 10. There are 7 different sums.

8. D. It is equally likely that any one of the 5 marbles will be the one that is not removed. So, the probability that the yellow one is left is $\frac{1}{5}$ and the probability that it is removed is $\frac{4}{5}$.

9. D. This is the counting principle at work. Each day Josh has four jobs to do: choose 1 of the 10 doors to enter and 1 of the 9 other doors to exit; choose 1 of the 8 staircases to go up and 1 of the other 7 to come down. This can be done in $10 \times 9 \times 8 \times 7 = 5040$ ways. So on each of 5040 days Josh could choose a different path.

10. E. In a problem like this the easiest thing to do is to see what could go wrong in your attempt to get 2 marbles of each color. If you were really unlucky, you might remove 10 blue ones in a row, followed by all 6 white ones. At that point you would have 16 marbles, and you still wouldn't have even 1 red one. The next 2 marbles, however, must both be red. The answer is 18.

11. A. It may help to draw a line and label it:

\[
\frac{k}{k+1} \times \frac{1}{m} = \frac{1}{n-m}
\]

Since $k$ people went before Judy, she was number $k + 1$ to try out; and since $m$ people went after Liz, she was number $n - m$ to try out. So the number of people to try out between them was

\[(n - m) - (k + 1) - 1 = n - m - k - 2.\]

12. E. Draw a Venn diagram, letting $x$ be the number of students who are on the team and in the club. Of the 100 students, 70 are in the club, so 30 are not in the club. Of these 30, 20 are also not on the team, so 10 are on the team but not in the club.

\[
\begin{align*}
\text{Team} & \quad \text{Club} \\
10 & \quad x \\
70 - x & \quad 20
\end{align*}
\]

Since more students are on the team than in the club, $10 + x > 70 \Rightarrow x > 60$. Since $x$ must be an integer, the least it can be is 61.

13. C. You could try to break it down by saying that first 24 of the 125 players would be paired off and play 62 matches. The 62 losers would be eliminated and there would still be 63 people left, the 62 winners and the 1 person who didn't play yet. Then continue until only 1 person was left. This is too time-consuming. An easier way is to observe that the winner never loses and the other 124 players each lose once. Since each match has exactly one loser, there must be 124 matches.

14. C. The region labeled $x$ contains all of the primes less than 20 that do not contain the digit 7. They are 2, 3, 5, 11, 13, 19.

15. D. Region $y$ consists of primes that contain the digit 7 and that are greater than 20. There are two of them that are less than 50: 37 and 47. Their sum is 84.

16. C. Don't calculate the probabilities. The probability of no heads is equal to the probability of no tails; but no tails means all heads.

17. B. The simplest solution is to notice that whatever color the first marble is, there is only 1
more marble of that color, but there are 2 of the other color, so it is twice as likely that the marbles will be of different colors.

18. C. By the counting principle, Column A is 5·4·3·2 and Column B is 5·4·3·2·1. Clearly, the columns are equal.

19. A. Column A: the probability is \( \frac{1}{7} \).

Column B: the probability is \( \frac{1}{12} \).

20. A. Every prime between 100 and 199 is odd (the only even prime is 2). So the probability in Column A is \( \frac{1}{2} \), which is greater than 0.99.
PART FIVE

Model Tests
This chapter is designed to give you further experience in what to expect on the verbal, quantitative, and analytical writing sections of the Graduate Record Examination General Test. These tests should serve as a basis for analysis, which for some may signal the need for further drill before taking the actual test, and for others, may indicate that preparation for this part of the test is adequate. For the best results, take these tests only after reviewing your weak areas, found as a result of completing our Diagnostic Test.

Remember that the actual GRE Test you take will be computer adaptive. Therefore, we strongly recommend that, if you purchased this book with a CD-ROM, in addition to completing these five model tests, you take a computer-based model test using the CD-ROM. Note that although the model tests in the book cannot be adaptive, each section has the exact same format as the test you will be taking. In each of the five model tests in this book, the order of the sections is verbal, quantitative, and analytical writing. On the actual computerized GRE that you take, the computerized sections can appear in any order.

To best simulate actual test conditions, find a quiet place to work. Have a stopwatch or a clock handy so that you can keep perfect track of the time. Go through each section by answering the questions in the order in which they appear. If you don’t know the answer to a question, guess, making an educated guess, if possible, and move on. Do not return to a question that you were unsure of, and do not go back to check your work if you have some time left over at the end of a section. (It isn’t possible to do that on a real GRE.) Practice pacing yourself so that you use all your time and just finish each section in the time allowed. Do not spend too much time on any one question. If you get stuck, just guess and go on to the next question.

After you have devoted the specified time allowed for each section of a model examination, refer to the correct answers furnished, determine your raw score, judge your progress, and plan further study. You should then carefully study the explanations for the correct answers of those questions that gave you difficulty. If you find that a particular topic needs further review, refer to the earlier part of the book where this topic is treated before attempting to take the next model test. If you follow this procedure, by the time you complete the last test in this chapter you will feel confident about your success.
Section 1

1. A B C D E
2. A B C D E
3. A B C D E
4. A B C D E
5. A B C D E
6. A B C D E
7. A B C D E
8. A B C D E
9. A B C D E
10. A B C D E

11. A B C D E
12. A B C D E
13. A B C D E
14. A B C D E
15. A B C D E
16. A B C D E
17. A B C D E
18. A B C D E
19. A B C D E
20. A B C D E

21. A B C D E
22. A B C D E
23. A B C D E
24. A B C D E
25. A B C D E
26. A B C D E
27. A B C D E
28. A B C D E
29. A B C D E
30. A B C D E

Section 2

1. A B C D E
2. A B C D E
3. A B C D E
4. A B C D E
5. A B C D E
6. A B C D E
7. A B C D E
8. A B C D E
9. A B C D E
10. A B C D E

11. A B C D E
12. A B C D E
13. A B C D E
14. A B C D E
15. A B C D E
16. A B C D E
17. A B C D E
18. A B C D E
19. A B C D E
20. A B C D E

21. A B C D E
22. A B C D E
23. A B C D E
24. A B C D E
25. A B C D E
26. A B C D E
27. A B C D E
28. A B C D E
MODEL TEST 1

SECTION 1—VERBAL ABILITY

Time—30 Minutes
30 Questions

Select the best answer to the following questions, then fill in the appropriate space on your Answer Sheet.

Directions: In each of the following antonym questions, a word printed in capital letters precedes five lettered words or phrases. From these five lettered words or phrases, pick the one most nearly opposite in meaning to the capitalized word.

1. ESTRANGE:
   (A) reconcile
   (B) feign
   (C) perplex
   (D) arbitrate
   (E) commiserate

2. PROVIDENT:
   (A) manifest
   (B) prodigal
   (C) thankful
   (D) tidy
   (E) transient

Directions: Each of the following sentence completion questions contains one or two blanks. These blanks signify that a word or set of words has been left out. Below each sentence are five words or sets of words. For each blank, pick the word or set of words that best reflects the sentence's overall meaning.

3. Like the theory of evolution, the big-bang model of the universe's formation has undergone modification and __________, but it has __________ all serious challenges.
   (A) alteration...confirmed
   (B) refinement...resisted
   (C) transformation...ignored
   (D) evaluation...acknowledged
   (E) refutation...misdirected

4. A university training enables a graduate to see things as they are, to go right to the point, to disen- tangle a __________ of thought.
   (A) line
   (B) strand
   (C) mass
   (D) plethora
   (E) skein

Directions: Each of the following analogy questions presents a related pair of words linked by a colon. Five lettered pairs of words follow the linked pair. Choose the lettered pair of words whose relationship is most like the relationship expressed in the original linked pair.

5. SONG : CYCLE ::
   (A) waltz : dance
   (B) tune : arrangement
   (C) sonnet : sequence
   (D) agenda : meeting
   (E) cadenza : aria

6. OBdurATE : FLEXIBILITY ::
   (A) accurate : perception
   (B) turbid : roughness
   (C) principled : fallibility
   (D) diaphanous : transparency
   (E) adamant : submissiveness
Directions: Each of the following reading comprehension questions is based on the content of the following passage. Read the passage and then determine the best answer choice for each question. Base your choice on what this passage states directly or implies, not on any information you may have gained elsewhere.

(This passage was written prior to 1950)

In the long run a government will always encroach upon freedom to the extent to which it has the power to do so; this is almost a natural law of politics, since, whatever the intentions of the men who exercise political power, the sheer momentum of government leads to a constant pressure upon the liberties of the citizen. But in many countries society has responded by throwing up its own defenses in the shape of social classes or organized corporations which, enjoying economic power and popular support, have been able to set limits to the scope of action of the executive. Such, for example, in England was the origin of all our liberties—won from government by the stand first of the feudal nobility, then of churches and political parties, and latterly of trade unions, commercial organizations, and the societies for promoting various causes. Even in European lands which were arbitrarily ruled, the powers of the monarchy, though absolute in theory, were in their exercise checked in a similar fashion. Indeed, the fascist dictatorships of today are the first truly tyrannical governments which western Europe has known for centuries, and they have been rendered possible only because on coming to power they destroyed all forms of social organization which were in any way rivals to the state.

7. According to the passage, the natural relationship between government and individual liberty is one of
   (A) marked indifference
   (B) secret collusion
   (C) inherent opposition
   (D) moderate complicity
   (E) fundamental interdependence

8. Fascist dictatorships differ from monarchies of recent times in
   (A) setting limits to their scope of action
   (B) effecting results by sheer momentum
   (C) rivaling the state in power
   (D) exerting constant pressure on liberties
   (E) eradicating people's organizations

9. The passage suggests which of the following about fascist dictatorships?
   (A) They represent a more efficient form of the executive.
   (B) Their rise to power came about through an accident of history.
   (C) They mark a regression to earlier despotic forms of government.
   (D) Despite superficial dissimilarities, they are in essence like absolute monarchies.
   (E) They maintain their dominance by rechanneling opposing forces in new directions.

Sentence Completion

10. We have in America a ________ speech that is neither American, Oxford English, nor colloquial English, but ________ of all three.
   (A) motley...an enhancement
   (B) hybrid...a combination
   (C) nasal...a blend
   (D) mangled...a medley
   (E) formal...a patchwork

11. Rather than portraying Joseph II as a radical reformer whose reign was strikingly enlightened, the play Amadeus depicts him as ________ thinker, too wedded to orthodox theories of musical composition to appreciate an artist of Mozart's genius.
   (A) a revolutionary
   (B) an idiosyncratic
   (C) a politic
   (D) a doctrinaire
   (E) an iconoclastic
Antonyms

12. CAPITULATE:
   (A) initiate
   (B) defame
   (C) exonerate
   (D) resist
   (E) escalate

13. INDIGENOUS:
   (A) affluent
   (B) parochial
   (C) alien
   (D) serene
   (E) mimical

Analogies

14. SCURRY : MOVE ::
   (A) chant : sing
   (B) chatter : talk
   (C) carry : lift
   (D) sleep : drowse
   (E) limp : walk

15. CHAMELEON : HERPETOLOGIST ::
   (A) fungi : ecologist
   (B) salmon : ichthyologist
   (C) mongoose : ornithologist
   (D) oriole : virologist
   (E) aphid : etymologist

Reading Comprehension

As the works of dozens of women writers have been rescued from what E. P. Thompson calls "the enormous condescension of posterity," and considered in relation to each other, the lost continent of the female tradition has risen like Atlantis from the sea of English literature. It is now becoming clear that, contrary to Mill’s theory, women have had a literature of their own all along. The woman novelist, according to Vineta Colby, was “really neither single nor anomalous,” but she was also more than a “register and spokesman for her age.” She was part of a tradition that had its origins before her age, and has carried on through our own.

Many literary historians have begun to reinterpret and revise the study of women writers. Ellen Moers sees women’s literature as an international movement, “apart from, but hardly subordinate to, the mainstream: an undercurrent, rapid and powerful. This ‘movement’ began in the late

eighteenth century, was multinational, and produced some of the greatest literary works of two centuries, as well as most of the lucrative potboilers.” Patricia Meyer Spacks, in The Female Imagination, finds that “for readily discernible historical reasons women have characteristically concerned themselves with matters more or less peripheral to male concerns, or at least slightly skewed from them. The differences between traditional female preoccupations and roles and male ones make a difference in female writing.” Many other critics are beginning to agree that when we look at women writers collectively we can see an imaginative continuum, the recurrence of certain patterns, themes, problems, and images from generation to generation.

16. In the second paragraph of the passage the author’s attitude toward the literary critics cited can best be described as one of
   (A) irony
   (B) ambivalence
   (C) disparagement
   (D) receptiveness
   (E) awe

17. The passage supplies information for answering which of the following questions?
   (A) Does the author believe the female literary tradition to be richer in depth than its masculine counterpart?
   (B) Are women psychological as well as sociological chameleons?
   (C) Does Moers share Mill’s concern over the ephemeral nature of female literary renown?
   (D) What patterns, themes, images, and problems recur sufficiently in the work of women writers to belong to the female imaginative continuum?
   (E) Did Mill acknowledge the existence of a separate female literary tradition?

18. In the first paragraph, the author makes use of all the following techniques EXCEPT
   (A) extended metaphor
   (B) enumeration and classification
   (C) classical allusion
   (D) direct quotation
   (E) comparison and contrast
1

**Antonyms**

19. CHAGRIN:
   (A) frown  
   (B) disguise  
   (C) make indifferent  
   (D) make aware  
   (E) please

20. DISINGENUOUS:
   (A) naive  
   (B) accurate  
   (C) hostile  
   (D) witty  
   (E) polite

**Sentence Completion**

21. When those whom he had injured accused him of being a ________, he retorted curtly that he had never been a quack.
   (A) libertine  
   (B) sycophant  
   (C) charlatan  
   (D) plagiarist  
   (E) reprobate

22. There is an essential ________ in human gestures, and when someone raises the palms of his hands together, we do not know whether it is to bury himself in prayer or to throw himself into the sea.
   (A) economy  
   (B) dignity  
   (C) insincerity  
   (D) reverence  
   (E) ambiguity

**Analogies**

23. ASCETIC : SELF-DENIAL ::
   (A) nomad : dissipation  
   (B) miser : avarice  
   (C) zealot : fanaticism  
   (D) renegade : loyalty  
   (E) athlete : stamina

24. CAMOUFLAGE : DISCERN ::
   (A) encipher : comprehend  
   (B) adorn : admire  
   (C) magnify : observe  
   (D) renovate : construct  
   (E) embroider : unravel

25. SEER : PROPHECY ::
   (A) mentor : reward  
   (B) sage : wisdom  
   (C) pilgrim : diligence  
   (D) diplomat : flattery  
   (E) virtuoso : penance

**Reading Comprehension**

The physics of elementary particles is notorious for the fancifulness of its terminology, abounding as it does in names such as "quark," "flavor," "strangeness" and "charm." One term, however, even to the nonscientist seems most apt: "gluon." Physicists conjecture that the gluon is the "glue" connecting quarks into hadrons or strongly interacting particles (protons, neutrons, pions, etc.). Initially, physicists envisaged the gluon's adhesive strength to be so powerful that a quark could not be extracted from a hadron no matter how great the force brought to bear on it. Furthermore, the gluon itself also seemed to be permanently bound: just as no force seemed strong enough to pry apart the quarks, none appeared strong enough to squeeze out a single drop of the glue that bound them. Today, however, some physicists hypothesize the existence of pure glue: gluons without quarks, or gluonium, as they call it.

26. The author refers to charms and quarks (lines 3–4) primarily in order to
   (A) demonstrate the similarity between these particles and the gluon  
   (B) make a distinction between opposite and inappropriate terminology  
   (C) offer an objection to suggestions of similar frivolous names  
   (D) provide illustrations of idiosyncratic nomenclature in contemporary physics  
   (E) cite preliminary experimental evidence supporting the existence of gluons

27. The tone of the author's discussion of the neologisms coined by physicists is one of
   (A) scientific detachment  
   (B) moderate indignation  
   (C) marked derision  
   (D) amused approbation  
   (E) qualified skepticism
Antonyms

28. SPURIOUS:
   (A) cautious
   (B) fantastic
   (C) modest
   (D) genuine
   (E) pertinent

29. TANTAMOUNT:
   (A) not negotiable
   (B) not equivalent
   (C) not ambitious
   (D) not evident
   (E) not relevant

Sentence Completion

30. It has been Virginia Woolf's peculiar destiny to be declared annoyingly feminine by male critics at the same time that she has been _________ by women interested in the sexual revolution as not really eligible to be _________ their ranks.
   (A) lauded...enlisted in
   (B) emulated...counted among
   (C) neglected...helpful to
   (D) dismissed...drafted into
   (E) excoriated...discharged from
SECTION 2—QUANTITATIVE ABILITY

In this section use scrap paper to solve each problem. Then decide which is the best of the choices given and fill in the corresponding oval on the Answer Sheet.

Directions: In the following type of question, two quantities appear, one in Column A and one in Column B. You must compare them. The correct answer to the question is

A if the quantity in Column A is greater
B if the quantity in Column B is greater
C if the two quantities are equal
D if it is impossible to determine which quantity is greater

Notes: Sometimes information about one or both of the quantities is centered above the two columns. If the same symbol appears in both columns, it represents the same thing each time.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The sum of the positive divisors of 19</td>
<td>The product of the positive divisors of 19</td>
</tr>
</tbody>
</table>

1.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>5(r + t)</td>
<td>5r + t</td>
</tr>
</tbody>
</table>

3.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The average (arithmetic mean) of all the positive multiples of 5 less than 26</td>
<td>The average (arithmetic mean) of all the positive multiples of 7 less than 26</td>
</tr>
</tbody>
</table>

4.

Directions: In the following questions, choose the best answer from the five choices listed.

5. If it is now June, what month will it be 400 months from now?
   (A) January  (B) April  (C) June
   (D) October  (E) December

6. If \( \frac{5}{9} \) of the members of the school chorus are boys, what is the ratio of girls to boys in the chorus?
   (A) \( \frac{4}{9} \)  (B) \( \frac{4}{5} \)  (C) \( \frac{5}{4} \)  (D) \( \frac{9}{4} \)
   (E) It cannot be determined from the information given.

7. What is the volume of a cube whose total surface area is 54?
   (A) 9  (B) 27  (C) 54  (D) 81  (E) 729
### Column A

8. \((a + b)(a - b)\)

9. The number of 5-cent stamps she used

10. If \(A\) is 25 kilometers east of \(B\), which is 12 kilometers south of \(C\), which is 9 kilometers west of \(D\), how far is it, in kilometers, from \(A\) to \(D\)?
    (A) 20  (B) \(5\sqrt{34}\)  (C) \(5\sqrt{41}\)
    (D) \(10\sqrt{13}\)  (E) 71

11. The number of small cubes that have exactly three red faces

### Column B

8. \(a(b + a) - b(a + b)\)

9. The number of 7-cent stamps she used

12. \(\frac{1}{c} = 1 + \frac{1}{d}\)

13. A number is a palindrome if it reads exactly the same from right to left as it does from left to right. For example, 959 and 24742 are palindromes.

### Column A

A wooden cube whose edges are 4 inches is painted red. The cube is then cut into 64 small cubes whose edges are 1 inch.

11. The number of small cubes that have no red faces

### Column B

A number is a palindrome if it reads exactly the same from right to left as it does from left to right. For example, 959 and 24742 are palindromes.

11. \(\frac{1}{10}\)
Total enrollment in higher education institutions, by control and type of institution: Fall 1972–95

Index of total enrollment

Percentage distribution of total enrollment

SOURCE: U.S. Department of Education.
14. In 1995 the number of students enrolled in public institutions of higher education was approximately how many times the number of students enrolled in private institutions of higher education? 
   (A) 2  (B) 2.5  (C) 3  (D) 3.5  (E) 4

15. If the total enrollment in institutions of higher education in 1972 was 5,000,000, approximately how many students were enrolled in private 4-year institutions in 1995? 
   (A) 1,000,000  (B) 1,100,000  (C) 1,250,000  
   (D) 1,500,000  (E) 1,650,000

   **Column A**  
   **Column B**  
   Jack and Jill each bought the same TV set using a 10% off coupon. Jack's cashier took 10% off the price and then added 8.5% sales tax. Jill's cashier first added the tax and then took 10% off the total price. 
   The amount Jack paid  
   The amount Jill paid

   **ABAC**  
   \[ \times A \]  
   **DCD**  

   In the multiplication problem above, each letter represents a different digit.

17. **B**  

18. If the lengths of two of the sides of a triangle are 9 and 10, which of the following could be the length of the third side? 
   I. 1  
   II. 11  
   III. 21  
   (A) None  (B) I only  (C) II only  
   (D) I and II only  (E) I, II, and III

19. If \( x \) is a positive integer, which of the following CANNOT be an integer? 
   \( (A) \sqrt{x - 1} \) \( (B) \sqrt{x^2 - 1} \) \( (C) \frac{1}{x} \) 
   \( (D) \frac{x + 2}{x + 1} \) \( (E) \frac{7}{x + 1} \)
Percentage of students who reported spending time on homework and watching television

**Percentage of students who spent time on homework, by grade and hours per day: 1984–96**

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Grade 4</td>
<td>60</td>
<td>50</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>Grade 8</td>
<td>80</td>
<td>70</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>Grade 11</td>
<td>100</td>
<td>90</td>
<td>80</td>
<td>70</td>
</tr>
</tbody>
</table>

- Less than 1 hour
- None
- More than 2 hours

**Percentage of students who watched television, by grade and hours per day: 1984–96**

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
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<td>30</td>
</tr>
<tr>
<td>Grade 8</td>
<td>80</td>
<td>70</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>Grade 11</td>
<td>100</td>
<td>90</td>
<td>80</td>
<td>70</td>
</tr>
</tbody>
</table>

- 4 hours or more
- 1 hour or less

SOURCE: U.S. Department of Education.

20. In 1996, what percent of fourth-graders did between 1 and 2 hours of homework per day?
   (A) 5%   (B) 15%   (C) 25%
   (D) 40%   (E) 55%

21. If in 1984 there were 2,000,000 eleventh-graders, and if between 1984 and 1996 the number of eleventh-graders increased by 10%, then approximately how many more eleventh-graders watched 1 hour or less of television in 1996 than in 1984?
   (A) 25,000   (B) 50,000   (C) 75,000
   (D) 100,000   (E) 150,000
22. Which of the following expresses the area of a circle in terms of \( C \), its circumference?

\[
\begin{array}{ll}
(A) \ \frac{C^2}{4\pi} & (B) \ \frac{C^2}{2\pi} \\
(C) \ \frac{\sqrt{C}}{2\pi} & (D) \ \frac{\pi}{4} \\
(E) \ \frac{C}{4\pi}
\end{array}
\]

Column A  Column B

23. The area of \( \triangle ABC \)  The area of \( \triangle DEF \)

\( A \) is the sum of the integers from 1 to 50, and \( B \) is the sum of the integers from 51 to 100.

24. \( B - A = 2500 \)

26. If \( p \) pencils cost \( c \) cents, how many can be bought for \( d \) dollars?

\[
\begin{array}{ll}
(A) \ \frac{cdp}{p} & (B) \ \frac{100 cd p}{c} \\
(C) \ \frac{dp}{100c} & (D) \ \frac{100 cd}{p} \\
(E) \ \frac{100 dp}{c}
\end{array}
\]

27. Because her test turned out to be more difficult than she intended it to be, a teacher decided to adjust the grades by deducting only half the number of points a student missed. For example, if a student missed 10 points, she received a 95 instead of a 90. Before the grades were adjusted the class average was \( A \). What was the average after the adjustment?

\[
\begin{array}{ll}
(A) \ \frac{50 + A}{2} & (B) \ \frac{1}{2} (100 - A) \\
(C) \ 100 - A & (D) \ \frac{50 + A}{2} \\
(E) \ A + 25
\end{array}
\]

28. If a square and an equilateral triangle have equal perimeters, what is the ratio of the area of the triangle to the area of the square?

\[
\begin{array}{ll}
(A) \ \frac{4\sqrt{3}}{9} & (B) \ \frac{3}{4} \\
(C) \ \frac{1}{1} & (D) \ \frac{4}{3} \\
(E) \ \text{It cannot be determined from the information given.}
\end{array}
\]

Each small circle has radius \( r \), and the large circle has radius \( R \). The areas of the shaded region and the white region are equal.

\[
\begin{array}{ll}
\frac{R}{r} & 2
\end{array}
\]
SECTION 3—ANALYTICAL WRITING

Time—75 Minutes
2 Writing Tasks

Task 1: Issue Exploration
45 Minutes

Directions: In 45 minutes, choose one of the two following topics and compose an essay on that topic. You may not write on any other topic. Write your essay on separate sheets of paper.

Each topic is presented in a one- to two-sentence quotation commenting on an issue of general concern. Your essay may support, refute, or qualify the views expressed in the quotation. Whatever you write, however, must be relevant to the issue under discussion, and you must support your viewpoint with reasons and examples derived from your studies and/or experience.

Before you choose a topic, read both topics carefully. Consider which topic would give you greater scope for writing an effective, well-argued essay.

Faculty members from various institutions will evaluate your essay, judging it on the basis of your skill in the following areas.

• Analysis of the quotation’s implications
• Organization and articulation of your ideas
• Use of relevant examples and arguments to support your case
• Handling of the mechanics of standard written English

Once you have decided which topic you prefer, click on the appropriate icon (Topic 1 or Topic 2) to confirm your choice. Do not be hasty confirming your choice of topic. Once you have clicked on a topic, you will not be able to switch to the alternate choice.

Topic 1

"Young people frequently fall into the trap of assuming that the difficulties they face today are greater and more troublesome than those faced by previous generations. As they gain experience and maturity, however, they eventually become aware of the falsity of this assumption."

Topic 2

"Question authority. Only by questioning accepted wisdom can we advance our understanding of the world."
Task 2: Argument Analysis
30 Minutes

Directions: In 30 minutes, prepare a critical analysis of an argument expressed in a short paragraph. You may not offer an analysis of any other argument. Write your essay on separate sheets of paper.

As you critique the argument, think about the author's underlying assumptions. Ask yourself whether any of them are questionable. Also evaluate any evidence the author brings up. Ask yourself whether it actually supports the author's conclusion.

In your analysis, you may suggest additional kinds of evidence to reinforce the author's argument. You may also suggest methods to refute the argument, or additional data that might be useful to you as you assess the soundness of the argument. You may not, however, present your personal views on the topic. Your job is to analyze the elements of an argument, not to support or contradict that argument.

Faculty members from various institutions will judge your essay, assessing it on the basis of your skill in the following areas:

- Identification and assessment of the argument's main elements
- Organization and articulation of your thoughts
- Use of relevant examples and arguments to support your case
- Handling of the mechanics of standard written English

The following appeared in a petition presented by Classen University students to the school's administration.

The purpose of higher education is to prepare students for the future, but Classen students are at a serious disadvantage in the competition for post-college employment due to the University's burdensome breadth requirements. Classen's job placement rate is substantially lower than placement rates of many top-ranked schools. Classen students would be more attractive to employers if they had more time to take advanced courses in their specialty, rather than being required to spend fifteen percent of their time at Classen taking courses outside of their subject area. We demand, therefore, that the University abandon or drastically cut back on its breadth requirements.
Answer Key

Section 1—Verbal Ability


Section 2—Quantitative Ability

NOTE: The letters in brackets following the Quantitative Ability answers refer to the sections of Chapter 14 in which you can find the information you need to answer the questions. For example, 1. C [E] means that the answer to question 1 is C, and that the solution requires information found in Section 14-E: Averages. Also, 20. A [13] means that the answer to question 20 is based on information in Chapter 13: Data Interpretation.


Section 3—Analytical Writing

There are no “correct answers” to this section.

Answer Explanations

Section 1—Verbal Ability

1. A. The opposite of to estrange or to alienate is to reconcile.
Think of “estranged couples” in a divorce.

2. B. The opposite of provident or frugal is prodigal or extravagant.
Think of the fable of the prodigal grasshopper and the provident ant.

3. B. The author concedes that the big-bang theory has been changed somewhat; it has undergone refinement or polishing. However, he denies that its validity has been threatened seriously by any rival theories; it has resisted or defied all challenges.
The use of the support signal and indicates that the first missing word is similar in meaning to “modification.” The use of the contrast signal but indicates that the second missing word is contrary in meaning to “undergone modification.”

4. E. One would have to disentangle a skein or coiled and twisted bundle of yarn. Note how the presence of the verb disentangle, which may be used both figuratively and literally, influences the writer’s choice of words. In this case, while line and strand are possible choices, neither word possesses the connotations of twistings and tangled contortions that make skein the most suitable choice.

5. C. A song is part of a cycle or series of songs. A sonnet is part of a sequence or series of sonnets.

6. E. Someone obdurate (unyielding, inflexible) is lacking in flexibility. Someone adamant (unshakable in opposition) is lacking in submissiveness.

7. C. The author says that the tendency for a government to encroach upon individual liberty to the extent to which it has the power to do so is “almost a natural law” of politics. Thus, government and individual liberty are inherently by their very natures in opposition to one another.
8. E. The final sentence states that the fascist dictatorships "destroyed (eradicated) all forms of social organization that were in any way rivals to the state."

9. C. If the fascist dictatorships "are the first truly tyrannical governments which western Europe has known for centuries," then it can be inferred that centuries ago there were tyrannical or despotic governments in western Europe. Thus, the fascist governments represent a regression or reversion to an earlier form of government.

10. B. Speech that is hybrid (made up of several elements) by definition combines these elements. The technical term hybrid best suits this context because it is a neutral term devoid of negative connotations (which motley and mangled possess).

11. D. A man too wedded to orthodox theories or doctrines can best be described as doctrinaire or dogmatic.

12. D. The opposite of to capitulate or yield is to resist. Think of "capitulating without a fight."

13. C. The opposite of indigenous or native is alien or foreign. Beware eye-catchers. Choice A is incorrect. Do not confuse indigenous or native with indigent or poor.

14. B. To scurry is to move in a brisk and rapid manner. To chatter is to talk in a brisk and rapid manner. (Manner)

15. B. A chameleon, a kind of lizard, is studied by a herpetologist (scientist who studies reptiles and amphibians). A salmon, a kind of fish, is studied by an ichthyologist. (Defining Characteristic)

16. D. The author opens the paragraph by stating that many literary critics have begun reinterpreting the study of women's literature. She then goes on to cite individual comments that support her assertion. Clearly, she is receptive or open to the ideas of these writers, for they and she share a common sense of the need to reinterprett their common field. Choices A and B are incorrect. The author cites the literary critics straightforwardly, presenting their statements as evidence supporting her thesis. Choice C is incorrect. The author does not disparage or belittle these critics. By quoting them respectfully she implicitly acknowledges their competence.

Choice E is incorrect. The author quotes the critics as acknowledged experts in the field. However, she is quite ready to disagree with their conclusions (as she disagrees with Moers' view of women's literature as an international movement). Clearly, she does not look on these critics with awe.

17. E. Question E is answerable on the basis of the passage. According to lines 6–8, Mill disbelieved in the idea that women "have had a literature of their own all along."

18. B. The writer neither lists (enumerates) nor sorts (classifies) anything in the opening paragraph. Choice A is incorrect. The writer likens the female tradition to a lost continent and develops the metaphor by describing the continent "rising ... from the sea of English literature." Choice C is incorrect. The author refers or alludes to the classical legend of Atlantis. Choice D is incorrect. The author quotes Colby and Thompson. Choice E is incorrect. The author contrasts the revised view of women's literature with Mill's view.

19. E. The opposite of to chagrin (disappoint) is to please. Beware eye-catchers. Choice A is incorrect. Chagrin is unrelated to grin. Think of "being chagrined by a defeat."

20. A. The opposite of disingenuous or guileful (giving a false impression of naiveté) is naive or unsophisticated. Think of a "disingenuous appearance of candor."

21. C. Charlatan is another term for a quack or pretender to medical knowledge.

22. E. The statement that "we do not know" whether a gesture indicates devotion or despair suggests that gestures are by their nature ambiguous or unclear.

23. C. By definition, an ascetic (one who practices severe self-discipline) is characterized by self-denial. A zealot (extreme enthusiast) is characterized by fanaticism. Beware eye-catchers. A miser may hoard wealth, but he is not necessarily characterized by affluence. Even poor persons may be misers. (Defining Characteristic)

24. A. To camouflage something is to make it difficult to discern or perceive. To encipher or encode something is to make it difficult to comprehend. (Function)
25. B. A seer or prophet is by definition someone gifted in prophecy. A sage or wise person is by definition someone gifted in wisdom. (Defining Characteristic)

26. D. The author provides them as examples of what he means by the “fanciful ... terminology” or idiosyncratic nomenclature in modern particle physics.

27. D. Since the author considers the gluon to be aptly named, he clearly views this particular neologism or newly coined term with approbation. However, he tempers his approval with amusement, for he finds the terms fanciful (capricious, whimsical) as well as apt.

28. D. The opposite of spurious (false or fraudulent) is genuine. Think of forgers selling “a spurious work of art.”

29. B. The opposite of tantamount or equivalent in value is not equivalent. Context Clue: “Failure to publish is tantamount to suppression.”

30. D. The incongruity here is that one group finds Woolf too feminine for their tastes while another finds her not feminine (or perhaps feminist) enough for theirs. Note that the word peculiar signals that Woolf’s destiny is an unexpected one.

Section 2—Quantitative Ability

Two asterisks (**) indicate an alternative method of solving.

1. A. The only positive divisors of 19 are 1 and 19. Column A: $1 + 19 = 20$. Column B: $1 \times 19 = 19$.

2. A. Since $(a, b)$ is on the positive portion of the x-axis, a is positive and $b = 0$; so $a + b$ is positive. Also, since $(c, d)$ is on the negative portion of the y-axis, c is negative and $d = 0$; so $c + d$ is negative. Column A is greater.

3. D. By the distributive law, Column A is $5r + 5t$. Subtract $5r$ from each column, and compare $5t$ and $t$. They are equal if $t = 0$ and unequal otherwise. Neither column is always greater, and the two columns are not always equal (D).

4. A. Column A: there are 5 positive multiples of 5 less than 26: 5, 10, 15, 20, 25; their average is 15, the middle one [KEY FACT E5].

Column B: there are 3 positive multiples of 7 less than 26: 7, 14, 21; their average is 14. Column A is greater.

5. D. Since $400 = 12 \times 33 + 4$, 100 months is 4 months more than 33 years. 33 years from June it will again be June, and 4 months later it will be October. [See Section 14-P]

6. B. Use TACTIC 3 in Chapter 11: pick an easy-to-use number. Since $\frac{6}{9}$ of the members are boys, assume there are 9 members, 5 of whom are boys. Then the other 4 are girls, and the ratio of girls to boys is 4 to 5, or $\frac{4}{5}$.

7. B. Since the surface area of the cube is 54, the area of each of the six faces is a square. $54 \div 6 = 9$. Then each edge is 3, and the volume is $3^3 = 27$.

8. C. Column A: $(a + b)(a - b) = a^2 - b^2$.

Column B: $a(b + a) - b(a + b) = ab + a^2 - ba - b^2 = a^2 - b^2$.

9. D. If $x$ and $y$ represent the number of 5-cent stamps and 7-cent stamps, respectively, that Dalia used, then $5x + 7y = 75$. There are infinitely many solutions to this equation, but there are only two solutions in which $x$ and $y$ are both positive integers: $y = 10$ and $x = 1$ or $y = 5$ and $x = 8$. Neither column is always greater, and the two columns are not always equal (D).

10. A. Use TACTIC 1 in Chapter 10: draw a diagram. In the figure below, form rectangle $BCDE$ by drawing $DE \parallel AB$. Then, $BE = 9$, $AE = 16$, and $DE = 12$. Finally, $DA = 20$, because right triangle $AED$ is a 3-4-5 triangle in which each side is multiplied by 4. If you don’t realize that, use the Pythagorean theorem to get $DA$:

$$(DA)^2 = (AE)^2 + (DE)^2 = 256 + 144 = 400 \Rightarrow DA = 20.$$
11. C. Draw a diagram, and on each small cube write the number of red faces it has. The cubes with three red faces are the eight corners. The cubes with no red faces are the "inside" ones that can't be seen. If you cut off the top and bottom rows, the front and back rows, and the left and right rows, you are left with a small 2-inch cube, none of whose faces is red. That 2-inch cube is made up of eight 1-inch cubes. The columns are equal (C).

12. B. Since \( \frac{1}{d} = \frac{1 + \frac{1}{c}}{d} \), then \( 1 = \frac{1}{d} - \frac{1}{d} = \frac{d - c}{cd} \). Therefore, \( d - c = cd \), which is positive. Then, \( d - c \) is positive, and so \( d > c \). Column B is greater.

13. C. The simplest solution is to realize that there is one palindrome between 100 and 109 (101), one between 390 and 399 (393), one between 880 and 889 (888), and in general, one out of every 10 numbers. So the probability is \( \frac{1}{10} \).

The answer is (C).

**The more direct solution is to count the number of palindromes. Either systematically make a list and notice that there are 10 of them between 100 and 199, and 10 in each of the hundreds from the 100s to the 900s, for a total of 90; or use the counting principle: the first digit can be chosen in any of 9 ways, the second in any of 10 ways, and the third, since it must match the first, can be chosen in only 1 way (9 \( \times \) 10 \( \times \) 1 = 90). Since there are 900 three-digit numbers, the probability is \( \frac{90}{900} = \frac{1}{10} \).

14. D. From the bottom graph, we can estimate the percentage distribution of total enrollment to be:

<table>
<thead>
<tr>
<th>Public 4-year</th>
<th>Private 4-year</th>
<th>Public 2-year</th>
<th>Private 2-year</th>
<th>Total public</th>
<th>Total private</th>
</tr>
</thead>
<tbody>
<tr>
<td>41%</td>
<td>21%</td>
<td>37%</td>
<td>1%</td>
<td>78%</td>
<td>22%</td>
</tr>
</tbody>
</table>

78 \div 22 = 3.5, so there were 3.5 times as many students enrolled in public institutions as private ones.

15. E. In 1972, enrollment in private 4-year institutions was approximately 1,100,000 (22% of the total enrollment of 5,000,000). By 1995, the index for private 4-year institutions had increased from 80 to 120, a 50% increase.

Therefore, the number of private 4-year students enrolled in 1995 was approximately 1,650,000 (50% more than the 1,100,000 students enrolled in 1972).

16. C. Let \( P \) = the price of the TV set. Then Jack paid 1.085(90\( P \)), whereas Jill paid \( 0.90(1.085 \times P) \). The columns are equal (C).

**Use TACTIC 2, Chapter 12, and choose a convenient number: assume the TV cost $100. Jack paid $90 plus $7.65 tax (8.5% of $90) for a total of $97.65. Jill's cashier rang up $100 plus $8.50 tax and then deducted $10.85 (10% of $108.50) for a final cost of $97.65.

17. B. Since \( A \) times \( ABA \) is a three-digit number, \( A \) has to be less than 4; but 1 times \( ABA \) is \( ABA \), so \( A \neq 1 \). Therefore, \( A = 2 \) or \( A = 3 \).

\[
\begin{align*}
2B2 & \quad 3B3 \\
\times \quad 2 & \quad \times \quad 3 \\
4C4 & \quad 9C9
\end{align*}
\]

Since there is no carrying, either \( 2 \times B = C \), a one-digit number, and \( B < 5 \), or \( 3 \times B = C \), and \( B < 3 \). In either case, column B is greater.

18. C. By the triangle inequality (KEY FACTS J12 and J13),

- The third side must be less than 9 + 10 = 19. (III is false.)
- The third side must be greater than 10 - 9 = 1. (I is false.)
- Any number between 1 and 19 could be the length of the third side. (II is true.)

The answer is C.

19. D. Check each choice. (A) If \( x = 5 \), \( \sqrt{x-1} = 2 \).

(B) This one is more difficult; the only possibility if \( x = 1 \), in which case \( \sqrt{x^2-1} = 0 \).

If you don't see that immediately, keep Choice B under consideration, and test the rest. (C) If \( x = 1 \), \( \frac{1}{x} = 1 \).

(D) For positive \( x \), \( \frac{x+2}{x+1} \) is always greater than 1 but less than 2;

\( \frac{x+2}{x+1} \) cannot be an integer—that's it. If you didn't reason that out, check Choice E. \( \frac{7}{x+1} \) is an integer if \( x = 6 \). You should have eliminated at least Choices A, C, and E.

20. B. From the top graph, we see that among fourth-graders in 1996:

25% did no homework;
55% did less than 1 hour;
5% did more than 2 hours.

This accounts for 85% of the fourth-graders; the other 15% did between 1 and 2 hours of homework per day.

21. E. In 1984, approximately 540,000 eleventh-graders watched television 1 hour or less per day (27% of 2,000,000). By 1996, the number of eleventh-graders had increased by 10%
22. A. Since \( C = 2\pi r \), then \( r = \frac{C}{2\pi} \), and 

\[
\text{area of circle} = \pi r^2 = \pi \left( \frac{C}{2\pi} \right)^2 = \pi \left( \frac{C^2}{4\pi^2} \right) = \frac{C^2}{4\pi}
\]

23. A. Column A: Since the hypotenuse is 2, the length of each leg is \( \frac{2}{\sqrt{2}} = \sqrt{2} \), and the area is \( \frac{1}{2} \left( \sqrt{2} \right) \left( \sqrt{2} \right) = \frac{1}{2} \times 2 = 1 \).

\[
\begin{array}{c}
\sqrt{2} \\
\frac{2}{\sqrt{2}}
\end{array}
\]

Column B: Since the hypotenuse is 2, the shorter leg is 1, the longer leg is \( \sqrt{3} \), and the area is \( \frac{1}{2} \times 1 \times \sqrt{3} = \frac{\sqrt{3}}{2} \), which is less than 1 because \( \sqrt{3} \) is less than 2.

Column A is greater.

24. C. \( B - A =
(51+52+53+...+99+100) - (1+2+3+...+49+50)
= (51-1) + (52-2) + (53-3) + ... + (99-49) + (100-50)
= 50 + 50 + 50 + ... + 50 + 50 = 50 \times 50 = 2500.

**If you know the formula, \( \frac{n(n+1)}{2} \), for finding the first \( n \) positive integers, you can use it: \( A = \frac{50(51)}{2} = 25(51) = 1275 \). \( B \) is the sum of the integers from 1 to 100 minus the sum of the integers from 1 to 50.

\[ B = \frac{100(101)}{2} - 1275 = 50(101) - 1275 = 5050 - 1275 = 3875. \]

Finally, \( B - A = 3875 - 1275 = 2500 \).

The columns are equal (C).

25. A. Since the area of each small circle is \( \pi r^2 \), the area of the white region is \( 3\pi r^2 \). Also, since the area of the large circle is \( \pi R^2 \), the shaded area is \( \pi R^2 - 3\pi r^2 = \pi (R^2 - 3r^2) \). Since the areas of the white region and the shaded region are equal:

\[
3\pi r^2 = \pi (R^2 - 3r^2) \Rightarrow 3r^2 = R^2 - 3r^2 \Rightarrow R^2 = 6r^2 \Rightarrow \frac{R^2}{r^2} = 6 \Rightarrow \frac{R}{r} = \sqrt{6}
\]

which is greater than 2. Column A is greater.

26. E. Since \( p \) pencils cost \( \frac{c}{p} \) cents. By dividing the number of cents we have by \( \frac{c}{p} \), we find out how many pencils we can buy. Since \( d \) dollars equals \( 100d \) cents, we divide \( 100d \) by \( \frac{c}{p} \), which is equivalent to multiplying \( 100d \) by \( \frac{p}{c} \):

\[ 100d \left( \frac{p}{c} \right) = \frac{100dp}{c}. \]

You will probably prefer the alternate solution below.

**Use TACTIC 2, Chapter 12. Assume 2 pencils cost 10 cents. So, pencils cost 5 cents each or 20 for one dollar. So, for 3 dollars, we can buy 60 pencils. Which of the choices equals 60 when \( p = 2, c = 10, \) and \( d = 3? \) Only \( \frac{100dp}{c} \).

27. A. If a student earned a grade of \( g \), she missed \( 100 - g \) points. In adjusting the grades, the teacher decided to deduct only half that number: \( \frac{100 - g}{2} \). So the student's new grade was

\[ 100 - \left( \frac{100 - g}{2} \right) = 100 - 50 + \frac{g}{2} = 50 + \frac{g}{2}. \]

Since this was done to each student's grade, the effect on the average was exactly the same. The new average was \( 50 + \frac{A}{2} \).

28. A. Use TACTIC 3, Chapter 11. Choose an appropriate number for the common perimeter. Any number will work, but since a triangle has 3 sides and a square has 4 sides, 12 is a good choice. Then, each side of the square is 3, and the area is \( 3^2 = 9 \). Each side of the equilateral triangle is 4, and the area is \( \frac{4^2 \sqrt{3}}{4} = 4\sqrt{3} \).

(KEY FACT J15). The ratio is \( \frac{4\sqrt{3}}{9} \).

Section 3—Analytical Writing

There are no "correct answers" to this section.
Answer Sheet—Model Test 2

Section 1

1. A   B   C   D   E  
2. A   B   C   D   E  
3. A   B   C   D   E  
4. A   B   C   D   E  
5. A   B   C   D   E  
6. A   B   C   D   E  
7. A   B   C   D   E  
8. A   B   C   D   E  
9. A   B   C   D   E  
10. A   B   C   D   E  
11. A   B   C   D   E  
12. A   B   C   D   E  
13. A   B   C   D   E  
14. A   B   C   D   E  
15. A   B   C   D   E  
16. A   B   C   D   E  
17. A   B   C   D   E  
18. A   B   C   D   E  
19. A   B   C   D   E  
20. A   B   C   D   E  
21. A   B   C   D   E  
22. A   B   C   D   E  
23. A   B   C   D   E  
24. A   B   C   D   E  
25. A   B   C   D   E  
26. A   B   C   D   E  
27. A   B   C   D   E  
28. A   B   C   D   E  
29. A   B   C   D   E  
30. A   B   C   D   E  

Section 2

1. A   B   C   D   E  
2. A   B   C   D   E  
3. A   B   C   D   E  
4. A   B   C   D   E  
5. A   B   C   D   E  
6. A   B   C   D   E  
7. A   B   C   D   E  
8. A   B   C   D   E  
9. A   B   C   D   E  
10. A   B   C   D   E  
11. A   B   C   D   E  
12. A   B   C   D   E  
13. A   B   C   D   E  
14. A   B   C   D   E  
15. A   B   C   D   E  
16. A   B   C   D   E  
17. A   B   C   D   E  
18. A   B   C   D   E  
19. A   B   C   D   E  
20. A   B   C   D   E  
21. A   B   C   D   E  
22. A   B   C   D   E  
23. A   B   C   D   E  
24. A   B   C   D   E  
25. A   B   C   D   E  
26. A   B   C   D   E  
27. A   B   C   D   E  
28. A   B   C   D   E  

Remove answer sheet by cutting on dotted line.
SECTION 1—VERBAL ABILITY

Time—30 Minutes
30 Questions
Select the best answer to the following questions, then fill in the appropriate space on your Answer Sheet.

Directions: In each of the following antonym questions, a word printed in capital letters precedes five lettered words or phrases. From these five lettered words or phrases, pick the one most nearly opposite in meaning to the capitalized word.

1. ELATED:
   (A) crestfallen
   (B) inebriated
   (C) punctual
   (D) insulted
   (E) lamented

2. RETICENCE:
   (A) irascibility
   (B) loquaciousness
   (C) quiescence
   (D) patience
   (E) surrender

Directions: Each of the following sentence completion questions contains one or two blanks. These blanks signify that a word or set of words has been left out. Below each sentence are five words or sets of words. For each blank, pick the word or set of words that best reflects the sentence's overall meaning.

3. You may wonder how the expert on fossil remains is able to trace descent through teeth, which seem __________ pegs upon which to hang whole ancestries.
   (A) novel
   (B) reliable
   (C) specious
   (D) inadequate
   (E) academic

4. An essential purpose of the criminal justice system is to enable purgation to take place; that is, to provide a __________ by which a community expresses its collective __________ the transgression of the criminal.
   (A) catharsis...outrage at
   (B) disclaimer...forgiveness of
   (C) means...empathy with
   (D) procedure...distaste for
   (E) document...disapprobation of

Directions: Each of the following analogy questions presents a related pair of words linked by a colon. Five lettered pairs of words follow the linked pair. Choose the lettered pair of words whose relationship is most like the relationship expressed in the original linked pair.

5. VINDICTIVE : MERCY ::
   (A) avaricious : greed
   (B) insightful : hope
   (C) modest : dignity
   (D) skeptical : trustfulness
   (E) pathetic : sympathy

6. RUFFLE : COMPOSURE ::
   (A) flounce : turmoil
   (B) flourish : prosperity
   (C) provoke : discussion
   (D) adjust : balance
   (E) upset : equilibrium
Directions: Each of the following reading comprehension questions is based on the content of the following passage. Read the passage and then determine the best answer choice for each question. Base your choice on what this passage states directly or implies, not on any information you may have gained elsewhere.

Given the persistent and intransient nature of the American race system, which proved quite impervious to black attacks, Du Bois in his speeches and writings moved from one proposed solution to another, and the salience of various parts of his philosophy changed as his perceptions of the needs and strategies of black America shifted over time. Aloof and autonomous in his personality, Du Bois did not hesitate to depart markedly from whatever was the current mainstream of black thinking when he perceived that the conventional wisdom being enunciated by black spokesmen was proving inadequate to the task of advancing the race. His willingness to seek different solutions often placed him well in advance of his contemporaries, and this, combined with a strong-willed, even arrogant personality made his career as a black leader essentially a series of stormy conflicts.

Thus Du Bois first achieved his role as a major black leader in the controversy that arose over the program of Booker T. Washington, the most prominent and influential black leader at the opening of the twentieth century. Amidst the wave of Lynchings, disfranchisement, and segregation laws, Washington, seeking the good will of powerful whites, taught blacks not to protest against discrimination, but to elevate themselves through industrial education, hard work, and property accumulation; then, they would ultimately obtain recognition of their citizenship rights. At first Du Bois agreed with this gradualist strategy, but in 1903 with the publication of his most influential book, Souls of Black Folk, he became the chief leader of the onslaught against Washington that polarized the black community into two wings—the “conservative” supporters of Washington and his “radical” critics.

7. Which of the following statements about W. E. B. Du Bois does the passage best support?

(A) He sacrificed the proven strategies of earlier black leaders to his craving for political novelty.

(B) Preferring conflict to harmony, he followed a disruptive course that alienated him from the bulk of his followers.

(C) He proved unable to change with the times in mounting fresh attacks against white racism.

(D) He relied on the fundamental benevolence of the white population for the eventual success of his movement.

(E) Once an adherent of Washington’s policies, he ultimately lost patience with them for their inefficacy.

8. It can be inferred that Booker T. Washington in comparison with W. E. B. Du Bois could be described as all of the following EXCEPT

(A) submissive to the majority

(B) concerned with financial success

(C) versatile in adopting strategies

(D) traditional in preaching industry

(E) respectful of authority

9. The author’s attitude toward Du Bois’ departure from conventional black policies can best be described as

(A) skeptical

(B) derisive

(C) shocked

(D) approving

(E) resigned

Antonyms

10. REVILE:

(A) compose

(B) awake

(C) deaden

(D) praise

(E) secrete

11. PROFITIOUS:

(A) adjacent

(B) clandestine

(C) contentious

(D) unfavorable

(E) coy
1

Analogies

12. OFFHAND : PREMEDITATION ::
   (A) upright : integrity
   (B) aboveboard : guile
   (C) cutthroat : competition
   (D) backward : direction
   (E) underlying : foundation

13. LARVAL : INSECT ::
   (A) serpentine : snake
   (B) floral : plant
   (C) amphibian : reptile
   (D) embryonic : mammal
   (E) alete : bird

Sentence Completion

14. When facts are __________ and data hard to come by, even scientists occasionally throw aside the professional pretense of __________ and tear into each other with shameless appeals to authority and arguments that are unashamedly ad hominem.
   (A) elusive...objectivity
   (B) established...courtesy
   (C) demonstrable...neutrality
   (D) ineluctable...cooperation
   (E) hypothetical...scholarship

15. In the tradition of scholarly __________, the poet and scholar A.E. Housman once assailed a German rival for relying on manuscripts "as a drunkard relies on lamp-posts, for __________ rather than illumination."
   (A) animosity...current
   (B) discourse...stability
   (C) erudition...shadow
   (D) invective...support
   (E) competition...assistance

Reading Comprehension

At night, schools of prey and predators are almost always spectacularly illuminated by the bioluminescence produced by the microscopic and larger plankton. The reason for the ubiquitous (5) production of light by the microorganisms of the sea remains obscure, and suggested explanations are controversial. It has been suggested that light is a kind of inadvertent by-product of life in transparent organisms. It has also been hypothesized (10) that the emission of light on disturbance is advantageous to the plankton in making the predators of the plankton conspicuous to their predators! Unquestionably, it does act this way. Indeed, some fisheries base the detection of their prey on

(15) the bioluminescence that the fish excite. It is difficult, however, to defend the thesis that this effect was the direct factor in the original development of bioluminescence, since the effect was of no advantage to the individual microorganism (20) that first developed it. Perhaps the luminescence of a microorganism also discourages attack by light-avoiding predators and is of initial survival benefit to the individual. As it then becomes general in the population, the effect of revealing (25) plankton predators to their predators would also become important.

16. The primary topic of the passage is which of the following?
   (A) The origin of bioluminescence in plankton predators
   (B) The disadvantages of bioluminescence in microorganisms
   (C) The varieties of marine bioluminescent life forms
   (D) Symbiotic relationships between predators and their prey
   (E) Hypotheses on the causes of bioluminescence in plankton

17. The author mentions the activities of fisheries in order to provide an example of
   (A) how ubiquitous the phenomenon of bioluminescence is coastally
   (B) how predators do make use of bioluminescence in locating their prey
   (C) how human intervention imperils bioluminescent microorganisms
   (D) how nocturnal fishing expeditions are becoming more and more widespread
   (E) how limited bioluminescence is as a source of light for human use

18. The passage provides an answer to which of the following questions?
   (A) What is the explanation for the phenomenon of bioluminescence in marine life?
   (B) Does the phenomenon of plankton bioluminescence have any practical applications?
   (C) Why do only certain specimens of marine life exhibit the phenomenon of bioluminescence?
   (D) How does underwater bioluminescence differ from atmospheric bioluminescence?
   (E) What are the steps that take place as an individual microorganism becomes bioluminescent?
Antonyms

19. INCONGRUOUS:
   (A) external
   (B) prudent
   (C) legitimate
   (D) harmonious
   (E) efficacious

20. APOSTATE:
   (A) laggard
   (B) loyalist
   (C) martinet
   (D) predecessor
   (E) skeptic

Analogies

21. Sextant : Nautical ::
   (A) octet : musical
   (B) therapy : physical
   (C) forceps : surgical
   (D) comet : astronomical
   (E) blueprint : mechanical

22. Refractory : Manage ::
   (A) redoubtable : impress
   (B) lethargic : stimulate
   (C) pedantic : convince
   (D) officious : arrange
   (E) aggrieved : distress

Antonyms

23. Ensue:
   (A) litigate
   (B) precede
   (C) arbitrate
   (D) accentuate
   (E) delay

Sentence Completion

24. While the disease is in _______ state it is almost impossible to determine its existence by _______.
   (A) a dormant...postulate
   (B) a critical...examination
   (C) an acute...analysis
   (D) a suspended...estimate
   (E) a latent...observation

25. Virginia Woolf _________ conventional notions of truth: in her words, one cannot receive from any lecture “a nugget of pure truth” to wrap up between the pages of one’s notebook and keep on the mantelpiece forever.
   (A) anticipates
   (B) articulates
   (C) neglects
   (D) mocks
   (E) rationalizes

Reading Comprehension

The curtain rises; the Cardinal and Daniel de Bosola enter from the right. In appearance, the Cardinal is something between an El Greco cardinal and a Van Dyke noble lord. He has the tall, spare form—the elongated hands and features—of the former; the trim pointed beard, the imperial repose, the commanding authority of the latter. But the El Greco features are not really those of asceticism or inner mystic spirituality. They are the index to a cold, refined but ruthless cruelty in a highly civilized controlled form. Neither is the imperial repose an aloof mood of proud detachment. It is a refined expression of satanic pride of place and talent.

To a degree, the Cardinal’s coldness is artificially cultivated. He has defined himself against his younger brother Duke Ferdinand and is the opposite to the overwrought emotionality of the latter. But the Cardinal’s aloof mood is not one of bland detachment. It is the deliberate detachment of a methodical man who collects his thoughts and emotions into the most compact and formidable shape—that when he strikes, he may strike with the more efficient and devastating force. His easy movements are those of the slowly circling eagle just before the swift descent with the exposed talons. Above all else, he is a man who never for a moment doubts his destined authority as a governor. He derisively and sharply rebukes his brother the Duke as easily and readily as he mocks his mistress Julia. If he has betrayed his hireling Bosola, he uses his brother as the tool to win back his “familiar.” His court dress is a long brilliant scarlet cardinal’s gown with white cuffs and a white collar turned back over the red, both collar and cuffs being elaborately scalloped and embroidered. He wears a small cape, reaching only to the elbows. His cassock is buttoned to the ground, giving a heightened effect to his already tall presence. Richelieu would have adored his neatly trimmed beard. A richly jeweled and ornamented cross lies on his breast, suspended from his neck by a gold chain.
26. In lines 24–27 the author most likely compares the movements of the Cardinal to those of a circling eagle in order to emphasize his
   (A) flightiness
   (B) love of freedom
   (C) eminence
   (D) sense of spirituality
   (E) mercilessness

27. Which of the following best characterizes the author's attitude toward the Cardinal?
   (A) He deprecates his inability to sustain warm familial relationships.
   (B) He esteems him for his spiritual and emotional control.
   (C) He admires his grace in movement and sure sense of personal authority.
   (D) He finds him formidable both as an opponent and as a dramatic character.
   (E) He is perturbed by his inconsistencies in behavior.

**Antonyms**

29. RETROSPECTION:
   (A) introversion
   (B) deliberation
   (C) anticipation
   (D) gregariousness
   (E) equivocation

30. TOPICAL:
   (A) general
   (B) disinterested
   (C) chronological
   (D) fallacious
   (E) imperceptible

**Analogy**

28. AUSTERE : STYLE ::
   (A) controlled : movement
   (B) affluent : wealth
   (C) subservient : demeanor
   (D) inspirational : faith
   (E) pragmatic : speech
SECTION 2--QUANTITATIVE ABILITY

Time—45 Minutes
28 Questions

Directions: In the following type of question, two quantities appear, one in Column A and one in Column B. You must compare them. The correct answer to the question is

A if the quantity in Column A is greater
B if the quantity in Column B is greater
C if the two quantities are equal
D if it is impossible to determine which quantity is greater

Notes: Sometimes information about one or both of the quantities is centered above the two columns. If the same symbol appears in both columns, it represents the same thing each time.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>( m ) and ( n ) are positive integers ( mn = 25 )</td>
<td></td>
</tr>
<tr>
<td>1. ( m )</td>
<td>( n )</td>
</tr>
<tr>
<td>2. 65% of ( a )</td>
<td>( \frac{2}{3} ) of ( a )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 3 )</td>
<td>( c )</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>( ab = 0 )</td>
<td></td>
</tr>
<tr>
<td>4. ( (a+b)^2 )</td>
<td>( (a-b)^2 )</td>
</tr>
</tbody>
</table>

Directions: In the following questions, choose the best answer from the five choices listed.

5. The Center City Little League is divided into \( d \) divisions. Each division has \( t \) teams, and each team has \( p \) players. How many players are there in the entire league?

(A) \( d + t + p \)  (B) \( dtp \)  (C) \( \frac{pt}{d} \)  (D) \( \frac{d}{p} \)  (E) \( \frac{d}{pt} \)

6. A number \( x \) is chosen at random from the set of positive integers less than 10. What is the probability that \( \frac{9}{x} > x \) ?

(A) \( \frac{1}{5} \)  (B) \( \frac{2}{9} \)  (C) \( \frac{1}{3} \)  (D) \( \frac{2}{3} \)  (E) \( \frac{7}{9} \)

7. If \( \frac{1}{a} + \frac{1}{a} + \frac{1}{a} = 12 \), then \( a = \)

(A) \( \frac{1}{12} \)  (B) \( \frac{1}{4} \)  (C) \( \frac{1}{3} \)  (D) 3  (E) 4

10. In 1980, the cost of $p$ pounds of potatoes was $d$ dollars. In 1990, the cost of $2p$ pounds of potatoes was $\frac{1}{2}d$ dollars. By what percent did the price of potatoes decrease from 1980 to 1990?
(A) 25%  (B) 50%  (C) 75%  (D) 100%  (E) 400%
Average expected family contribution (EFC) for dependent students, by family income: Academic year 1995–96

Expected family contribution

$22,000

20,000

18,000

16,000

14,000

12,000

10,000

8,000

6,000

4,000

2,000

0

Less than $20

20–29

30–39

40–49

50–59

60–69

70–79

80–89

90–99

100–124

Family income (in thousands of dollars)

NOTE: The horizontal lines on the figure represent the average student budgets for full-time, full-year students at the indicated type of institution.

SOURCE: U.S. Department of Education.
14. A family's unmet need (which must be covered by a financial aid package) is defined to be the total cost of attending an institution of higher education minus the expected family contribution. What is the unmet need of a family whose income is $55,000 and who has a child attending a 4-year public university?
   (A) $700 (B) $3300 (C) $6800 (D) $7500 (E) $12,500

15. If family A has an income of $95,000 per year, and family B has an income of $35,000 per year, and each has a child attending a 4-year public university, to the nearest $1000, how much more would family A be expected to pay than family B?
   (A) $4000 (B) $7000 (C) $10,000 (D) $12,000 (E) $15,000

16. \[
\begin{array}{c|c}
\text{Column A} & \text{Column B} \\
\hline
\frac{\sqrt{24}}{2} & \frac{6}{\sqrt{6}} \\
\end{array}
\]

18. A bag contains 3 red, 4 white, and 5 blue marbles. Jason begins removing marbles from the bag at random, one at a time. What is the least number of marbles he must remove to be sure that he has at least one of each color?
   (A) 3  (B) 6  (C) 8  (D) 10  (E) 12

19. Jordan has taken 5 math tests so far this semester. If he gets a 70 on his next test, it will lower the average (arithmetic mean) of his test scores by 4 points. What is his average now?
   (A) 74  (B) 85  (C) 86  (D) 90  (E) 94

Projected percentage change in public elementary and secondary school enrollment, by region: Fall 1988 to 2008

20. To the nearest million, how many more students were enrolled in school—both public and private, preK–12—in 1970 than in 1988?
   (A) 3,000,000  (B) 6,000,000  (C) 10,000,000  (D) 44,000,000  (E) 51,000,000

21. In 1988 there were 40,000,000 public school students in the United States, of whom 22% lived in the West. Approximately, how many public school students are projected to be living in the West in 2008?
   (A) 9,000,000  (B) 12,000,000  (C) 15,000,000  (D) 24,000,000  (E) 66,000,000

22. If $a$ and $b$ are the lengths of the legs of a right triangle whose hypotenuse is 10 and whose area is 20, what is the value of $(a + b)^2$?
   (A) 100  (B) 120  (C) 140  (D) 180  (E) 200

23. Column A
   The circumference of a circle is $a\pi$ inches.
   The area of the same circle is $b\pi$ square inches.

24. The circle with center $O$ is inscribed in the semicircle with center $A$.

25. The fraction of the seats on the two buses that are now occupied
   
   \[
   \frac{9}{10}
   \]

26. What is the average (arithmetic mean) of $3^{30}$, $3^{60}$, and $3^{90}$?
   (A) $3^{50}$  (B) $3^{100}$  (C) $3^{10} + 3^{20} + 3^{30}$
   (D) $3^{27} + 3^{57} + 3^{87}$  (E) $3^{30} + 3^{30} + 3^{30}$

27. The figure at the right consists of four semicircles in a large semicircle. If the small semicircles have radii of 1, 2, 3, and 4, what is the perimeter of the shaded region?
   (A) $10\pi$  (B) $20\pi$  (C) $40\pi$  (D) $60\pi$  (E) $100\pi$

28. If $a$ is increased by 25% and $b$ is decreased by 25%, the resulting numbers will be equal. What is the ratio of $a$ to $b$?
   (A) $\frac{3}{5}$  (B) $\frac{3}{4}$  (C) $\frac{1}{1}$  (D) $\frac{4}{3}$  (E) $\frac{5}{3}$
SECTION 3—ANALYTICAL WRITING

Time—75 Minutes
2 Writing Tasks

Task 1: Issue Exploration
45 Minutes

Directions: In 45 minutes, choose one of the two following topics and compose an essay on that topic. You may not write on any other topic. Write your answer on separate sheets of paper.

Each topic is presented in a one- to two-sentence quotation commenting on an issue of general concern. Your essay may support, refute, or qualify the views expressed in the quotation. Whatever you write, however, must be relevant to the issue under discussion, and you must support your viewpoint with reasons and examples derived from your studies and/or experience.

Before you choose a topic, read both topics carefully. Consider which topic would give you greater scope for writing an effective, well-argued essay.

Faculty members from various institutions will evaluate your essay, judging it on the basis of your skill in the following areas.

- Analysis of the quotation's implications
- Organization and articulation of your ideas
- Use of relevant examples and arguments to support your case
- Handling of the mechanics of standard written English

Once you have decided which topic you prefer, click on the appropriate icon (Topic 1 or Topic 2) to confirm your choice. Do not be hasty confirming your choice of topic. Once you have clicked on a topic, you will not be able to switch to the alternate choice.

**Topic 1**

"If rituals did not exist, we would have to invent them. We need ceremonies and rituals to help us define ourselves socially and culturally."

**Topic 2**

"In this electronic age, reading has inevitably taken a back seat to watching television and gleaning information from the World Wide Web. People learn far more readily from electronic media than they do from print."
Task 2: Argument Analysis
30 Minutes

Directions: In 30 minutes, prepare a critical analysis of an argument expressed in a short paragraph. You may not offer an analysis of any other argument. Write your essay on separate sheets of paper.

As you critique the argument, think about the author’s underlying assumptions. Ask yourself whether any of them are questionable. Also evaluate any evidence the author brings up. Ask yourself whether it actually supports the author’s conclusion.

In your analysis, you may suggest additional kinds of evidence to reinforce the author’s argument. You may also suggest methods to refute the argument, or additional data that might be useful to you as you assess the soundness of the argument. You may not, however, present your personal views on the topic. Your job is to analyze the elements of an argument, not to support or contradict that argument.

Faculty members from various institutions will judge your essay, assessing it on the basis of your skill in the following areas:

- Identification and assessment of the argument’s main elements
- Organization and articulation of your thoughts
- Use of relevant examples and arguments to support your case
- Handling of the mechanics of standard written English

The following appeared in a letter to the editor in the journal Health Matters.

Statistics gathered over the past three decades show that the death rate is higher among those who do not have jobs than among those with regular employment. Unemployment, just like heart disease and cancer, is a significant health issue. While many health care advocates promote increased government funding for medical research and public health care, it would be folly to increase government spending if doing so were to affect the nation’s economy adversely and ultimately cause a rise in unemployment. A healthy economy means healthy citizens.
Answer Key

Section 1—Verbal Ability

1. A  
2. B  
3. D  
4. A  
5. D  
6. E  
7. E  
8. C  
9. D  
10. D  
11. D  
12. B  
13. D  
14. A  
15. D  
16. E  
17. B  
18. B  
19. D  
20. B  
21. C  
22. B  
23. B  
24. E  
25. D  
26. E

Section 2—Quantitative Ability

NOTE: The letters in brackets following the Quantitative Ability answers refer to the sections of Chapter 14 in which you can find the information you need to answer the questions. For example, 1. C [E,G] means that the answer to question 1 is C, and that the solution requires information found in Section 14-E: Averages. Also, 20. A [13] means that the answer to question 20 is based on information in Chapter 13: Data Interpretation.

1. D [A]  
2. D [B,C]  
3. D [J]  
4. C [F]  
5. B [D]  
7. B [B,G]  
8. D [J]  
10. C [C,D]  
11. C [E,G]  
16. C [A]  
17. C [K,L]  
18. D [O]  
19. E [E]  
22. D [G,J]  
23. D [L]  
24. C [L]  
25. C [B]

Section 3—Analytical Writing

There are no “correct answers” to this section.

Answer Explanations

Section 1—Verbal Ability

1. A. *Elated* (joyful, in high spirits) is the opposite of *cresfallen* (dejected). Think of “elated by her success.”

2. B. The opposite of *reticence* (uncommunicativeness; restraint in speech) is *locquaciousness* (talkativeness). Think of “speaking without reticence.”

3. D. If “you may wonder” how the expert reaches his conclusions, it appears that it is questionable to rely on teeth for guidance in interpreting fossils. Choice D, *inadequate*, creates the element of doubt that the clause tries to develop. Choice C, *specious*, also creates an element of doubt; however, nothing in the context justifies the idea that the reasoning is specious or false. Note that here you are dealing with an extended metaphor. Picture yourself hanging a heavy winter coat on a slim wooden peg. Wouldn’t you worry that the peg might prove inadequate or flimsy?

4. A. Here the task is to determine the communal reaction to crime. The writer maintains that the criminal justice system of punishments allows the community to purge itself of its anger, its sense of *outrage* at the criminal’s acts. Thus, it provides a *catarsis* or purgation for the community.

Remember, in double-blank sentences, go through the answers, testing the first word in each choice and eliminating those that don’t fit. In this case, you can readily eliminate Choices B and E: it is unlikely that an *essential* purpose of the criminal justice system would be the provision of either a disclaimer (denial or disavowal, as in disavowing responsibility for a legal claim) or a document.

5. D. Someone *vindictive* or vengeful is lacking in mercy. Someone *skeptical* or suspicious is lacking in *trustfulness.* (Antonym Variant)

6. E. To *ruffle* someone’s *composure* is to disturb or trouble his self-possession. To *upset* someone’s *equilibrium* is to disturb or trouble his balance. (Function)
7. E. The last sentence points out that Du Bois originally agreed with Washington's program. Choice A is incorrect. Nothing in the passage suggests that Du Bois sacrificed effective strategies out of a desire to try something new. Choice B is incorrect. Du Bois gained in influence, effectively winning away large numbers of blacks from Washington's policies. Choice C is incorrect. Du Bois' quickness to depart from conventional black wisdom when it proved inadequate to the task of advancing the race shows him to be well able to change with the times. Choice D is incorrect. Washington, not Du Bois, is described as seeking the good will of powerful whites.

8. C. The author does not portray Washington as versatile. Instead, he portrays Du Bois as versatile. Choice A is incorrect. The author portrays Washington as submissive to the majority; he shows him teaching blacks not to protest. Choice B is incorrect. The author portrays Washington as concerned with financial success; he shows him advocating property accumulation. Choice D is incorrect. The author portrays Washington as traditional in preaching industry; he shows him advocating hard work. Choice E is incorrect. The author portrays Washington as respectful of authority; he shows him deferring to powerful whites.

9. D. Although the author points out that Du Bois' methods led him into conflicts, he describes Du Bois as "often...well in advance of his contemporaries" and stresses that his motives for departing from the mainstream were admirable. Thus, his attitude can best be described as approving.

10. D. To revile (verbally abuse) something is the opposite of praising it. Think of "reviled as a traitor."

11. D. The opposite of propitious (favorable, advantageous) is unfavorable. Think of being pleased by "propitious omens."

12. B. An offhand remark is made without forethought or premeditation. An aboveboard (open) deed is done without trickery or guile. (Antonym Variant)

13. D. The larval (immature) stage of an insect best corresponds to the embryonic stage of a mammal. (Defining Characteristic)

14. A. Under certain circumstances scientists attack each other with ad hominem arguments (personal attacks) and shameless appeals. When is this likely to occur? When facts are established or demonstrable or ineluctable (unavoidable)? Hardly. Under such circumstances they would rely on facts to establish their case. It is when facts prove elusive that they lose control and, in doing so, abandon their pretense of objectivity.

15. D. The key word here is assailed. Housman is attacking his rival. Thus he is in the tradition of scholarly invective (vehement verbal attack), criticizing his foe for turning to manuscripts merely for confirmation or support of old theories and not for enlightenment or illumination. Again, note the use of figurative language, in this case the simile of the drunkard.

16. E. The author first states that the reasons for bioluminescence in underwater microorganisms is obscure and then proceeds to enumerate various hypotheses.

17. B. The author does not deny that predators make use of bioluminescence in locating their prey. Instead, he gives an example of human predators (commercial fishermen) who are drawn to their prey (the fish that prey on plankton) by the luminescence of the plankton.

18. B. As the previous answer makes clear, the phenomenon of plankton bioluminescence does have practical applications. It is a valuable tool for fisheries interested in increasing their catch of fish that prey on plankton.

19. D. The opposite of incongruous (inconsistent, not fitting) is harmonious. Think of being startled by "incongruous behavior."

20. B. An apostate (renegade; person faithless to an allegiance) is the opposite of a loyalist. Beware eye-catchers. Do not confuse apostate (renegade) with apostile (missionary; reformer). Think of "a faithless apostate."

21. C. By definition, a sextant is a piece of equipment that is nautical. Similarly, a forceps is a piece of equipment that is surgical. (Defining Characteristic)

22. B. Someone refractory (stubborn; unmanageable) by definition is hard to manage. Likewise, someone lethargic (sluggish; drowsy) by definition is hard to stimulate. (Definition)

23. B. The opposite of to ensue (happen later, follow) is to precede. Think of "the wedding that ensued."
24. E. A disease in a latent state has yet to manifest itself and emerge into view. Therefore it is impossible to observe. Remember, in double-blank sentences, go through the answers, testing the first word in each choice and eliminating those that don't fit. When a disease is in a critical or acute state, its existence is obvious. Therefore, you can eliminate Choices B and C.

25. D. The second clause presents an example of literary mockery. The abstract idea of preserving a nugget of pure truth is appealing; the concrete example of setting it up on the mantel makes fun of the whole idea.

26. E. The eagle is poised to strike "with exposed talons." It, like the Cardinal, collects itself to strike with greater force. The imagery accentuates the Cardinal’s mercilessness. Choice A is incorrect. The Cardinal is not flighty (light-headed and irresponsible); he is cold and calculating. Choice B is incorrect. He loves power, not freedom. Choice C is incorrect. An eagle poised to strike with bare claws suggests violence, not eminence (fame and high position). Choice D is incorrect. Nothing in the passage suggests he is spiritual. Beware eye-catchers. "Eminence" is a title of honor applied to cardinals in the Roman Catholic church. Choice D may attract you for this reason.

27. D. The author’s depiction of the Cardinal stresses his redoubtable qualities as a foe (calculation, duplicity, mercilessness) and as a challenge to an actor ("imperial repose," a commanding presence, smooth movements suggesting latent danger). Choice A is incorrect. The author portrays the Cardinal’s relations with his brother and mistress as cold, but he never apologizes for the Cardinal’s lack of warmth. Indeed, the author somewhat savors it. Choices B and C are incorrect. Neither esteem for a nonexistent spirituality nor admiration for a villainous autocracy enters into the author’s depiction of the Cardinal. Choice E is incorrect. A cause of perturbation to others, the Cardinal is never perturbed.

28. A. An austere style is severely simple and restrained. Controlled movement is restrained as well. (Defining Characteristic)

29. C. Retrospection (looking backward; the act of surveying the past) is the opposite of anticipation (looking forward). Word Parts Clue: Retro- means backward; spec- means look. Retrospection means looking backward. Think of "an old man lost in retrospection."

30. A. Topical (local, temporary) is the opposite of general. Remember that words may be used in several different ways. Here topical does not mean arranged according to topics (as in a topical index). Think of "a topical anesthetic," one applied locally, not generally.

Section 2—Quantitative Ability

Two asterisks (**) indicate an alternative method of solving.

1. D. Use TACTIC 4, Chapter 12. Could m and n be equal? Sure, if each is 5. Eliminate Choices A and B. Must they be equal? No, not if m = 1 and n = 25. Eliminate Choice C, as well. Neither column is always greater, and the two columns are not always equal (D).

2. D. Since \( \frac{2}{3} = \frac{60}{90} \), which is clearly more than 65%, it appears that Column B is greater. Be careful! That would be true if \( a \) were positive, but no restrictions are placed on \( a \). If \( a = 0 \), the columns are equal; if \( a \) is negative, Column A is greater. Neither column is always greater, and the two columns are not always equal (D). **Use TACTIC 1, Chapter 12. Just let \( a = 0 \), and then let \( a = 1 \).

3. D. Use TACTIC 4, Chapter 12. Could the columns be equal? Could \( c = 5 ? \) Sure, if this is a 3-4-5 right triangle. Must \( c = 5? \) No; if the triangle is not a right triangle, \( c \) could be less than or more than 5. Neither column is always greater, and the columns are not always equal (D). (Note: Since the figure may not be drawn to scale, do not assume that the triangle has a right angle.)

4. C. Column A: \( (a + b)^2 = a^2 + 2ab + b^2 = a^2 + b^2 \) (since \( ab = 0 \)). Column B: \( (a - b)^2 = a^2 - 2ab + b^2 = a^2 + b^2 \) (since \( ab = 0 \)). The columns are equal (C). **Use TACTIC 1, Chapter 12: Pick two numbers whose product is 0; say \( a = 0 \) and \( b = 1 \). Then \( (a + b)^2 = (0 + 1)^2 = 1 \) and \( (a - b)^2 = (0 - 1)^2 = 1 \). Eliminate A and B and try other
values where either \(a\) or \(b\) is 0 (since \(ab = 0\)).
The two expressions are always equal.

5. B. Since \(d\) divisions each have \(t\) teams, multiply
to get \(dt\) teams; and since each team has \(p\)
players, multiply the number of teams (\(dt\)) by
\(p\) to get the total number of players: \(dtp\).
**Use TACTIC 2, Chapter 11. Pick three
easy-to-use numbers for \(t, d,\) and \(p\). Assume
that there are 2 divisions, each consisting of
4 teams, so, there are \(2 \times 4 = 8\) teams. Then
assume that each team has 10 players, for a
total of \(8 \times 10 = 80\) players. Now check the
choices. Which one is equal to 80 when \(d = 2,\)
\(t = 4,\) and \(p = 10?\) Only \(dtp\).

6. B. There are nine positive integers less than 10:
1, 2, ..., 9. For which of them is \(\frac{9}{x} > x?\) Only
1 and 2: \(\frac{9}{1} > 1\) and \(\frac{9}{2} > 2.\) When \(x = 3, \frac{9}{x} = x,\)
and for all the others \(\frac{9}{x} < x.\) The probability
is \(\frac{2}{9}.\)

7. B. Solve the given equation:
\[
\frac{1}{a} + \frac{1}{a} + \frac{1}{a} = 12
\]
Add the fractions:
\[
\frac{3}{a} = 12
\]
Multiply both sides by \(a: \)
\[
3 = 12a
\]
Divide both sides by 12:
\[
a = \frac{3}{12} = \frac{1}{4}
\]
**You can use TACTIC 1, Chapter 11: backsolve; try Choice C. If \(a = \frac{1}{3},\) then \(\frac{1}{a} = 3,\) so
the left-hand side equals 9. That's too small.
Now, be careful: a fraction gets bigger when
its denominator gets smaller [KEY FACT
B4]. Eliminate Choices C, D, and E, and try a
smaller value for \(a: \frac{1}{4}\) works.

8. D. Use TACTIC 4, Chapter 12. Could \(y = 20?\)
Yes, if the large triangle were equilateral, \(x\)
would be 30 and \(y\) would be 20. Must \(y = 20?\)
No, if \(x = 45, y = 10.\) (Note: Since the figure
may not be drawn to scale, the triangle could
be any triangle with a 60° angle.) Neither col-
umn is always larger, and the columns are not
always equal (D).

9. B. You don't have to solve for \(a\) and \(b.\) If
\(a - b > a + b,\) then \(b\) is negative and Column
B is greater.

**You could solve. Adding the two equations
yields
\[
2a + 49 \Rightarrow a = 24.5 \Rightarrow b = -3.5.
\]

10. C. Since, in 1990, \(2p\) pounds of potatoes cost \(\frac{1}{2}\)
dollars, \(p\) pounds cost half as much:
\[
\frac{1}{2}\left(\frac{1}{2}\right) = \frac{1}{4}.\]This is \(\frac{1}{4},\) or 25%, as much as the cost
in 1980, which represents a decrease of 75%.
**In this type of problem it is often easier to use
TACTIC 2, Chapter 11. Assume that 1 pound of
potatoes cost $100 in 1980. Then in 1990, 2 pounds cost $50, so 1 pound cost
$25. This is a decrease of $75 in the cost of 1 pound of potatoes, and

\[
\text{% decrease} = \frac{\text{actual decrease}}{\text{original amount}} \times 100% = \frac{75}{100} \times 100% = 75%.
\]

11. C. Adding the two given equations, we get
\(a + b + c + d = 11d.\) Then
\[
\frac{a + b + c + d}{4} = \frac{12d}{4} = 3d.
\]
The columns are equal (C).

12. A. Since in the given figure \(OA\) and \(OB\) are radii,
each is equal to 5. With no restrictions on \(x,\)
\(AB\) could be any positive number less than 10;
and the larger \(x\) is, the larger \(AB\) is. If \(x\) were
90, \(AB\) would be 5√2 , but we are told that
\(x > 90,\) so \(AB > 5\sqrt{2} > 7.\)

13. A. Column B = \(\frac{135}{17} = (x^7)^5 = x^{35}\)
Since \(0 < x < 1, x^{35} < x.\)

14. B. The average expected family contribution of a
family with an income between $50,000 and
$59,000 is about $7,500. Since the average
cost of attending a 4-year public university
is $10,800, there is an unmet need of
$10,800 - $7,500 = $3,300.

15. B. Family A would be expected to pay $10,800,
the full annual cost for a 4-year public univer-
sity. Family B would be expected to pay
approximately $3,500. Therefore, family A
would pay $10,800 - $3,500 = $7,300 more.
16. C. To compare two fractions, cross-multiply. Since \( \sqrt{24} \times \sqrt{6} = \sqrt{144} = 12 \) and \( 2 \times 6 = 12 \), the two fractions have the same value. The columns are equal (C).

17. C. In Figure 1, since the radius of each circle is 3, the area of each circle is \( 9\pi \), and the total area of the four circles is \( 36\pi \). In Figure 2, the radius of each circle is 2, and so the area of each circle is \( 4\pi \), and the total area of the nine circles is \( 36\pi \). In the two figures, the white areas are equal, as are the shaded areas. The columns are equal (C).

18. D. If Jason were really unlucky, what could go wrong in his attempt to get one marble of each color? Well, his first nine picks might yield five blue marbles and four white ones. But then the tenth marble would be red, and now he would have at least one of each color. The answer is 10.

19. E. If \( a \) represents Jordan’s average after 5 tests, then he has earned a total of \( 5a \) points [TACTIC E1]. A grade of 70 on the sixth test will lower his average 4 points to \( a - 4 \). Therefore,

\[
a - 4 = \frac{5a + 70}{6} \Rightarrow 6a - 24 = 5a + 70 \Rightarrow 6a - 5a = 70 + 24 \Rightarrow a = 94.
\]

**Assume** Jordan’s average is \( a \) because he earned \( a \) on each of his first 5 tests. Since after getting a 70 on his sixth test his average will be \( a - 4 \), the deviation on each of the first 5 tests is 4, for a total deviation above the average of 20 points. So, the total deviation below must also be 20 [KEY FACT E3]. Therefore, 70 is 20 less than the new average of \( a - 4 \):

\[
70 = (a - 4) - 20 \Rightarrow a = 94.
\]

**Use** TACTIC 1, Chapter 11: backsolve. Start with Choice C, 86. If his 5-test average was 90, he had 450 points and a 70 on the sixth test would give him a total of 520 points, and an average of 520 \( \div 6 = 86 \). So, the 70 lowered his average 3.33 points. That’s not enough. Eliminate Choices A, B, and C. Try Choices D or E. Choice E, 94, works.

20. B. Reading from the top graph, we get the following enrollment figures:

<table>
<thead>
<tr>
<th>Year</th>
<th>Public PreK-8</th>
<th>Public 9-12</th>
<th>Private PreK-8</th>
<th>Private 9-12</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>33,000,000</td>
<td>13,000,000</td>
<td>4,000,000</td>
<td>1,000,000</td>
<td>51,000,000</td>
</tr>
<tr>
<td>1988</td>
<td>28,000,000</td>
<td>12,000,000</td>
<td>4,000,000</td>
<td>1,000,000</td>
<td>45,000,000</td>
</tr>
</tbody>
</table>

\$1,000,000 - 45,000,000 = 6,000,000.

21. B. In 1988, 8,800,000 (22% of 40,000,000) students lived in the West. From 1988-1998 this figure increased by 27%—for simplicity use 25%; an additional 2,200,000 students; so the total was then 11,000,000. The projected increase from 1998-2008 is about 10%, so the number will grow by 1,100,000 to 12,100,000.

22. D.

By the Pythagorean theorem,

\[
a^2 + b^2 = 10^2 = 100;
\]

and since the area is 20,

\[
\frac{1}{2}ab = 20 \Rightarrow ab = 40.
\]

Expand:

\[
(a + b)^2 = a^2 + 2ab + b^2 = (a^2 + b^2) + 2ab.
\]

Then

\[
(a^2 + b^2) + 2ab = 100 + 2(40) = 180.
\]

23. D. Let \( r \), \( C \), and \( A \) represent the radius, circumference, and area of the circle.

\[
C = 2\pi r = \pi \Rightarrow a = \frac{2\pi r}{\pi} = 2r.
\]

Similarly,

\[
A = \pi r^2 = \pi \Rightarrow \pi r^2 = \pi r^2 = r^2.
\]

The value of Column A is \( 2r \), and the value of Column B is \( r^2 \). Which is greater? Dividing each by \( r \), yields 2 in Column A and \( r \) in Column B. Since there are no restrictions, \( r \) could be greater than, less than, or equal to 2. Neither column is always greater, and the two columns are not always equal (D).

**Use** TACTIC 1, Chapter 12. Let \( r = 1 \).

Then, \( C = 2\pi \) and \( A = \pi \); so \( a = 2 \) and \( b = 1 \). Column B is greater; eliminate A and C. Try \( r = 2 \). Now, \( C = 4\pi \) and \( A = 4\pi \). Try \( a = b \) and the columns are equal. Eliminate Choice B. The answer is D.

24. C. If \( r \) is the radius of the white circle, \( 2r \) is the radius of the shaded semicircle. The area of the white circle is \( \pi r^2 \). The area of the semicircle is \( \frac{1}{2} \pi (2r)^2 = \frac{1}{2} \pi (4r^2) = 2\pi r^2 \), so the area of the shaded region is \( 2\pi r^2 - \pi r^2 = \pi r^2 \). The columns are equal (C).
25. C. If there are $x$ seats on each bus, then the group is using $\frac{4}{5}(3x) = \frac{12}{5}x$ seats. After $\frac{1}{4}$ of them get off, $\frac{3}{4}$ of them, or $\frac{3}{4}(\frac{12}{5}x) = \frac{9}{5}x$ remain.

What fraction of the $2x$ seats on the two buses are now being used? $\frac{9}{5}x$ of $\frac{5}{2} = \frac{9}{10}$.

**To avoid the algebra, assume there are 20 seats on each bus. At the beginning, the group is using 48 of the 60 seats on the three buses. When 12 people left, the 36 remaining people used $\frac{36}{40} = \frac{9}{10}$ of the 40 seats on two buses.

26. E. To find the average of three numbers, divide their sum by 3: $\frac{3^{30} + 3^{60} + 3^{90}}{3}$. Now use the distributive law and divide each term in the numerator by 3: $\frac{3^{30}}{3} + \frac{3^{60}}{3} + \frac{3^{90}}{3} = 3^{30} + 3^{60} + 3^{90}$.

27. B. In the given figure, the diameters of the four small semicircles are 2, 4, 6, and 8, so the diameter of the large semicircle is $2 + 4 + 6 + 8 = 20$, and its radius is 10. The perimeter of the shaded region is the sum of the circumferences of all five semicircles. Since the circumference of a semicircle is $\pi$ times its radius, the perimeter is $\pi + 2\pi + 3\pi + 4\pi + 10\pi = 20\pi$.

28. A. $a + 25\%(a) = 1.25a$, and $b - 25\%(b) = 0.75b$.

So, $1.25a = 0.75b$, and $\frac{a}{b} = \frac{0.75}{1.25} = \frac{3}{5}$.

**If after increasing $a$ and decreasing $b$ the results are equal, $a$ must be smaller than $b$. So, the ratio of $a$ to $b$ must be less than 1. Eliminate Choices C, D, and E. Now, either test Choices A and B or just guess. To test Choice B, pick two numbers in the ratio of 3 to 4—30 and 40, for example. Then, 30 increased by 25% is 37.5, and 40 decreased by 25% is 30. The results are not equal, so eliminate Choice B. The answer is $\frac{3}{5}$. (50 decreased by 25% is 37.5.)

Section 3—Analytical Writing

There are no "correct answers" to this section.
Answer Sheet—Model Test 3

Section 1

1. A B C D  
2. A B C D  
3. A B C D  
4. A B C D  
5. A B C D  
6. A B C D  
7. A B C D  
8. A B C D  
9. A B C D  
10. A B C D  

11. A B C D  
12. A B C D  
13. A B C D  
14. A B C D  
15. A B C D  
16. A B C D  
17. A B C D  
18. A B C D  
19. A B C D  
20. A B C D  

21. A B C D  
22. A B C D  
23. A B C D  
24. A B C D  
25. A B C D  
26. A B C D  
27. A B C D  
28. A B C D  
29. A B C D  
30. A B C D  

Section 2

1. A B C D  
2. A B C D  
3. A B C D  
4. A B C D  
5. A B C D  
6. A B C D  
7. A B C D  
8. A B C D  
9. A B C D  
10. A B C D  

11. A B C D  
12. A B C D  
13. A B C D  
14. A B C D  
15. A B C D  
16. A B C D  
17. A B C D  
18. A B C D  
19. A B C D  
20. A B C D  

21. A B C D  
22. A B C D  
23. A B C D  
24. A B C D  
25. A B C D  
26. A B C D  
27. A B C D  
28. A B C D  

MODEL TEST 3

SECTION 1—VERBAL ABILITY

Time—30 Minutes
30 Questions

Select the best answer to the following questions, then fill in the appropriate space on your Answer Sheet.

Directions: In each of the following antonym questions, a word printed in capital letters precedes five lettered words or phrases. From these five lettered words or phrases, pick the one most nearly opposite in meaning to the capitalized word.

1. PARIAH:
   (A) miser
   (B) nomad
   (C) servant
   (D) idol
   (E) renegade

2. EXACERBATE:
   (A) alleviate
   (B) bewilder
   (C) contemplate
   (D) intimidate
   (E) economize

Directions: Each of the following sentence completion questions contains one or two blanks. These blanks signify that a word or set of words has been left out. Below each sentence are five words or sets of words. For each blank, pick the word or set of words that best reflects the sentence's overall meaning.

3. Although he was generally considered an extremely ________ individual, his testimony at the trial revealed that he had been very ________.
   (A) intrepid...valiant
   (B) guileless...hypocritical
   (C) abstemious...temperate
   (D) meek...timorous
   (E) ingenious...obtuse

4. The perpetual spinning of particles is much like that of a top, with one significant difference: unlike the top, the particles have no need to be wound up, for ________ is one of their ________ properties.
   (A) revolution...radical
   (B) motion...intangible
   (C) rotation...intrinsic
   (D) acceleration...lesser
   (E) collision...hypothetical

Directions: Each of the following analogy questions presents a related pair of words linked by a colon. Five lettered pairs of words follow the linked pair. Choose the lettered pair of words whose relationship is most like the relationship expressed in the original linked pair.

5. DEFLECT : MISSILE ::
   (A) defend : fortress
   (B) reflect : mirror
   (C) diversify : portfolio
   (D) dismantle : equipment
   (E) distract : attention

6. MULISH : PLIANCY ::
   (A) piggish : gluttony
   (B) sluggish : reluctance
   (C) kittenish : motility
   (D) apish : servility
   (E) shrewish : amiability
Directions: Each of the following reading comprehension questions is based on the content of the following passage. Read the passage and then determine the best answer choice for each question. Base your choice on what this passage states directly or implies, not on any information you may have gained elsewhere.

How is a newborn star formed? For the answer to this question, we must look to the familiar physical concept of gravitational instability. It is a simple concept, long-known to scientists, having been first recognized by Isaac Newton in the late 1600s.

Let us envision a cloud of interstellar atoms and molecules, slightly admixed with dust. This cloud of interstellar gas is static and uniform. Suddenly, something occurs to disturb the gas, causing one small area within it to condense. As this small area increases in density, becoming slightly denser than the gas around it, its gravitational field likewise increases somewhat in strength. More matter now is attracted to the area, and its gravity becomes even stronger; as a result, it starts to contract, in the process increasing in density even more. This in turn further increases its gravity, so that it accumulates still more matter and contracts further still. And so the process continues, until finally the small area of gas gives birth to a gravitationally bound object, a newborn star.

7. It can be inferred from the passage that the author views the information contained within it as
   (A) controversial but irrefutable
   (B) speculative and unprofitable
   (C) uncomplicated and traditional
   (D) original but obscure
   (E) sadly lacking in elaboration

8. The author provides information that answers which of the following questions?
   I. How does the small area's increasing density affect its gravitational field?
   II. What causes the disturbance that changes the cloud from its original static state?
   III. What is the end result of the gradually increasing concentration of the small area of gas?
   (A) I only
   (B) II only
   (C) I and II only
   (D) I and III only
   (E) I, II and III

Antonyms

9. CONTENTIOUS:
   (A) amenable
   (B) active
   (C) dispassionate
   (D) callow
   (E) severe

10. DEBACLE:
    (A) endeavor
    (B) success
    (C) drought
    (D) transience
    (E) dominance

Sentence Completion

11. Whereas off-Broadway theater over the past several seasons has clearly ________, a talent for experimentation and improvisation, one deficiency in the commercial stage of late has been its marked incapacity for ________:
    (A) manifested...spontaneity
    (B) lampooned...theatricality
    (C) cultivated...orthodoxy
    (D) disavowed...histrionics
    (E) betrayed...burlesque

Analogies

12. CLOY : PALATE ::
    (A) sniff : nose
    (B) slit : tongue
    (C) surfeit : appetite
    (D) clinging : touch
    (E) refine : taste

13. PRATFALL : EMBARRASSMENT ::
    (A) deadlock : mortification
    (B) checkup : reluctance
    (C) downfall : penitence
    (D) diehard : grievance
    (E) windfall : jubilation
Reading Comprehension

With Meredith's *The Egoist* we enter into a critical problem that we have not yet before faced in these studies. That is the problem offered by a writer of recognizably impressive stature, whose work is informed by a muscular intelligence, whose language has splendor, whose "view of life" wins our respect, and yet for whom we are at best able to feel only a passive appreciation which amounts, practically, to indifference. We should be unjust to Meredith and to criticism if we should, giving in to the inertia of indifference, simply avoid dealing with him and thus avoid the problem along with him. He does not "speak to us," we might say; his meaning is not a "meaning for us"; he "leaves us cold." But do not the challenge and the excitement of the critical problem as such lie in that ambivalence of attitude which allows us to recognize the intelligence and even the splendor of Meredith's work, while, at the same time, we experience a lack of sympathy, a failure of any enthusiasm of response?

14. According to the passage, the work of Meredith is noteworthy for its elements of
   (A) sensibility and artistic fervor
   (B) ambivalence and moral ambiguity
   (C) tension and sense of vitality
   (D) brilliance and linguistic grandeur
   (E) wit and whimsical frivolity

15. All of the following can be found in the author's discussion of Meredith EXCEPT
   (A) an indication of Meredith's customary effect on readers
   (B) an enumeration of the admirable qualities in his work
   (C) a selection of hypothetical comments at Meredith's expense
   (D) an analysis of the critical ramifications of Meredith's effect on readers
   (E) a refutation of the claim that Meredith evokes no sympathy

17. It can be inferred from the passage that the author would be most likely to agree with which of the following statements about the role of criticism?
   (A) Its prime office should be to make our enjoyment of the things that feed the mind as conscious as possible.
   (B) It should be a disinterested endeavor to learn and propagate the best that is known and thought in the world.
   (C) It should enable us to go beyond personal prejudice to appreciate the virtues of works antipathetic to our own tastes.
   (D) It should dwell upon excellencies rather than imperfections, ignoring such deficiencies as irrelevant.
   (E) It should strive both to purify literature and to elevate the literary standards of the reading public.

Sentence Completion

18. Soap operas and situation comedies, though given to distortion, are so derivative of contemporary culture that they are inestimable ______ the attitudes and values of our society in any particular decade.
   (A) contraventions of
   (B) antidotes to
   (C) indices of
   (D) prerequisites for
   (E) determinants of

19. Perry's critics in the scientific world ________ that many of the observations he has made during more than a decade of research in Costa Rica have been reported as ________ in popular magazines rather than as carefully documented case studies in technical journals.
   (A) intimate...hypotheses
   (B) charge...anecdotes
   (C) applaud...rumors
   (D) claim...scholarship
   (E) apologize...fabrications

Antonyms

20. GAUCHE:
   (A) grotesque
   (B) tactful
   (C) rightful
   (D) fashionable
   (E) inane
21. HAPLESS:
   (A) fortuitous
   (B) forunate
   (C) fortified
   (D) forbidden
   (E) forestalled

22. PROLIXITY:
   (A) proximity
   (B) disinclination
   (C) circuitousness
   (D) extremity
   (E) terseness

Analogy

23. CONTemporaneous : EVENTS ::
   (A) adjacent : objects
   (B) modern : times
   (C) temporary : measures
   (D) gradual : degrees
   (E) repetitive : steps

24. Limerick : Poem ::
   (A) motif : symphony
   (B) prologue : play
   (C) catch : song
   (D) sequence : sonnet
   (E) epigraph : novel

Sentence Completion

25. Slander is like counterfeit money: many people who would not coin it ________ it without qualms.
   (A) waste
   (B) denounce
   (C) circulate
   (D) withdraw
   (E) invest

Antonyms

26. DIatribe:
   (A) medley
   (B) dilemma
   (C) afterthought
   (D) rebuttal
   (E) praise

27. Gainsay:
   (A) estimate
   (B) corroborate
   (C) forfeit
   (D) expend
   (E) neglect

Reading Comprehension

The Quechua world is submerged, so to speak, in a cosmic magma that weighs heavily upon it. It possesses the rare quality of being as it were interjected into the midst of antagonistic forces, which in turn implies a whole body of social and aesthetic structures whose innermost meaning must be the administration of energy. This gives rise to the social organism known as the ayltu, the agrarian community that regulates the procurement of food. The ayllu formed the basic structure of the whole Inca empire.

The central idea of this organization was a kind of closed economy, just the opposite of our economic practices, which can be described as open. The closed economy rested on the fact that the Inca controlled both the production and consumption of food. When one adds to this fact the religious ideas noted in the Quechua texts cited by the chronicler Santa Cruz Pachacuti, one comes to the conclusion that in the Andean zone the margin of life was minimal and was made possible only by the system of magic the Quechua constructed through his religion. Adversities, moreover, were numerous, for the harvest might fail at any time and bring starvation to millions. Hence the whole purpose of the Quechua administrative and ideological system was to carry on the arduous task of achieving abundance and staving off shortages. This kind of structure presupposes a state of unremitting anxiety, which could not be resolved by action. The Quechua could not do so because his primordial response to problems was the use of magic, that is, recourse to the unconscious for the solution of external problems. Thus the struggle against the world was a struggle against the dark depths of the Quechua’s own psyche, where the solution was found. By overcoming the unconscious, the outer world was also vanquished.

These considerations permit us to classify Quechua culture as absolutely static or, more accurately, as the expression of a mere state of being. Only in this way can we understand the refuge that it took in the germinative center of the cosmic mandala as revealed by Quechua art. The Quechua empire was nothing more than a mandala, for it was divided into four zones, with Cuzco in the center. Here the Quechua ensconced himself to contemplate the decline of the world as though it were caused by an alien and autonomous force.
28. The term “mandala” as used in the last paragraph most likely means
   (A) an agrarian community
   (B) a kind of superstition
   (C) a closed economic pattern
   (D) a philosophy or way of regarding the world
   (E) a figure composed of four divisions

29. The author implies that the Quechua world was
   (A) uncivilized
   (B) highly introspective
   (C) vitally energetic
   (D) free of major worries
   (E) well organized

30. With which of the following statements would the author most likely agree?
   (A) Only psychological solutions can remedy economic ills.
   (B) The Quechua were renowned for equanimity and unconcern.
   (C) The Quechua limited themselves to realizable goals.
   (D) Much of Quechua existence was harsh and frustrating.
   (E) Modern Western society should adopt some Quechua economic ideas.
SECTION 2—QUANTITATIVE ABILITY

Time—45 Minutes 28 Questions

Directions: In the following type of question, two quantities appear, one in Column A and one in Column B. You must compare them. The correct answer to the question is

A if the quantity in Column A is greater
B if the quantity in Column B is greater
C if the two quantities are equal
D if it is impossible to determine which quantity is greater

Notes: Sometimes information about one or both of the quantities is centered above the two columns. If the same symbol appears in both columns, it represents the same thing each time.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The sum of the integers from -7 to 3</td>
<td>The sum of the integers from -3 to 7</td>
</tr>
</tbody>
</table>

1. \( O \) is the center of the circle, and \( Y \) (not shown) is a point inside the circle.

2. \( OX \) \( OY \)

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>( x + y = 1 )</td>
<td></td>
</tr>
<tr>
<td>( xy )</td>
<td>1</td>
</tr>
</tbody>
</table>

3. The average (arithmetic mean) of \( a, b, c, d, e, f, \) and \( g \)

4. 50

Directions: In the following questions, choose the best answer from the five choices listed.

5. If 80% of the adult population of a village is registered to vote, and 60% of those registered actually voted in a particular election, what percent of the adults in the village did NOT vote in that election?
   (A) 20 (B) 40 (C) 48 (D) 50 (E) 52

6. If \( \frac{3}{4} \) of a number is 7 more than \( \frac{1}{6} \) of the number, what is \( \frac{5}{3} \) of the number?
   (A) 12 (B) 15 (C) 18 (D) 20 (E) 24

7. An operation, *, is defined as follows: for any positive numbers \( a \) and \( b \), \( a * b = \sqrt[3]{a} + \sqrt[3]{b} \). Which of the following is an integer?
   (A) 11 * 5 (B) 4 * 9 (C) 4 * 16 (D) 7 * 4 (E) 9 * 9
2

Column A

The ratio of the area of the large circle to the area of the small circle

Column B

2:1

8.

$x$ and $y$ are positive integers

$x, y = 21$

$x + y$

15

9.

10. Two sides of a right triangle are 5 and 6. Which of the following could be the length of the third side?

I. $\sqrt{11}$
II. $\sqrt{31}$
III. $\sqrt{61}$

(A) I only  (B) III only  (C) I and II only  (D) I and III only  (E) I, II, and III

2

Column A

$x < y$

Column B

The average (arithmetic mean) of $x$ and $y$

The average (arithmetic mean) of $x$, $y$, and $y$

11.

The sum of the areas of two equilateral triangles whose sides are 10

The area of one equilateral triangle whose sides are 20

12.

The radius of the large circle is $R$.
The radius of the small circle is $r$.
The areas of the shaded region and the white region are equal.

$\frac{R}{r}$

1.5

13.
14. In which of the following pairs of years were the ratios of Republican receipts to Democratic receipts most nearly equal?
(A) 1981–82 and 1985–86
(B) 1983–84 and 1995–96
(C) 1987–88 and 1989–90
(D) 1991–92 and 1993–96

15. Between which two consecutive two-year periods was there the greatest percent increase in the Democratic receipts?
(A) 1981–82 to 1983–84
(B) 1985–86 to 1987–88
(C) 1989–90 to 1991–92
(D) 1991–92 to 1993–94
(E) 1993–94 to 1995–96

18. Which of the following points lies in the interior of the circle whose radius is 10 and whose center is at the origin?
(A) (−9, 4)  
(B) (5, −9)  
(C) (0, −10)  
(D) (10, −1)  
(E) (−6, 8)

19. For any numbers \( a, b, \) and \( c, \)
\[
\begin{align*}
\frac{a}{b} + \frac{c}{b} &= abc - (a + b + c).
\end{align*}
\]
For which of the following equations is it true that there is exactly one positive integer that satisfies it?
I. \( \frac{a}{b} = 0 \)
II. \( \frac{a}{a} = 0 \)
III. \( \frac{a}{2a} = 0 \)

(A) none  
(B) I only  
(C) III only  
(D) I and III only  
(E) I, II, and III

16. The distance between Ali's house and her college is exactly 135 miles. She drove \( \frac{2}{3} \) of the distance in 135 minutes.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 &lt; ( a &lt; 1 )</td>
<td>( \frac{a}{b} )</td>
</tr>
</tbody>
</table>

- The area of a square whose side is \( a \)
- The area of a circle whose diameter is \( a \)

17. Her average speed, in miles per hour
| 45 |
20. The revenue from lottery ticket sales is divided between prize money and the various uses shown in the graph labeled "Proceeds." In 1997, what percent of the money spent on tickets was returned to the purchasers in the form of prize money?
   (A) 23.5%  (B) 50%  (C) 60%  (D) 66%  (E) 74%

21. Approximately what percent of the proceeds that went to the states' General fund would have to be given to the senior citizen programs so that the proceeds for the senior citizen programs and the Cities would be equal?
   (A) 0.9%  (B) 9%  (C) 31%  (D) 48%  (E) 69%

22. If \( x + y = a, y + z = b, \) and \( x + z = c, \) what is the average (arithmetic mean) of \( x, y, \) and \( z? \)
   (A) \( \frac{a + b + c}{2} \)  (B) \( \frac{a + b + c}{3} \)  (C) \( \frac{a + b + c}{4} \)
   (D) \( \frac{a + b + c}{6} \)  (E) \( a + b + c \)
23. The sides of the large square are $S$. The sides of the small square are $s$. The areas of the shaded region and white region are equal.

\[ \frac{S}{s} = 1.5 \]

25. The number of positive three-digit numbers for which the average (arithmetic mean) of the three digits is equal to 2

26. In the figure above, what is the value of $h$?
   (A) 2  (B) 2.2  (C) 2.4  (D) 2.6  (E) 2.8

27. Let $P$ and $Q$ be points which are two inches apart, and let $A$ be the area, in square inches, of a circle which passes through $P$ and $Q$. Which of the following is the set of all possible values for $A$?
   (A) $0 < A$  (B) $0 < A \leq \pi$  (C) $A = \pi$
   (D) $A > \pi$  (E) $A \geq \pi$

28. In 1950 Roberto was four times as old as Juan. In 1955 Roberto was three times as old as Juan. How old was Roberto when Juan was born?
   (A) 5  (B) 10  (C) 20  (D) 30  (E) 40
SECTION 3—ANALYTICAL WRITING

Time—75 Minutes
2 Writing Tasks

Task 1: Issue Exploration
45 Minutes

Directions: In 45 minutes, choose one of the two following topics and compose an essay on that topic. You may not write on any other topic. Write your essay on separate sheets of paper.

Each topic is presented in a one- to two-sentence quotation commenting on an issue of general concern. Your essay may support, refute, or qualify the views expressed in the quotation. Whatever you write, however, must be relevant to the issue under discussion, and you must support your viewpoint with reasons and examples derived from your studies and/or experience.

Before you choose a topic, read both topics carefully. Consider which topic would give you greater scope for writing an effective, well-argued essay.

Faculty members from various institutions will evaluate your essay, judging it on the basis of your skill in the following areas.

- Analysis of the quotation's implications
- Organization and articulation of your ideas
- Use of relevant examples and arguments to support your case
- Handling of the mechanics of standard written English

Once you have decided which topic you prefer, click on the appropriate icon (Topic 1 or Topic 2) to confirm your choice. Do not be hasty confirming your choice of topic. Once you have clicked on a topic, you will not be able to switch to the alternate choice.

Topic 1
“A true university education encompasses far more than the narrow, specialized study of a single discipline. Only through exploring the broad spectrum of liberal arts courses can students become truly learned.”

Topic 2
“Complete publicity makes it absolutely impossible to govern.” (Kierkegaard)
Task 2: Argument Analysis
30 Minutes

Directions: In 30 minutes, prepare a critical analysis of an argument expressed in a short paragraph. You may not offer an analysis of any other argument. Write your essay on separate sheets of paper.

As you critique the argument, think about the author's underlying assumptions. Ask yourself whether any of them are questionable. Also evaluate any evidence the author brings up. Ask yourself whether it actually supports the author's conclusion.

In your analysis, you may suggest additional kinds of evidence to reinforce the author's argument. You may also suggest methods to refute the argument, or additional data that might be useful to you as you assess the soundness of the argument. You may not, however, present your personal views on the topic. Your job is to analyze the elements of an argument, not to support or contradict that argument.

Faculty members from various institutions will judge your essay, assessing it on the basis of your skill in the following areas:

- Identification and assessment of the argument's main elements
- Organization and articulation of your thoughts
- Use of relevant examples and arguments to support your case
- Handling of the mechanics of standard written English

The following passage is excerpted from a brochure promoting the sale of Cold Cone Creamery franchises in California.

Open your own Cold Cone Creamery franchise and start down the road to financial independence. Are you tired of working long hours at low pay? Join the ranks of successful business owners who have opened Cold Cone Creameries. Due to its sunny weather, California is the number-one ice cream state in the nation, with more ice cream parlors per capita than any other state. Work for yourself, set your own hours, and keep the profits, as the owner of your own successful business.
Answer Key

Section 1—Verbal Ability


Section 2—Quantitative Ability

NOTE: The letters in brackets following the Quantitative Ability answers refer to the sections of Chapter 14 in which you can find the information you need to answer the questions. For example, 1. C [E] means that the answer to question 1 is C, and that the solution requires information found in Section 14-E: Averages. Also, 20. A [13] means that the answer to question 20 is based on information in Chapter 13: Data Interpretation.


Section 3—Analytical Writing

There are no “correct answers” to this section.

Answer Explanations

Section 1—Verbal Ability

1. D. The opposite of s pariah or person rejected by society is an idol or person greatly loved by society. Think of being “shunned as a pariah.”

2. A. The opposite of to exacerbate (to worsen or make more harsh) is to alleviate or lighten. Think of “exacerbating a quarrel.”

3. B. In reputation he was a guileless or undeceitful person; in real life he showed himself to have been hypocritical or deceptive. Note the use of although to signal the contrast.

4. C. Particles have no need to be wound up because the property of spinning (rotation) is built into their makeup: it is intrinsic.

5. E. By definition, a missile is deflected when it turns aside from its original direction. Likewise, someone’s attention is distracted when it turns aside from its original direction. (Definition)

6. E. Someone mulish (stubborn) is not characterized by pliancy (readiness to yield). Someone shrewish (ill-tempered) is not characterized by amiability. (Antonym Variant)

7. C. To the author the concept is both simple and traditional, dating as it does from Newton’s time.

8. D. You can answer this question by the process of elimination. Question I is answerable on the basis of the passage. As the area’s density increases, its gravitational field increases in strength. Therefore, you can eliminate Choice B. Question II is not answerable on the basis of the passage. The passage nowhere states what disturbs the gas. Therefore, you can eliminate Choices C and E. Question III is answerable on the basis of the passage. The end result of the process is the formation of a gravitationally bound object, a newborn star. Therefore, you can eliminate Choice A. Only Choice D is left. It is the correct answer.
9. A. The opposite of contentious (quarrelsome, belligerent) is amenable (readily brought to yield, tractable). Note that contentious derives from the verb to contend (to struggle or argue), not the adjective content. Think of "a particularly contentious argument."

10. B. The opposite of a debacle (downfall; failure; collapse) is a success. Think of "the Wall Street debacle of 1987."

11. A. The off-Broadway and Broadway theaters are contrasted here. The former has manifested or shown a talent for improvisation, extemporaneous or spontaneous performance. The latter has manifested no such talent for spontaneity. Note the use of whereas to establish the contrast.

12. C. By definition, an excess of once-pleasing flavors cloys or sates the palate (seat of the sense of taste). An excess of once-tempting foodstuffs surfeits or sates the appetite. (Definition)

13. E. A pratfall is a humiliating mishap that causes you to feel embarrassment. A windfall is an unexpected piece of good fortune that causes you to feel jubilation. (Cause and Effect)

14. D. The author cites Meredith's intelligence (brilliance) and his splendor of language (linguistic grandeur).

15. E. Rather than refuting the claim, the author clearly acknowledges Meredith's inability to evoke the reader's sympathy. Choice A is incorrect. From the start the author points out how Meredith leaves readers cold. Choice B is incorrect. The author reiterates Meredith's virtues, citing muscular intelligence and literary merit. Choice C is incorrect. The author quotes several such imagined criticisms. Choice D is incorrect. The author indicates that if readers choose to avoid dealing with Meredith, they shall be doing a disservice to the cause of criticism. Only Choice E remains. It is the correct answer.

16. E. Speaking of the "challenge and excitement of the critical problem as such," the author clearly finds the prospect of appraising Meredith critically to be stirring and invigorating.

17. C. The author wishes us to be able to recognize the good qualities of Meredith's work while at the same time we continue to find it personally unsympathetic. Thus, she would agree that criticism should enable us to appreciate the virtues of works we dislike. Choices A, B, and E are unsupported by the passage. Choice D is incorrect. While the author wishes the reader to be aware of Meredith's excellences, she does not suggest that the reader should ignore those qualities in Meredith that make his work unsympathetic. Rather, she wishes the reader to come to appreciate the very ambivalence of his critical response.

18. C. Soap operas and situation comedies are derivative of contemporary culture: they take their elements from that culture. Therefore, they serve as indices (signs or indications) of what is going on in that culture; they both point to and point up the social attitudes and values they portray. Note that the soap operas and comedies here cannot be determinants of our society's attitudes and values; they derive from these attitudes and values; they do not determine them.

19. B. The critics charge (make the accusation) that Perry has published only anecdotes of his observations and not detailed analyses. Note that critics would be unlikely to applaud the publication of rumors or apologize for Perry's publication of fabrications or lies. Thus, you can eliminate Choices C and E. Similarly, popular magazines would be unlikely to publish scientific hypotheses or examples of scholarship. You therefore can rule out Choices A and D as well.

20. B. The opposite of gauche (awkward; lacking in social grace or tact) is tactful. Think of being embarrassed by "a gauche remark."

21. B. The opposite of hapless (unlucky) is fortunate. Think of "hapless unfortunates."

22. E. The opposite of prolixity (wordiness) is terseness or brevity. Think of "long-winded prolixity."

23. A. Events that are contemporaneous (occurring within the same time frame) exist in temporal reference to one another. Objects that are adjacent exist in spatial reference to one another. (Defining Characteristic)

24. C. A limerick is a kind of poem. A catch is a kind of song. Note how simple the relationship of the original pair of words is. Analogy questions
seldom are this easy. This should alert you to be on the lookout for something particularly deceptive among the answer choices. In this case, catch is used in an uncommon manner. (Class and Member)

25. C. Whatever word you choose here must apply equally well both to slander and to counterfeit money. People who would not make up a slanderous statement circulate slander by passing it on. So too people who would not coin or make counterfeit money circulate counterfeit money by passing it on. Note how the extended metaphor here influences the writer’s choice of words.

26. E. The opposite of a diatribe (abusive criticism) is praise. Think of “a bitter diatribe.”

27. B. The opposite of to gainsay or contradict is to corroborate or support. Beware eye-catchers. To gainsay derives from to say against, not from to gain. Think of “gainsaying an assertion.”

28. E. The passage compare the Quechua empire to a mandala because “it was divided into four parts.” Thus, a mandala is most likely a figure composed of four divisions.

29. B. The author refers to the Quechua as existing in “a state of unrelenting anxiety, which could not be resolved by action” and which the Quechua could only deal with by looking into himself and struggling with the depths of his own psyche. This suggests that the Quechua world was highly introspective.

30. D. Both the unrelenting anxiety of Quechua life and the recurring harvest failures that brought starvation to millions illustrate the harshness and frustration of Quechua existence.

Section 2—Quantitative Ability

Two asterisks (**) indicate an alternative method of solving.

1. B. In each column, the sum includes the numbers from -3 to 3. Since all the other numbers in Column A are negative and those in Column B are positive, Column B is greater. (Note that we didn’t have to calculate either sum. We just used TACTIC 5, Chapter 12 and compared the columns.)

2. A. Since Y is inside the circle it is closer to the center than X, which is on the circle. Column A is greater.

3. B. Since \( x + y = 1 \), at least one of the numbers is positive. If either \( x \) or \( y \) is 0, the product \( xy = 0 \); and if either one is negative, then \( xy \) is negative. In each case, \( xy \) is less than 1. If both \( x \) and \( y \) are positive, then each is less than 1, and so is their product. Column B is greater.

4. A. There is not enough information provided to determine the values of \( a, b, c, d, e, f, \) and \( g \), but they are irrelevant. Since the sum of the measures of the seven angles is \( 360^\circ \), their average is \( 360^\circ / 7 = 51.4^\circ \). Column A is greater.

5. E. If there are \( x \) adults in the village, then .8x of them are registered and .6(.8x) = .48x voted. Therefore, \( x - .48x = .52x \) or 52% of the adults did not vote.

**You can avoid the algebra by assuming there are 100 adults. Then 80 of them are registered and 60% of 80 = 48 of them voted. So 52 did not vote, and \( \frac{52}{100} = 52\% \).

6. D. Let the number be \( x \), and write the equation:

\[
\frac{3}{4}x = 7 + \frac{1}{5}x.
\]

Multiply both sides by 12:

\[9x = 84 + 2x\]

Subtract 2x from each side and divide by 7:

\[7x = 84\]

\[x = 12\]

Be careful: 12 is not the answer. You were asked for \( \frac{5}{3} \) of the number: \( \frac{5}{3}(42) = 20 \).

7. D. There’s nothing to do except check each choice until you find one that works. In questions such as this, it is often faster to start with \( E \) and work towards \( A \).

E: \( 9 \star 9 = \sqrt{9} + \sqrt{9} = \sqrt{9} + 3 = \sqrt{12} \), which is not an integer.

D: \( 7 \star 4 = \sqrt{7} + \sqrt{4} = \sqrt{7} + 2 = \sqrt{9} = 3 \), an integer.

Once you find the answer, do not waste any time trying the other choices—they won’t work.

8. C. Let \( r \) and \( R \) be the radii of the two circles. From the figure, you can see that \( \triangle OAB \) is a 45-45-90 right triangle, and so \( R = r\sqrt{2} \) (KEY FACT 18). Therefore,
area of large circle = \( \pi R^2 = \pi \left( r \sqrt{2} \right)^2 = \pi r^2 \) \\
area of small circle \( \frac{2\pi r^2}{\pi r^2} = 2 \). The ratio is 2:1.

**Do exactly the same thing except use TACTIC 2, Chapter 11. Let \( r = 1 \); then \( R = \sqrt{2} \), and the ratio is \( \frac{2\pi}{\pi(1)} = \frac{2\pi}{\pi} = 2:1 \).**

9. D. If \( x = 3 \) and \( y = 7 \) (or vice versa), then \( x + y = 10 \), and Column B is greater. Eliminate Choices A and C. If \( x = 1 \) and \( y = 21 \) (or vice versa), then \( x + y = 22 \). This time, Column A is greater. Eliminate Choice B. Neither column is always greater, and the two columns are not always equal.

10. D. Either (i) 5 and 6 are the lengths of the two legs, or (ii) 5 is the length of a leg, and 6 is the hypotenuse. In either case use the Pythagorean theorem:
(i) \( 5^2 + 6^2 = c^2 \Rightarrow c^2 = 61 \Rightarrow c = \sqrt{61} \); 
(ii) \( a^2 + 5^2 = 6^2 \Rightarrow a^2 = 36 - 25 = 11 \Rightarrow a = \sqrt{11} \).

Statements I and II only are true.

11. B. The average of \( x \) and \( y \) is less than \( y \), so having another \( y \) raises the average [KEY FACT E4]. Column B is greater. **Use TACTIC 1, Chapter 12. Plug in numbers. Column A: the average of 2 and 4 is 3. Column B: the average of \( 2, 4 \), and 4 is more than 3, because the extra 4 raises the average (it's 3.333). The answer is B.**

12. B. If you draw a diagram, it is immediately clear that the area of the large triangle is more than twice the area of the small one. In fact, it is 4 times as great. Column B is larger.

\[ * * * * * * \]

13. B. The area of the large circle is \( \pi R^2 \) and the area of the small circle is \( \pi r^2 \), so the area of the shaded region is \( \pi R^2 - \pi r^2 = \pi (R^2 - r^2) \). Since the shaded region and the white region have the same area, \( \pi (R^2 - r^2) = \pi r^2 \Rightarrow R^2 - r^2 = r^2 \Rightarrow R^2 = 2r^2 \Rightarrow \frac{R^2}{r^2} = 2 \Rightarrow \frac{R}{r} = \sqrt{2} \), which is less than 1.5. Column B is greater.

14. C. For each of the pairs of years in question, use the graph to approximate the ratio of Republican to Democratic receipts. For example, in 1981–82, Republican receipts were slightly over \$200 million and Democratic receipts were about \$40 million, a ratio of 5:1. The only two pairs of years in which the ratio was very close were 1987–88 and 1989–90; in both of those pairs of years the ratio was very nearly 2:1.

15. A. In 1981–82 the Democratic receipts were about \$40 million and in 1983–84 they had increased to about \$100 million, an increase of 150\%. From 1991–92 to 1993–94 (Choice D), receipts decreased. During the periods covered by Choices B, C, and E, receipts increased, but by less than 150\%.

16. A. Column A: the area of a square of side \( a \) is \( a^2 \). Column B: since the diameter of the circle is \( a \), the radius is \( \frac{1}{2} a \), and so the area of the circle is \( \pi \left( \frac{1}{2} a \right)^2 = \frac{\pi a^2}{4} \), which is less than \( a^2 \), since \( \frac{\pi}{4} < 1 \). Column A is greater.

17. B. To find the average speed, in miles per hour, divide the distance, in miles, by the time, in hours. Ali drove 90 miles \( \left( \frac{2}{3} \text{ of } 135 \right) \) in 2.25 hours (135 minutes = 2.25 hours and 15 minutes = 2 \frac{1}{4} hours), 90 \( \div \) 2.25 = 40. Column B is greater.

18. A. Find the distance from each point to \((0,0)\), the center of the circle. We’re looking for a point that is less than 10 units from the center. The distance from \((a,b)\) to \((0,0)\) equals \( \sqrt{(a-0)^2 + (b-0)^2} = \sqrt{a^2 + b^2} \). Check each point. A: \((-9,4)\) \( \sqrt{(-9)^2 + 4^2} = \sqrt{81 + 16} = \sqrt{97} < 10 \) (KEY FACT N2).
22. D. Whenever you have three equations, add them.
\[
\frac{2x + 2y + 2z = a + b + c}{2} = \frac{x + y + z = a + b + c}{3} = \frac{a + b + c}{6}
\]

**Use TACTIC 2, Chapter 11: substitute for the variables.** Let \(x = 1, y = 2,\) and \(z = 3.\) Then the average of \(x, y,\) and \(z\) is \(2.\) When \(a = 1 + 2 = 3, b = 2 + 3 = 5,\) and \(c = 1 + 3 = 4,\) which of the choices equals 2? Only \(\frac{a + b + c}{6} = 2\).

23. B. The area of the large square is \(S^2,\) and the area of the small square is \(s^2,\) so the area of the shaded region is \(S^2 - s^2.\) Since the shaded region and the unshaded region have the same area,
\[
S^2 - s^2 = s^2 \Rightarrow S^2 = 2s^2 \Rightarrow \frac{S^2}{s^2} = 2 \Rightarrow \frac{S}{s} = \sqrt{2},
\]
which is less than 1.5. Column B is greater.

24. A. You do not need to add the lengths of the steps. Together, all the horizontal steps are equal to the bottom, and all the vertical risers are equal to the left side. The sum of the left side, 5 feet 4 inches, or 64 inches, and the bottom, 9 feet 2 inches, or 110 inches, is half the perimeter. The perimeter is \(2(64 + 110) = 2(174) = 348\) inches. Column A is greater.

25. A. If the average of the three digits is 2, the sum of the digits is 6. The simplest thing is to list them. If there are only a few, list them all; if it seems that there will be too many to list, look for a pattern. The list starts this way: 105, 114, 123, 132, 141, 150, so there are 6 of them in the 100s. Continue: 204, 213, 222, 231, 240. There are 5 in the 200s. You can conclude, correctly, that there are 4 in the 300s, 3 in the 400s, 2 in the 500s, and 1 in the 600s. So, the total is \(6 + 5 + 4 + 3 + 2 + 1 = 21.\) If you don’t spot the pattern, just continue the list: 303, 312, …, 501, 510, 600.

26. C. Since the area of a right triangle is \(\frac{1}{2}\) the product of its legs, the area is \(\frac{1}{2}(3)(4) = 6.\) But the area can also be calculated as \(\frac{1}{2}bh.\) Since this is a 3-4-5 triangle, the base is 5. So, \(6 = \frac{1}{2}(5)h \Rightarrow 5h = 12 \Rightarrow h = \frac{12}{5} = 2.4.\)
27. E. If \( PQ \) is a diameter of the circle, then the radius is 1 and \( A \), the area, is \( \pi \). This is the smallest possible value of \( A \), but \( A \) can be any number larger than \( \pi \) if the radius is made sufficiently large, as shown by the figures below.

The answer is \( A \geq \pi \).

28. D. Make a table to determine Roberto’s and Juan’s ages. Let \( x \) represent Juan’s age in 1950, and fill in the table as shown.

<table>
<thead>
<tr>
<th></th>
<th>1950</th>
<th>1955</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roberto</td>
<td>4( x )</td>
<td>4( x + 5 )</td>
</tr>
<tr>
<td>Juan</td>
<td>( x )</td>
<td>( x + 5 )</td>
</tr>
</tbody>
</table>

In 1955, Roberto was 3 times as old as Juan, so

\[ 4x + 5 = 3(x + 5) = 3x + 15 \Rightarrow x = 10. \]

Therefore, in 1950, Juan was 10 and Roberto was 40. Because Roberto is 30 years older than Juan, Roberto was 30 when Juan was born.

Section 3—Analytical Writing

There are no "correct answers" to this section.
Answer Sheet—Model Test 4

Section 1

1. A B C D E
2. A B C D E
3. A B C D E
4. A B C D E
5. A B C D E
6. A B C D E
7. A B C D E
8. A B C D E
9. A B C D E
10. A B C D E
11. A B C D E
12. A B C D E
13. A B C D E
14. A B C D E
15. A B C D E
16. A B C D E
17. A B C D E
18. A B C D E
19. A B C D E
20. A B C D E
21. A B C D E
22. A B C D E
23. A B C D E
24. A B C D E
25. A B C D E
26. A B C D E
27. A B C D E
28. A B C D E
29. A B C D E
30. A B C D E

Section 2

1. A B C D E
2. A B C D E
3. A B C D E
4. A B C D E
5. A B C D E
6. A B C D E
7. A B C D E
8. A B C D E
9. A B C D E
10. A B C D E
11. A B C D E
12. A B C D E
13. A B C D E
14. A B C D E
15. A B C D E
16. A B C D E
17. A B C D E
18. A B C D E
19. A B C D E
20. A B C D E
21. A B C D E
22. A B C D E
23. A B C D E
24. A B C D E
25. A B C D E
26. A B C D E
27. A B C D E
28. A B C D E
MODEL TEST 4

SECTION 1—VERBAL ABILITY

Time—30 Minutes
30 Questions

Select the best answer to the following questions, then fill in the appropriate space on your Answer Sheet.

Directions: In each of the following antonym questions, a word printed in capital letters precedes five lettered words or phrases. From these five lettered words or phrases, pick the one most nearly opposite in meaning to the capitalized word.

1. INSIPIDNESS:
(A) wisdom
(B) cowardice
(C) lividity
(D) savoriness
(E) tentativeness

2. SEQUESTER:
(A) precede in sequence
(B) permit to mingle
(C) alter in composition
(D) free from doubt
(E) attempt to better

Directions: Each of the following sentence completion questions contains one or two blanks. These blanks signify that a word or set of words has been left out. Below each sentence are five words or sets of words. For each blank, pick the word or set of words that best reflects the sentence's overall meaning.

3. Book publishing has long been _________ profession, partly because, for younger editors, the best way to win a raise or a promotion was to move on to another publishing house.
   (A) an innovative
   (B) a prestigious
   (C) an itinerant
   (D) a rewarding
   (E) an insular

4. For centuries, physicists have had good reason to believe in the principle of equivalence propounded by Galileo: it has _________ many rigorous tests that _________ its accuracy to extraordinary precision.
   (A) endured...compromised
   (B) passed...presupposed
   (C) borne...postulated
   (D) survived...proved
   (E) inspired...equated

Directions: Each of the following analogy questions presents a related pair of words linked by a colon. Five lettered pairs of words follow the linked pair. Choose the lettered pair of words whose relationship is most like the relationship expressed in the original linked pair.

5. AGITATOR : FIREBRAND ::
   (A) miser : spendthrift
   (B) renegade : turncoat
   (C) anarchist : backslider
   (D) maverick : scapegoat
   (E) reprobate : hothead

6. DISPASSIONATE : PARTISANSHIP ::
   (A) enthusiastic : zealousness
   (B) disconsolate : sorrow
   (C) intemperate : moderation
   (D) volatile : immobility
   (E) ardent : involvement
Directions: Each of the following reading comprehension questions is based on the content of the following passage. Read the passage and then determine the best answer choice for each question. Base your choice on what this passage states directly or implies, not on any information you may have gained elsewhere.

Mary Shelley herself was the first to point to her fortuitous immersion in the literary and scientific revolutions of her day as the source of her novel Frankenstein. Her extreme youth, as well as her sex, have contributed to the generally held opinion that she was not so much an author in her own right as a transparent medium through which passed the ideas of those around her. “All Mrs. Shelley did,” writes Mario Praz, “was to provide a passive reflection of some of the wild fantasies which were living in the air about her.”

Passive reflections, however, do not produce original works of literature, and Frankenstein, if not a great novel, was unquestionably an original one. The major Romantic and minor Gothic tradition to which it should have belonged was to the literature of the overreacher: the superman who breaks through normal human limitations to defy the rules of society and infringe upon the realm of God. In the Faust story, hypertrophy of the individual will is symbolized by a pact with the devil. Byron’s and Balzac’s heroes; the Wandering Jew; the chained and unchained Prometheus: all are overreachers, all are punished by their own excesses—by a surfeit of sensation, of experience, of knowledge and, most typically, by the doom of eternal life.

But Mary Shelley’s overreacher is different. Frankenstein’s exploration of the forbidden boundaries of human science does not cause the prolongation and extension of his own life, but the creation of a new one. He defies mortality not by living forever, but by giving birth.

7. The author quotes Mario Praz primarily in order to
(A) support her own perception of Mary Shelley’s uniqueness 
(B) illustrate recent changes in scholarly opinions of Shelley
(C) demonstrate Praz’s unfamiliarity with Shelley’s Frankenstein
(D) provide an example of the predominant critical view of Shelley
(E) contrast Praz’s statement about Shelley with Shelley’s own self-appraisal

8. The author of the passage concedes which of the following about Mary Shelley as an author?
(A) She was unaware of the literary and mythological traditions of the overreacher.
(B) She intentionally parodied the scientific and literary discoveries of her time.
(C) She was exposed to radical artistic and scientific concepts that influenced her work.
(D) She lacked the maturity to create a literary work of absolute originality.
(E) She was not so much an author in her own right as an imitator of the literary works of others.

9. According to the author, Frankenstein parts from the traditional figure of the overreacher in
(A) his exaggerated will
(B) his atypical purpose
(C) the excesses of his method
(D) the inevitability of his failure
(E) his defiance of the deity

Antonyms

10. FLEDGLING:
(A) experienced
(B) shy
(C) cautious
(D) pedestrian
(E) fleeting

11. EQUANIMITY:
(A) clamor
(B) disparity
(C) agitation
(D) propensity
(E) indivisibility

12. ANATHEMATIZE:
(A) appraise
(B) reciprocate
(C) patronize
(D) insinuate
(E) bless
Analogy

13. INOCULATION : IMMUNITY ::
   (A) talisman : charm
   (B) serum : antidote
   (C) exposure : weathering
   (D) indoctrination : disloyalty
   (E) invasion : fortification

14. CALLOW : MATURITY ::
   (A) incipient : fruition
   (B) eager : anxiety
   (C) youthful : senility
   (D) apathetic : disinterest
   (E) pallid : purity

Sentence Completion

15. Although he did not consider himself __________, he felt that the inconsistencies in her story __________ a certain degree of incredulity on his part.
   (A) an apostate...justified
   (B) an optimist...intimated
   (C) a hypocrite...demonstrated
   (D) a charlatan...dignified
   (E) a skeptic...warranted

16. Among contemporary writers of fiction, Virginia Woolf is __________ figure, in some ways as radical as James Joyce, in others no more modern than Jane Austen.
   (A) a doctrinaire
   (B) an introspective
   (C) a peripheral
   (D) a disinterested
   (E) an anomalous

Reading Comprehension
(This passage was written prior to 1950)

The coastlines on the two sides of the Atlantic Ocean present a notable parallelism: the easternmost region of Brazil, in Pernambuco, has a convexity that corresponds almost perfectly with the concavity of the African Gulf of Guinea, while the contours of the African coastline between Rio de Oro and Liberia would, by the same approximation, match those of the Caribbean Sea.

Similar correspondences are also observed in many other regions of the Earth. This observation began to awaken scientific interest about sixty years ago, when Alfred Wegener, a professor at the University of Hamburg, used it as a basis for formulating a revolutionary theory in geological

(15) science. According to Wegener, there was originally only one continent or land mass, which he called Pangea. Inasmuch as continental masses are lighter than the base on which they rest, he reasoned, they must float on the substratum of

(20) igneous rock, known as sima, as ice floes float on the sea. Then why, he asked, might continents not be subject to drifting? The rotation of the globe and other forces, he thought, had caused the cracking and, finally, the breaking apart of the

(25) original Pangea, along an extensive line represented today by the longitudinal submerged mountain range in the center of the Atlantic. While Africa seems to have remained static, the Americas apparently drifted toward the west until

(30) they reached their present position after more than 100 million years. Although the phenomenon seems fantastic, accustomed as we are to the concept of the rigidity and immobility of the continents, on the basis of the distance that separates

(35) them it is possible to calculate that the continental drift would have been no greater than two inches per year.

17. The primary purpose of the passage is to
   (A) describe the relative speed of continental movement
   (B) predict the future configuration of the continents
   (C) refute a radical theory postulating continental movement
   (D) describe the reasoning behind a geological theory
   (E) explain how to calculate the continental drift per year

18. It can be inferred from the passage that evidence for continental drift has been provided by the
   (A) correspondences between coastal contours
   (B) proof of an original solitary land mass
   (C) level of sima underlying the continents
   (D) immobility of the African continent
   (E) relative heaviness of the continental masses
19. The passage presents information that would answer which of the following questions?
   (A) In what ways do the coastlines of Africa and South America differ from one another?
   (B) How much lighter than the substratum of igneous rock below them are the continental masses?
   (C) Is the rotation of the globe affecting the stability of the present-day continental masses?
   (D) According to Wegener’s theory, in what direction have the Americas tended to move?
   (E) How does Wegener’s theory account for the apparent immobility of the African continent?

Antonyms

20. REPUDIATE:
   (A) mislead
   (B) minimize
   (C) ascertain
   (D) isolate
   (E) accept

21. ALOOFNESS:
   (A) exaggeration
   (B) simplicity
   (C) concern
   (D) complacency
   (E) disingenuousness

22. OBfuscate:
   (A) insinuate
   (B) exacerbate
   (C) protract
   (D) clarify
   (E) placate

Sentence Completion

23. The epiphyte plants of the rain forest use trees for physical support but do not, like ________, sap nutrients from their hosts.
   (A) fauna
   (B) predators
   (C) parasites
   (D) insectivores
   (E) stumps

24. To the embittered ex-philanthropist, all the former recipients of his charity were ________ as stingy with their thanks as they were wasteful of his largesse.
   (A) louts
   (B) misers
   (C) ingrates
   (D) prigs
   (E) renegades

Analogies

25. DAMPEN : ENTHUSIASM ::
   (A) moisten : throat
   (B) test : commitment
   (C) distract : attention
   (D) reverse : direction
   (E) mute : sound

26. BURST : SOUND ::
   (A) ebb : tide
   (B) tinder : fire
   (C) blast : wind
   (D) glimmer : light
   (E) shard : pottery

Reading Comprehension

During the 1930s National Association for the Advancement of Colored People (NAACP) attorneys Charles H. Houston, William Hastie, James M. Nabrit, Leon Ransome, and Thurgood Marshall charted a legal strategy designed to end segregation in education. They developed a series of legal cases challenging segregation in graduate and professional schools. Houston believed that the battle against segregation had to begin at the highest academic level in order to mitigate fear of race mixing that could create even greater hostility and reluctance on the part of white judges.

After establishing a series of favorable legal precedents in higher education, NAACP attorneys planned to launch an all-out attack on the separate-but-equal doctrine in primary and secondary schools. The strategy proved successful. In four major United States Supreme Court decisions, precedents were established that would enable the NAACP to construct a solid legal foundation upon which the Brown case could rest: Missouri ex rel. Gaines v. Canada, Registrar of the University of Missouri (1938); Sipuel v. Board of

In the Oklahoma case, the Supreme Court held that the plaintiff was entitled to enroll in the University. The Oklahoma Regents responded by separating black and white students in cafeterias and classrooms. The 1950 McLaurin decision ruled that such internal separation was unconstitutional. In the Sweatt ruling, delivered on the same day, the Supreme Court held that the maintenance of separate law schools for whites and blacks was unconstitutional. A year after Herman Sweatt entered the University of Texas law school, desegregation cases were filed in the states of Kansas, South Carolina, Virginia, and Delaware, and in the District of Columbia asking the courts to apply the qualitative test of the Sweatt case to the elementary and secondary schools and to declare the separate-but-equal doctrine invalid in the area of public education.

The 1954 Brown v. Board of Education decision declared that a classification based solely on race violated the 14th Amendment to the United States Constitution. The decision reversed the 1896 Plessy v. Ferguson ruling which had established the separate-but-equal doctrine. The Brown decision more than any other case launched the "equalitarian revolution" in American jurisprudence and signalled the emerging primacy of equality as a guide to constitutional decisions; nevertheless, the decision did not end state-sanctioned segregation. Indeed, the second Brown decision, known as Brown II and delivered a year later, played a decisive role in limiting the effectiveness and impact of the 1954 case by providing southern states with the opportunity to delay the implementation of desegregation.

Which of the following best describes the relationship between the McLaurin decision and the 1954 Brown v. Board of Education decision?

(A) The McLaurin decision superseded the Brown decision.
(B) The Brown decision provided a precedent for the McLaurin decision.
(C) The Brown decision reversed the McLaurin decision.
(D) The McLaurin decision limited the application of the Brown decision.
(E) The McLaurin decision provided legal authority for the Brown decision.

Which of the following statements is most compatible with the principles embodied in Plessy v. Ferguson as described in the passage?

(A) Internal separation of whites and blacks within a given school is unconstitutional.
(B) Whites and blacks may be educated in separate schools so long as they offer comparable facilities.
(C) The maintenance of separate professional schools for blacks and whites is unconstitutional.
(D) The separate-but-equal doctrine is inapplicable to the realm of private education.
(E) Blacks may be educated in schools with whites whenever the blacks and whites have equal institutions.

The aspect of Houston's work most extensively discussed in the passage is its

(A) psychological canniness
(B) judicial complexity
(C) fundamental efficiency
(D) radical intellectualism
(E) exaggerated idealism

According to the passage, Houston aimed his legislative challenge at the graduate and professional school level on the basis of the assumption that

(A) the greatest inequities existed at the highest academic and professional levels
(B) the separate-but-equal doctrine applied solely to the highest academic levels
(C) there were clear precedents for reform in existence at the graduate school level
(D) the judiciary would feel less apprehension at desegregation on the graduate level
(E) the consequences of desegregation would become immediately apparent at the graduate school level
SECTION 2—QUANTITATIVE ABILITY

Time—45 Minutes
28 Questions

Directions: In the following type of question, two quantities appear, one in Column A and one in Column B. You must compare them. The correct answer to the question is
A if the quantity in Column A is greater
B if the quantity in Column B is greater
C if the two quantities are equal
D if it is impossible to determine which quantity is greater

Notes: Sometimes information about one or both of the quantities is centered above the two columns. If the same symbol appears in both columns, it represents the same thing each time.

1. Column A Column B
   The product of the integers from The product of the integers from
   -7 to 3 -3 to 7

2. Column A Column B
   AC BC

3. Column A Column B
   \[ \frac{2}{3} \text{ of } x \text{ equals } \frac{3}{4} \text{ of } x \]
   \[ \frac{4}{5} \text{ of } x \text{ equals } 0 \]

4. Column A Column B
   The number of prime factors of \( n \) The number of prime factors of \( 2n \)

Directions: In the following questions, choose the best answer from the five choices listed.

5. Camille's average on her 6 math tests this marking period is 75. Fortunately for Camille, her teacher drops each student's lowest grade, and this raises her average to 85. What was her lowest grade?
   (A) 20  (B) 25  (C) 30  (D) 40  (E) 50

6. What is the surface area in square inches of a cube whose volume is 216 cubic inches?
   (A) 36  (B) 54  (C) 216  (D) 324  (E) 1296

7. Last year Leo bought two paintings. This year he sold them for $2000 each. On one, he made a 25% profit, and on the other he had a 25% loss. What was his net loss or profit?
   (A) He broke even.
   (B) He lost less than $100.
   (C) He lost more than $100.
   (D) He earned less than $100.
   (E) He earned more than $100.

   Column A Column B
   The measure, in degrees, of the smaller angle formed by the hour and the minute hand of a clock at 11:20 140
### Column A

\[ x^2 - 2x - 7 = 0 \]

9. \[ x^2 - 7 \] \[ 2x \]

10. What is the area of a circle whose radius is the diagonal of a square whose area is 4?
   (A) \(2\pi\)  (B) \(2\pi \sqrt{2}\)  (C) \(4\pi\)  (D) \(8\pi\)  (E) \(16\pi\)

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The first term of a sequence is 1. Starting with the</td>
<td></td>
</tr>
<tr>
<td>second term, each term is 1 less than 3 times the</td>
<td></td>
</tr>
<tr>
<td>previous term.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>120</td>
</tr>
</tbody>
</table>

11. The smallest number greater than 100 in the sequence

### Unemployed Persons 20 Years Old and Over,
by Reason of Unemployment: 1997

<table>
<thead>
<tr>
<th>In millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job losers</td>
</tr>
<tr>
<td>Job leavers</td>
</tr>
<tr>
<td>Reentrants</td>
</tr>
<tr>
<td>New entrants</td>
</tr>
</tbody>
</table>


14. Of people 20 years of age or older, approximately how many more males than females were unemployed in 1997?
   (A) 150,000  (B) 300,000  (C) 750,000
   (D) 1,200,000  (E) 2,600,000

15. In 1997, of the unemployed males 20 years of age or older, what percent were unemployed because they had lost their jobs?
   (A) 35%  (B) 50%  (C) 60%  (D) 75%
   (E) 90%
22. At Tyler High School, there are twice as many girls as boys on the yearbook staff. At one staff meeting, the percentage of girls attending was twice the percentage of boys. What percent of those attending the meeting were boys?
(A) 20 (B) 25 (C) 30 (D) 33 (E) 50

23. The population of Mayberry in 2000 was twice the population of Mayberry in 1970. From 1970–1980 the population of Mayberry decreased 10%. From 1980–1990 the population of Mayberry decreased 20%. From 1990–2000 the population of Mayberry decreased 20%.

24. The figure below consists of four circles with the same center. The radii of the four circles are 1, 2, 3, and 4.

25. The average (arithmetic mean) of $a$ and $b$ is 33.

26. Paul drove $m$ miles in $h$ hours; Michelle drove the same distance in $\frac{h}{2}$ an hour less. How fast, in miles per hour, did Michelle drive?
(A) $\frac{m}{2h}$ (B) $\frac{2m+h}{2h}$ (C) $\frac{2m-h}{2h}$
(D) $\frac{2m}{2h+1}$ (E) $\frac{2m}{2h-1}$

Questions 20 and 21: See the diagram on the following page for information to answer the questions.

20. In the period from 1979–1989, on average, how much longer, in years, could a 45-year old Black man with a family income in excess of $25,000 expect to live than a 45-year old Black man with a family income of less than $10,000?
(A) 4 (B) 6 (C) 8 (D) 10 (E) 12

21. For which of the following groups did family income have the least significance in affecting life expectancy?
(A) Black men at age 65
(B) Black women at age 65
(C) White men at age 45
(D) White women at age 45
(E) White women at age 65
Life expectancy among adults 45 and 65 years of age by family income, sex, and race: United States, average annual 1979–89

Years of life expectancy

**White**

- Women
- Men

- At age 45
- At age 65

Family income (in 1980 dollars)

**Black**

- Women
- Men

- At age 45
- At age 65

Family income (in 1980 dollars)

27. A sequence of numbers begins 1, 1, 2, 2, 3 and then repeats this pattern forever. What is the sum of the 135th, 136th, and 137th numbers in the sequence?
(A) 3  (B) 4  (C) 5  (D) 6  (E) 7

28. In the figure above, the diameter of the circle is 20 and the area of the shaded region is $80\pi$. What is the value of $a + b + c + d$?
(A) 144  (B) 216  (C) 240  (D) 270  (E) 288
Task 1: Issue Exploration
45 Minutes

Directions: In 45 minutes, choose one of the two following topics and compose an essay on that topic. You may not write on any other topic. Write your essay on separate sheets of paper.

Each topic is presented in a one- to two-sentence quotation commenting on an issue of general concern. Your essay may support, refute, or qualify the views expressed in the quotation. Whatever you write, however, must be relevant to the issue under discussion, and you must support your viewpoint with reasons and examples derived from your studies and/or experience.

Before you choose a topic, read both topics carefully. Consider which topic would give you greater scope for writing an effective, well-argued essay.

Faculty members from various institutions will evaluate your essay, judging it on the basis of your skill in the following areas.

- Analysis of the quotation's implications
- Organization and articulation of your ideas
- Use of relevant examples and arguments to support your case
- Handling of the mechanics of standard written English

Once you have decided which topic you prefer, click on the appropriate icon (Topic 1 or Topic 2) to confirm your choice. Do not be hasty confirming your choice of topic. Once you have clicked on a topic, you will not be able to switch to the alternate choice.

Topic 1

"It takes a village to raise a child." The education of our children is the task of the community as a whole, not merely the province of teachers and local school administrators."

Topic 2

"The simple absence of data has never been enough to stop fools from inventing theories."
Task 2: Argument Analysis
30 Minutes

Directions: In 30 minutes, prepare a critical analysis of an argument expressed in a short paragraph. You may not offer an analysis of any other argument. Write your answer on separate sheets of paper.

As you critique the argument, think about the author's underlying assumptions. Ask yourself whether any of them are questionable. Also evaluate any evidence the author brings up. Ask yourself whether it actually supports the author's conclusion.

In your analysis, you may suggest additional kinds of evidence to reinforce the author's argument. You may also suggest methods to refute the argument, or additional data that might be useful to you as you assess the soundness of the argument. You may not, however, present your personal views on the topic. Your job is to analyze the elements of an argument, not to support or contradict that argument.

Faculty members from various institutions will judge your essay, assessing it on the basis of your skill in the following areas:

- Identification and assessment of the argument's main elements
- Organization and articulation of your thoughts
- Use of relevant examples and arguments to support your case
- Handling of the mechanics of standard written English

The following was part of an editorial in American View, a monthly political journal.

Welfare reform has been a success. Today, there are fewer people on the welfare rolls, and more people holding jobs, than there were before the welfare reform policies adopted under President Clinton. Former welfare recipients are better off today because they are able to support themselves. The success of maximum time limits for collecting welfare benefits demonstrates that one need not be jobless for life.
## Answer Key

### Section 1—Verbal Ability

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### Section 2—Quantitative Ability

NOTE: The letters in brackets following the Quantitative Ability answers refer to the sections of Chapter 14 in which you can find the information you need to answer the questions. For example, 1. C [E] means that the answer to question 1 is C, and that the solution requires information found in Section 14-E: Averages. Also, 20. A [13] means that the answer to question 20 is based on information in Chapter 13: Data Interpretation.

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</table>

### Section 3—Analytical Writing

There are no "correct answers" to this section.

## Answer Explanations

### Section 1—Verbal Ability

1. **D.** The opposite of *insipidness* or lack of flavor is *savoriness*, the quality of being flavorsome. Think of the "insipidness of overcooked boiled cabbage."

2. **B.** The opposite of *sequester* or segregate is to *permit to mingle.*

   Word Parts Clue: *Se-* means apart. To *sequester* someone means to set him apart.

   Think of "sequestered jurors."

3. **C.** The key phrase here is "move on." If editors have to travel from firm to firm to succeed in their field, then publishing can be classified as an *itinerant* profession, a profession marked by traveling.

4. **D.** The physicists have had good reason to believe in the principle because it has *survived* rigorous or strict tests. These tests have *proved* that the principle is accurate.

5. **B.** *Agitator* (troublemaker), is a synonym for *firebrand.* *Renegade* (traitor) is a synonym for *turncoat.*

   (Synonym)

6. **C.** Someone *dispassionate* or temperate in judgment is lacking in *partisanship* or bias. Someone *intemperate* or immoderate is lacking in *moderation.*

   (Antonym Variant)

7. **D.** Immediately before quoting Praz, the author states that the general view of Shelley depicts her as "a transparent medium through which passed the ideas of those around her." The quotation from Praz provides an excellent example of this particular point of view. To answer this question correctly, you do not need to read the passage in its entirety.

   Quickly scroll through the passage, scanning for the name Praz; read only the context in which it appears.

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Note how the second clause supports the first, explaining why the physicists had reason to be confident in the principle.
8. C. The opening sentence points out that Shelley herself acknowledged the influence of her unplanned immersion in the scientific and literary revolutions of her time. Clearly, the author of the passage concedes this as true of Shelley.

9. B. The concluding paragraph distinguishes Frankenstein from the other overreachers in his desire not to extend his own life but to impart life to another (by creating his monster). Thus, his purpose is atypical of the traditional overreacher.

To say that someone parts from the traditional figure of the overreacher is to say that he differs from it. Thus, to answer this question quickly, scan the passage looking for overreacher and different (or their synonyms).

10. A. The opposite of fledgling or untired is experienced. The image is of a young bird just capable of leaving the nest.

Think of “fledgling pilots trying their wings.”

11. C. The opposite of equanimity (emotional balance or composure) is agitation.

Word Parts Clue: Eq- means even. Ani- means mind or spirit. Equanimity is an even-ness of mind; composure.

Think of “something shattering one’s equanimity.”

12. E. The opposite of to anathematize or curse is to bless.

Think of “anathematizing one’s foes.”

13. C. Inoculation (introduction of a serum or vaccine into a living creature) results in immunity. Exposure to the elements results in weathering. (Cause and Effect)

14. A. Someone callow is immature and will not reach full development till maturity. Something incipient is beginning to become apparent and will not reach full development till fruition. (Antonym Variant)

15. E. Inconsistencies in a story would warrant or justify disbelief or incredulity on anyone’s part, whether or not he considered himself a skeptic (doubter).

16. E. If Virginia Woolf combines both radical and nonradical elements in her fictions, then she presents an anomalous or contradictory image.

17. D. The author takes the reader through Wegener’s reasoning step by step, describing what led Wegener to reach his conclusions.

18. A. Since the existence of the correspondences between the various coastal contours was used by Wegener as a basis for formulating his theory of continental drift, it can be inferred that the correspondences provide evidence for the theory.

Choice B is incorrect. The passage does not indicate that Pangea’s existence has been proved.

Choice C is incorrect. It is the relative heaviness of sima, not the level or depth of sima, that suggested the possibility of the lighter continents drifting.

Choice D is incorrect. Mobility rather than immobility would provide evidence for continental drift.

Choice E is incorrect. The continents are lighter than the underlying sima.

19. D. Choice D is answerable on the basis of the passage. The next-to-the-last sentence of the second paragraph states that the Americas “apparently drifted toward the west.”

20. E. The opposite of to repudiate (disown; refuse to acknowledge) is to accept.

Think of “repudiating a debt.”

21. C. The opposite of aloofness (remoteness, indifference) is concern.

Think of “haughty aloofness.”

22. D. The opposite of to obfuscate or confuse is to clarify.

Word Parts Clue: Ob- means completely; fus- means dark; -ate means to make. To obfuscate is to becloud or make completely dark.

Think of “obfuscating the issue.”

23. C. By definition, parasites sap or drain nutrients from their hosts.

24. C. The embittered benefactor thinks of them as ingrates (ungrateful persons) because they do not thank him sufficiently for his generosity. He does not think of them as misers (boarders of wealth); although they are stingy in expressing thanks, they are extravagant in spending money. He certainly does not think of them as louts (clumsy oafs), prigs (self-righteous fussbudgets), or renegades (traitors): the specific attribute he resents in them is ingratitude, not ciestathion, self-satisfaction, or perfidy.

25. E. To dampen enthusiasm is to diminish it. To mute (muffle) sound is to diminish it.

Note that Choice C is incorrect: to distract attention is not to diminish it but to divert it in a new direction. (Defining Characteristic)
26. C. A burst is a sudden violent outbreak of sound. A blast is a sudden violent outbreak (heavy gust) of wind. Beware eye-catchers. Choice D is incorrect. A glimmer is a feeble or intermittent light, not a sudden violent flare or blast of light.

(Degree of Intensity)

27. D. Houston believed that the battle had to begin at the graduate level "to mitigate fear" (relieve apprehension) of race mixing and miscegenation that might otherwise have caused the judges to rule against the NAACP-sponsored complaints.

28. E. The 1950 McLaurin decision was one of the decisions that provided legal precedents for the 1954 Brown decision. Choice A is incorrect. McLaurin preceded Brown I. Therefore, it could not have superseded a decision that had yet to be made. Choice B is incorrect. Brown I followed McLaurin. Therefore, it could not have set a precedent for McLaurin.

Choice C is incorrect. Brown I reversed Plessy v. Ferguson. It built on McLaurin. Choice D is incorrect. McLaurin preceded Brown I. Therefore, it could not have limited the application of a decision that had yet to be made.

29. B. The separate-but-equal doctrine established by Plessy v. Ferguson allows the existence of racially-segregated schools.

30. A. In assessing the possible effects on judges of race mixing in the lower grades, Houston was psychologically canny, shrewd in seeing potential dangers and in figuring strategies to avoid these dangers.

**Section 2—Quantitative Ability**

Two asterisks (**) indicate an alternative method of solving.

1. C. Each column is the product of 11 integers, one of which is 0. Since 0 times any number is 0, each column is 0. The columns are equal (C).

2. C. Since by KEY FACT J2 the measure of an exterior angle of a triangle is equal to the sum of the measures of the two opposite interior angles, 140 = 70 + y, and so y = 70. Therefore, angles A and B are equal, and by KEY FACT J3 so are the sides opposite them: AC = BC. The columns are equal (C).

**If you don't know the theorem about the exterior angle, first find x: x + 140 = 180 ⇒ x = 40. Then, since the sum of the measures of the three angles of a triangle is 180, y = 70.

3. C. If a ≠ b and ax = bx, then x must be 0.

So \( \frac{2}{3}x = \frac{3}{4}x \Rightarrow x = 0 \Rightarrow \frac{4}{5}x = 0. \)

4. B. Every factor of n is a factor of 2n, but 2 is a prime factor of 2n, which is not a factor of n (since n is odd). So, 2n has more prime factors than n. Column B is greater.

5. B. On six tests combined, Camille earned a total of 6 × 75 = 450 points [TACTIC E1]. The total of her five best grades is 5 × 85 = 425 points, so her lowest grade was 450 – 425 = 25.

**Assume that Camille's five best grades were each 85. Then each one has a deviation of 10 points above the average of 75, and the total deviation above 75 is 5 × 10 = 50 points. Therefore, her one bad grade must have been 50 points below 75.

6. C. Since the volume of the cube is 216 cubic inches, we have \( e^3 = 216 \Rightarrow e = 6. \) The area of each face is \( e^2 = 36 \) square inches, and since there are six faces, the total surface area is \( 6 \times 36 = 216 \) square inches.

7. C. On the first painting, Leo made a 25% profit, so if he bought it for \( x, \) he sold it for \( x + .25x = 1.25x = 2000 \Rightarrow x = 2000 / 1.25 = 1600. \)

His profit was $400. On the second painting, Leo lost 25%, so if he bought it for \( y, \) he sold it for \( y - .25y = .75y = 2000 \Rightarrow y = 2000 / .75 = 2666.67. \)

His loss was $666.67. In all, he lost $266.67, which is more than $100.

**In these types of problems you never break even. Eliminate A. When you make a profit, your purchase price is less than your selling price, and when you incur a loss, your purchase price is greater than your selling price. So the first painting cost less than $2000 and the second cost more than $2000. So Leo earned 25% of a small amount and lost 25% of a large amount. He surely lost money. Eliminate D and E. If you can't solve as above, guess between B and C.

8. C. Draw a diagram.
The minute hand, of course, is pointing right at 4. The hour hand, however, is not pointing at 11. It was pointing at 11 at 11:00, 20 minutes, or 1/3 hour, ago. The hour hand is now one-third of the way between 11 and 12, so there are 20 degrees between the hour hand and 12 and another 120 degrees to 4, a total of 140 degrees. The columns are equal (C).

9. C. This one is easier than it looks. Don’t try to factor. Don’t solve. Just add 2x to both sides of the given equation to get that
\[ x^2 - 7 = x. \]
The columns are equal (C).

10. D. If the area of the square is 4, each side is 2, and the length of a diagonal is 2\sqrt{2}. The area of a circle whose radius is 2\sqrt{2} is
\[ \pi(2\sqrt{2})^2 = 8\pi. \]

11. A. Write out the first few terms being careful to follow the directions. The first term is 1. The second term is 1 less than 3 times the first term: 3(1) - 1 = 2. The third term is 1 less than 3 times the second term: 3(2) - 1 = 5. Continue: 3(5) - 1 = 14; 3(14) - 1 = 41; 3(41) - 1 = 122. The smallest number greater than 100 is 122. Column A is greater.

12. C. The sum of the measures of the four angles in any quadrilateral is 360° [KEY FACT K1]. If the average of two of them is 60°, then their sum is 120° [TACTIC E1], leaving 240° for the other two angles, so their average is 120°. The columns are equal (C).

13. B. To find Anne's average speed, in kilometers per hour, we must divide the distance she went, in kilometers (198), by the time it took, in hours. Anne drove for 3 hours and 40 minutes, which is 2 2/3 hours. So her average speed was
\[ 198 \div \frac{2}{3} = 198 \times \frac{3}{2} = 198 \times \frac{3}{1} = 54. \]
Column B is greater.

14. B. The difference between the number of male and female job leavers was insignificant, so ignore them. Among the males, there were about 1.8 million job losers and 0.7 million reentrants, a total of 2.5 million. Among the females, there were about 1.05–1.1 million in each of those two categories, a total of 2.1–2.2 million. This represents a difference of 300–400,000—say, 350,000. Finally, there were about 50,000 more female than male new entrants, so there were approximately 300,000 more males unemployed than females. Note that your figures might be slightly different, but the answer choices are so far apart, that you should definitely choose B.

15. C. Adding up the number of males in each category, we see that there were approximately 3 million unemployed males of whom 1.8 million were job losers, which is 60%.

16. A. Since the average savings of the 10 students is $60, the total amount they have saved is $600 [TACTIC E1]. John has $130 and 3 students have none at all. If 5 other students have a total of $125 ($25 each, the least possible), then the tenth student will have $600 - $130 - $125 = $345. Column A is greater.

17. B. Column A: since \( b < 2 \), \( ab < 2a \).
Column B: since \( b > a \), \( a + b > a + a = 2a \).
Column B is greater.
**Use TACTIC 1, Chapter 12. Plug in numbers that satisfy the condition.**
Column A: \( (1.1)(1.8) = 1.98 \).
Column B: \( 1.1 + 1.8 = 2.9 \).
This time, Column B is greater. Eliminate Choices A and C, and try other numbers. Each time Column B will be greater. Choose B.

18. C. Since each radius is 3, \( OA = OB \), and by KEY FACT J3 \( m\angle A = m\angle B \).

Then, \( 60 + x + x = 180 \Rightarrow x = 60 \). Therefore \( \triangle AOB \) is equilateral, and \( AB = 3 \). The length of arc \( AB \) is \( \frac{60}{360} = \frac{1}{6} \) of the circumference.
C = \( 2\pi(3) = 6\pi \), so the length of arc \( AB = \pi \).
The perimeter of the region, then, is \( 3 + \pi \).
**Use TACTIC 2, Chapter 10: trust the diagram.** \( AB \) looks about the same as \( OB \), so assume it is 3, and arc \( AB \) is clearly slightly bigger. Hence, the perimeter is a little more than 6. Choices A and B are both less than 5, which is definitely too small. Between C and D guess. C, 3 + \( \pi \), is the better guess, because \( AB \) might be exactly 3.

19. C. \((m + 1)(m - 1) = m^2 - 1 = 17 - 1 = 16\).
**Since \( m^2 = 17 \), \( m \) is slightly more than 4, and \((m + 1)(m - 1)\) is the product of a number a little greater than 5 and a number a little greater than 3. The only reasonable choice is 16.**
20. C. From the lower graph, we can see that the life expectancy at age 45 for Black men with family incomes below $10,000 was 25, whereas for those whose family income was $25,000 or more, their life expectancy was 33 years: a difference of 8 years.

21. E. The line segments constituting the graph of life expectancy for White women at age 65 are virtually horizontal. At all incomes, these women have a life expectancy of about 20 years. For none of the other categories does family income have as small an impact on life expectancy.

22. A. Even if you can do the algebra, this type of problem is easier if you use TACTIC 2, Chapter 11. Find some easy-to-use numbers. Assume that there are 100 girls and 50 boys on staff and that 20% of the girls and 10% of the boys attended the meeting. Then, 20 girls and 5 boys were there, and 5 is 20% of 25, the total number attending.

**Of course, you can do this algebraically. If \( x \) represents the number of boys on staff, then \( 2x \) is the number of girls. If \( y \% \) of the boys attended the meeting, then \( 2xy \% \) of the girls did. So, the number of boys attending was \( 2x(\frac{2y}{100}) + \frac{xy}{100} \), whereas the number of girls attending was \( 2x(\frac{2y}{100}) = \frac{4xy}{100} \). Therefore, there were 4 times as many girls in attendance as boys: \( \frac{4}{5} \) of those at the meeting were girls and \( \frac{1}{5} \) or 20% were boys.

23. A. Note that, when a number is decreased by 20%, what remains is 80% of the original: 80% of 80% of 80% = \( .8 \times .8 \times .8 = .512 = 51.2\% \), which is greater than 50%. Column A is greater.

**Use TACTIC 2, Chapter 11. Assume that in 1970 the population of Mayberry was 100. Then, in 1980 it was 80, in 1990 it was 64 (80% of 80), and in 2000 it was 51.2, which is greater than 50, one-half of the 1970 population.

24. C. Since the entire region is a circle of radius 4, its area is \( \pi(4)^2 = 16\pi \). The white region is a circle of radius 3 minus the small shaded circle of radius 1, so its area is \( 9\pi - \pi = 8\pi \). Thus, the area of the white region is one-half of the total area, and the area of the shaded region is the other half. The columns are equal (C).

25. D. Use TACTIC 4, Chapter 12. Could the average of \( a \) and \( b \) equal 33? Only if the sum of \( a \) and \( b \) were 66. Is that possible? Yes, if \( a = 30.5 \) and \( b = 35.5 \). Must \( a + b = 66 \)? Of course not. Neither column is always greater, and the two columns are not always equal (D).

26. E. Michelle drove \( m \) miles in \( h - \frac{1}{2} \) hours. Since \( r = \frac{d}{t} \), to find her rate, we divide the distance, \( m \), by the time, \( \left( h - \frac{1}{2} \right) \):

\[
\frac{m}{h - \frac{1}{2}} = \frac{2m}{2h - 1}
\]

**Use TACTIC 2, Chapter 11. If Paul drove 20 miles in 2 hours, Michelle drove 20 miles in \( 1 \frac{3}{2} \) hours. So Michelle drove at

\[
20 \div \frac{3}{2} = 20 \times \frac{2}{3} = \frac{40}{3} \text{ miles per hour.}
\]

Only \( \frac{2m}{2h - 1} = \frac{40}{3} \) when \( m = 20 \) and \( h = 2 \).

27. C. Since the pattern has six digits, divide 135 by 6. The quotient is 22 and the remainder is 3. Since \( 22 \times 6 = 132 \), the 132nd number completes the pattern for the 22nd time. So the 133rd, 134th, and 135th numbers are 1s, and the 136th and 137th are 2s, and their sum is \( 1 + 2 + 2 = 5 \).

28. E. Since the diameter of the circle is 20, the radius is 10 and the area is 100\( \pi \). Since the area of the shaded region is 80\( \pi \), it is \( \frac{80}{100} = \frac{4}{5} \) of the circle, and the white area is \( \frac{1}{5} \) of the circle. So the sum of the measures of the two white central angles is \( \frac{1}{5} \) of 360°, or 72°. The sum of the measures of all six angles in the triangles is 360°, so \( a + b + c + d = 360 - 72 = 288 \).

**Section 3—Analytical Writing**

There are no "correct answers" to this section.
MODEL TEST 5

SECTION 1—VERBAL ABILITY
Time—30 Minutes
30 Questions

Select the best answer to the following questions, then fill in the appropriate space on your Answer Sheet.

Directions: In each of the following antonym questions, a word printed in capital letters precedes five lettered words or phrases. From these five lettered words or phrases, pick the one most nearly opposite in meaning to the capitalized word.

1. PANDEMONIUM:
   (A) amusement
   (B) indolence
   (C) deceleration
   (D) tranquility
   (E) tolerance

2. ENERVATE:
   (A) aggravate
   (B) stimulate
   (C) edify
   (D) applaud
   (E) disregard

Directions: Each of the following sentence completion questions contains one or two blanks. These blanks signify that a word or set of words has been left out. Below each sentence are five words or sets of words. For each blank, pick the word or set of words that best reflects the sentence's overall meaning.

3. Surprisingly to those who view the ocean floor as a uniformly __________ waste, each vent in the floor, where seawater is heated by the earth's interior magma, has been found to be an island-like __________ with its own distinctive fauna.
   (A) teeming...habitat
   (B) lifeless...enclave
   (C) barren...oasis
   (D) sunken...grotto
   (E) hazardous...environment

4. Rather than allowing these dramatic exchanges between her characters to develop fully, Ms. Norman unfortunately tends to __________ the discussions involving the two women.
   (A) exacerbate
   (B) protract
   (C) augment
   (D) truncate
   (E) elaborate

Directions: Each of the following analogy questions presents a related pair of words linked by a colon. Five lettered pairs of words follow the linked pair. Choose the lettered pair of words whose relationship is most like the relationship expressed in the original linked pair.

5. GLINT : LIGHT ::
   (A) blare : sound
   (B) whiff : scent
   (C) shade : color
   (D) glut : food
   (E) wave : tide

6. DOGGEREL : POET ::
   (A) symphony : composer
   (B) easel : painter
   (C) caption : cartoonist
   (D) soliloquy : playwright
   (E) potboiler : novelist
Directions: Each of the following reading comprehension questions is based on the content of the following passage. Read the passage and then determine the best answer choice for each question. Base your choice on what this passage states directly or implies, not on any information you may have gained elsewhere.

Unlike the carefully weighted and planned compositions of Dante, Goethe’s writings have always the sense of immediacy and enthusiasm.

He was a constant experimenter with life, with ideas, and with forms of writing. For the same reason, his works seldom have the qualities of finish or formal beauty which distinguish the masterpieces of Dante and Virgil. He came to love the beauties of classicism but these were never an essential part of his make-up. Instead, the urgency of the moment, the spirit of the thing, guided his pen. As a result, nearly all his works have serious flaws of structure, of inconsistencies, of excesses and redundancies and extraneous.

In the large sense, Goethe represents the fullest development of the romanticist. It has been argued that he should not be so designated because he so clearly matured and outgrew the kind of romanticism exhibited by Wordsworth, Shelley, and Keats. Shelley and Keats died young; Wordsworth lived narrowly and abandoned his early attitudes. In contrast, Goethe lived abundantly and developed his faith in the spirit, his understanding of nature and human nature, and his reliance on feelings as man’s essential motivating force. The result was an all-encompassing vision of reality and a philosophy of life broader and deeper than the partial visions and attitudes of other romanticists. Yet the spirit of youthfulness, the impatience with close reasoning or “logic-chopping,” and the continued faith in nature remained his to the end, together with an occasional waywardness and impulsiveness and a disregard of artistic or logical propriety which savor strongly of romantic individualism.

Since so many twentieth-century thoughts and attitudes are similarly based on the stimulus of the Romantic Movement, Goethe stands as particularly the poet of modern times as Dante stood for medieval times and as Shakespeare for the Renaissance.

7. A characteristic of romanticism NOT mentioned in this passage is its
(A) elevation of nature
(B) preference for spontaneity
(C) modernity of ideas
(D) unconcern for artistic decorum
(E) simplicity of language

8. It can be inferred from the passage that classicism has which of the following characteristics?
   I. Sensitivity toward emotional promptings
   II. Emphasis on formal aesthetic criteria
   III. Meticulous planning of artistic works
   (A) I only
   (B) II only
   (C) I and II
   (D) II and III
   (E) I, II, and III

9. The author’s attitude toward Goethe’s writings is best described as
   (A) unqualified endorsement
   (B) lofty indifference
   (C) reluctant tolerance
   (D) measured admiration
   (E) undisguised contempt

Antonyms

10. NEBULOUS:
   (A) hypothetical
   (B) querulous
   (C) lamentable
   (D) piquant
   (E) distinct

11. DECORUM:
   (A) lucidity
   (B) flexibility
   (C) impropriety
   (D) duplicity
   (E) severity

12. DENIGRATE:
   (A) emancipate
   (B) examine
   (C) desecrate
   (D) mollify
   (E) extol
Sentence Completion

13. Neutron stars are believed to be the highly compressed remnants of exploding stars (supernovas) and thus _______ of one of the most _______ processes in nature.
   (A) causes...cataclysmic
   (B) products...violent
   (C) examples...equivalent
   (D) justifications...brief
   (E) precursors...dynamic

14. The shortcomings of Mr. Brooks' analysis are _______ in explaining financial complexity and the sheer importance of his text.
   (A) alleviated by...ineptitude
   (B) offset by...clarity
   (C) magnified by...precision
   (D) demonstrated by...adroitness
   (E) mitigated by...incompetence

Analogies

15. ERUDITE : SCHOLAR ::
   (A) remote : hermit
   (B) pliant : beggar
   (C) meandering : traveler
   (D) mendacious : liar
   (E) vindictive : conqueror

16. FERAL : DOMESTICATION ::
   (A) arable : cultivation
   (B) viral : infection
   (C) crude : refinement
   (D) frugal : economy
   (E) pliable : molding

Reading Comprehension

The author cites Logan, Huggins, and Litwack for their work on curriculum reform in the public schools, participation in the Freedom Summer in Mississippi, return to the field of Afro-American history, research on blacks in nineteenth-century North Carolina, and identification with nonviolent direct action.
18. The passage suggests that Bennett’s work was similar to Logan’s work in which of the following ways?
   I. Both Bennett’s and Logan’s books recorded a then relatively unfamiliar aspect of Afro-American history.
   II. Both Bennett’s and Logan’s work were designed to appeal to a primarily academic audience.
   III. Both Bennett’s and Logan’s work were published in a variety of formats.
   (A) I only
   (B) III only
   (C) I and II only
   (D) I and III only
   (E) II and III only

19. It can be inferred that prior to 1950, for a historian to choose to specialize in black history
   (A) was encouraged by the academic establishment
   (B) established his academic conventionality
   (C) afforded him special opportunities for publication
   (D) was detrimental to his professional career
   (E) enhanced his contact with his colleagues

**Antonyms**

20. DESTitution:
   (A) civilization
   (B) recompense
   (C) affluence
   (D) reformation
   (E) parsimony

21. COGNIZANCE:
   (A) ignobility
   (B) disbelief
   (C) impotence
   (D) illegality
   (E) unawareness

**Reading Comprehension**

(This passage was written prior to 1950):

We now know that what constitutes practically all of matter is empty space; relatively enormous voids in which revolve with lightning velocity infinitesimal particles so utterly small that they have never been seen or photographed. The existence of these particles has been demonstrated by mathematical physicists and their operations determined by ingenious laboratory experiments. It was not until 1911 that experiments by Sir Ernest Rutherford revealed the architecture of the mysterious atom. Moseley, Bohr, Fermi, Millikan,

Compton, Urey, and others have also worked on the problem.

Matter is composed of molecules whose average diameter is about 1/125 millionth of an inch. Molecules are composed of atoms so small that about 5 million could be placed in a row on the period at the end of this sentence. Long thought to be the ultimate, indivisible constituent of matter, the atom has been found to consist roughly of a proton, the positive electrical element in the atomic nucleus, surrounded by electrons, the negative electric elements swirling about the proton.

22. According to the passage, all of the following were true of the center of the atom EXCEPT that it
   (A) had not yet been seen by the naked eye
   (B) contained elements that were positively charged
   (C) was very little larger than a molecule
   (D) followed experimentally determinable processes
   (E) was smaller than 1/125 millionth of an inch

23. By referring to the period at the end of the sentence (lines 16-18), the author intends to point up the atom’s
   (A) density
   (B) mystery
   (C) velocity
   (D) consistency
   (E) minuteness

24. Which of the following relationships most closely parallels the relationship between the proton and the electrons described in the passage?
   (A) A hawk to its prey
   (B) A blueprint to a framework
   (C) A planet to its satellites
   (D) A magnet to iron filings
   (E) A compound to its elements

**Analogies**

25. GIBBER : SENSE ::
   (A) jabber : noise
   (B) toddle : mobility
   (C) dawdle : deference
   (D) vacillate : resolution
   (E) disobey : order
26. UPROARIOUS : AMUSING ::
   (A) treacherous : steadfast
   (B) tumultuous : windy
   (C) menacing : aghast
   (D) repugnant : disagreeable
   (E) devious : clever

**Antonyms**

29. PRECIPITATE:
   (A) intricate
   (B) devious
   (C) posthumous
   (D) dilatory
   (E) contradictory

30. TORTUOUS:
   (A) merciful
   (B) direct
   (C) dangerous
   (D) legal
   (E) tawdry

**Sentence Completion**

27. To a person _________ natural history, his country or seaside stroll is a walk through a gallery filled with wonderful works of art, nine-tenths of which have their faces turned to the wall.
   (A) enamored of
   (B) uninstructed in
   (C) responsive to
   (D) disillusioned with
   (E) dependent on

28. A _________ of recent cases of scientific fraud in which gross errors of fact and logic have slipped past the review panels that scrutinize submissions to journals suggests that the review system is seriously _________.
   (A) plethora...intended
   (B) lack...strained
   (C) dearth...compromised
   (D) spate...taxed
   (E) preponderance...substantiated
SECTION 2—QUANTITATIVE ABILITY

In this section use scrap paper to solve each problem. Then decide which is the best of the choices given and fill in the corresponding oval on the Answer Sheet.

Directions: In the following type of question, two quantities appear, one in Column A and one in Column B. You must compare them. The correct answer to the question is

A if the quantity in Column A is greater
B if the quantity in Column B is greater
C if the two quantities are equal
D if it is impossible to determine which quantity is greater

Notes: Sometimes information about one or both of the quantities is centered above the two columns. If the same symbol appears in both columns, it represents the same thing each time.

Column A          Column B
\[ a = -2 \]

1. \[ a^4 - a^3 + a^2 - a \] \[ a - a^2 + a^3 - a^4 \]

\[ a \text{ and } b \text{ are primes} \]
\[ a + b = 12 \]

2. \( b \) \( 8 \)

3. \( c \) \( d \)

3. On a test \( \frac{4}{7} \) of the boys and \( \frac{7}{11} \) of the girls earned over 90.

4. The number of students receiving grades over 90
The number of students receiving grades of 90 or less

Directions: In the following questions, choose the best answer from the five choices listed.

5. What is the measure of the angle formed by the minute and hour hands of a clock at 1:50?
   (A) 90° (B) 95° (C) 105° (D) 115° (E) 120°

6. Which of the following CANNOT be expressed as the sum of three consecutive integers?
   (A) 18 (B) 24 (C) 28 (D) 33 (E) 36

7. Sandrine is now 5 times as old as Nicholas, but 7 years from now, she will be 3 times as old as he will be then. How old is Sandrine now?
   (A) 15 (B) 20 (C) 21 (D) 25 (E) 35
### Column A | Column B
---|---

**Questions 11-15** refer to the following graph.

**Percentage of students who reported using a computer**

<table>
<thead>
<tr>
<th>Year</th>
<th>Grade 4</th>
<th>Grade 8</th>
<th>Grade 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>1988</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>1992</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>1996</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>2000</td>
<td>40%</td>
<td>40%</td>
<td>40%</td>
</tr>
</tbody>
</table>

**SOURCE:** U.S. Department of Education.

14. If every student who was in the eleventh grade in 1996 and who used a computer in school at least once a week in 1997, then what percent of twelfth-graders in 1997 used a computer in school at least once a week? (A) 40\% (B) 50\% (C) 60\% (D) 70\% (E) 80\%
15. Assume that in 1990 there were 3,000,000 fourth-graders in the United States. How many fewer of those 3,000,000 students used a computer in school at least once a week in 1994 than in 1990?
(A) 100,000  (B) 250,000  (C) 500,000  (D) 600,000  (E) 750,000

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The measures of the angles in ( \triangle I ) are in the ratio of 1:2:3</td>
<td></td>
</tr>
<tr>
<td>The measures of the angles in ( \triangle II ) are in the ratio of 2:7:9</td>
<td></td>
</tr>
</tbody>
</table>

16. The shaded region above is bounded by two semicircles and two sides of square \( ABCD \). The perimeter of the shaded region is \( 4 + 2\pi \).

<table>
<thead>
<tr>
<th>The area of the shaded region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

18. If \( A \) is the point (-4, 1) and \( B \) is the point (2, 1), what is the area of the circle which has \( AB \) as \( \pi \) diameter?
(A) 3\( \pi \)  (B) 6\( \pi \)  (C) 9\( \pi \)  (D) 12\( \pi \)  (E) 36\( \pi \)

19. If the average (arithmetic mean) of 10, 20, 30, 40, and \( x \) is 66, what is the value of \( x \)?
(A) 50  (B) 60  (C) 100  (D) 150  (E) 200

Questions 20 and 21: See the graphs on the following page for information to answer the questions.

20. Each of the following is a valid conclusion from the graphs and the fact that the population of the United States was greater in 1995 than in 1991 EXCEPT
(A) In 1991, adults whose highest degree was at least a bachelor’s degree were more than twice as likely to participate in adult education than those whose highest educational attainment was a high school diploma or GED (high school equivalency diploma).
(B) On a percentage basis, from 1991 to 1995, the greatest increase in the adult education participation rate was among those adults whose highest educational attainment was grades 9–12, without earning a high school diploma.
(C) In 1995, more people participated in adult education programs than in 1991.
(D) From 1991 to 1995 the rate of participation in adult education among the groups represented in the graphs increased the least for those who had attained at least a bachelor’s degree.
(E) In 1995, more adults with at least a bachelor’s degree participated in adult education than did adults who attended some college but did not earn a college degree.

22. Bob and Jack share an apartment. If each month Bob pays \( a \) dollars and Jack pays \( b \) dollars, what percent of the total cost does Bob pay?
(A) \( \frac{a}{a + b} \% \)  (B) \( \frac{b}{a} \% \)  (C) \( \frac{a}{a + b} \% \)
(D) \( \frac{100a}{a + b} \% \)  (E) \( \frac{100a}{a} \% \)
Adult education participation rates in the past 12 months: 1991 and 1995

By educational attainment

- Grades 9-12
- High school diploma or GED
- Vocational/technical school
- Some college
- Associate degree
- Bachelor's degree or higher

By labor force status

- Employed
- Unemployed
- Not in labor force

SOURCE: U.S. Department of Education.
Column A | Column B
---|---
The area of \( \triangle ABC \) | The area of \( \triangle ABE \)

23. A wooden cube whose edges are 3 inches is painted red. The cube is then cut into 27 cubes whose edges are 1 inch.

The total surface area of all of the unpainted faces | 100 square inches

24. \[
\frac{AB}{AC} + CD = AA
\]

In the addition problem above, each letter represents a different digit.

25. \( A + C \) | \( B + D \)

26. If \( a \) is increased by 10% and \( b \) is decreased by 10%, the resulting numbers will be equal. What is the ratio of \( a \) to \( b \)?

(A) \( \frac{9}{11} \)  (B) \( \frac{9}{10} \)  (C) \( \frac{1}{1} \)  (D) \( \frac{10}{9} \)  (E) \( \frac{11}{9} \)

27. In the figure at the right, the legs of right triangle \( ACB \) are diameters of the two semicircles. If \( AB = 4 \), what is the sum of the areas of the semicircles?

(A) \( \pi \)  (B) \( 2\pi \)  (C) \( 4\pi \)  (D) \( 8\pi \)  (E) \( 16\pi \)

28. For how many positive integers \( m \leq 100 \) is \( (m - 5)(m - 45) \) positive?

(A) 45  (B) 50  (C) 58  (D) 59  (E) 60
SECTION 3—ANALYTICAL WRITING

Time—75 Minutes
2 Writing Tasks

Task 1: Issue Exploration
45 Minutes

Directions: In 45 minutes, choose one of the two following topics and compose an essay on that topic. You may not write on any other topic. Write your essay on separate sheets of paper.

Each topic is presented in a one- to two-sentence quotation commenting on an issue of general concern. Your essay may support, refute, or qualify the views expressed in the quotation. Whatever you write, however, must be relevant to the issue under discussion, and you must support your viewpoint with reasons and examples derived from your studies and/or experience.

Before you choose a topic, read both topics carefully. Consider which topic would give you greater scope for writing an effective, well-argued essay.

Faculty members from various institutions will evaluate your essay, judging it on the basis of your skill in the following areas.

- Analysis of the quotation’s implications
- Organization and articulation of your ideas
- Use of relevant examples and arguments to support your case
- Handling of the mechanics of standard written English

Once you have decided which topic you prefer, click on the appropriate icon (Topic 1 or Topic 2) to confirm your choice. Do not be hasty confirming your choice of topic. Once you have clicked on a topic, you will not be able to switch to the alternate choice.

Topic 1

“Originality does not consist in saying what no one has ever said before but in saying exactly what you think yourself.” (James Stephen)

Topic 2

“We laugh at the naivete of celebrities who complain about the public’s fascination with the intimate details of their lives. Movie and television stars, pop singers, politicians—public figures all—should necessarily understand that the inevitable price of becoming a public figure is the loss of privacy.”
Task 2: Argument Analysis
30 Minutes

Directions: In 30 minutes, prepare a critical analysis of an argument expressed in a short paragraph. You may not offer an analysis of any other argument. Write your answer on separate sheets of paper.

As you critique the argument, think about the author's underlying assumptions. Ask yourself whether any of them are questionable. Also evaluate any evidence the author brings up. Ask yourself whether it actually supports the author's conclusion.

In your analysis, you may suggest additional kinds of evidence to reinforce the author's argument. You may also suggest methods to refute the argument, or additional data that might be useful to you as you assess the soundness of the argument. You may not, however, present your personal views on the topic. Your job is to analyze the elements of an argument, not to support or contradict that argument.

Faculty members from various institutions will judge your essay, assessing it on the basis of your skill in the following areas:

- Identification and assessment of the argument's main elements
- Organization and articulation of your thoughts
- Use of relevant examples and arguments to support your case
- Handling of the mechanics of standard written English

The following advice, written by a childbirth instructor, appeared in an informational brochure for parents-to-be.

Statistics demonstrate that Caesarean births are dangerous for women. Women are three times more likely to suffer fatal complications when giving birth by Caesarean section than they are when giving birth naturally, without painkillers and labor-promoting drugs. When choosing a hospital, it is important that parents select one that does not encourage unnecessary Caesarean deliveries. Locally, I recommend Samaritan Hospital, because its rate of Caesarean delivery is less than two-thirds that of County General, which specializes in emergencies and high-risk cases.
Answer Key

Section 1—Verbal Ability

1. D
2. B
3. C
4. D
5. B
6. E
7. E
8. D
9. D
10. E
11. C
12. E
13. B
14. B
15. D
16. C
17. C
18. D
19. D
20. C
21. E
22. C
23. E
24. C
25. D
26. D
27. B
28. D
29. D
30. B

Section 2—Quantitative Ability

NOTE: The letters in brackets following the Quantitative Ability answers refer to the sections of Chapter 14 in which you can find the information you need to answer the questions. For example, 1. C [E] means that the answer to question 1 is C, and that the solution requires information found in Section 14-E: Averages. Also, 20. A [13] means that the answer to question 20 is based on information in Chapter 13: Data Interpretation.

1. A [A]
2. B [A]
3. A [J]
4. A [B]
5. D [I]
6. C [A]
7. E [H]
8. D [J]
9. D [A]
10. B [A]
11. C [C,D]
12. C [D]
13. D [F]
15. E [13]
16. C [D,J]
17. B [K,L]
18. C [L,N]
19. E [E]
20. E [13]
22. E [C]
23. C [J,K]
25. B [A]
26. A [C,D]
27. B [J,L]
28. D [O]

Section 3—Analytical Writing

There are no “correct answers” to this section.

Answer Explanations

Section 1—Verbal Ability

1. D. The opposite of pandemonium or tumultuous uproar is tranquility or calm. Word Parts Clue: Pan- means all; demon- means evil spirit. Hell or Pandemonium, the place where all the evil spirits dwell, is a place of noise and uproar. Think of “pandemonium breaking loose.”

2. B. To enervate (weaken or enfeeble) is the opposite of to stimulate or energize. Think of being “enervated by the heat.”

3. C. Rather than being barren or devoid of life, the vent regions are like oases that support life. Choice A is incorrect. A waste by definition is not seeming but barren. Choice B is incorrect. The vent region would not be described as an enclave (tract enclosed within a foreign territory).

4. D. Instead of allowing the exchanges to develop fully, the playwright cuts short or truncates them.

5. B. A glint is a small gleam of light. A whiff is a slight puff of scent. (Degree of Intensity)

6. E. Doggerel is trivial or inferior verse produced by a poet. A potboiler is a trivial or inferior literary work produced by a novelist. (Defining Characteristic)

7. E. The author never mentions simplicity of language as a characteristic of romanticism. Choice A is incorrect. The passage refers to a “continued faith in nature” as one aspect of Goethe’s romanticism. Choice B is incorrect. The passage refers to impulsiveness or spontaneity as savoring strongly of romantic individualism.
Choice C is incorrect. Since romanticism has formed so many modern attitudes, one finds in romanticism ideas that seem noteworthy for their modernity. Choice D is incorrect. The passage refers to "a disregard of artistic or logical propriety" as characteristic of romanticism.

8. D. You can arrive at the correct answer by the process of elimination. Sensitivity towards emotional promptings is characteristic of romanticism; it is an unlikely characteristic of classicism. Therefore, you can eliminate Choices C and E. Emphasis on formal aesthetic criteria is a likely characteristic of classicism. The passage talks of the formal beauty that distinguishes the classical works of Dante and Virgil. Therefore, you can eliminate Choice B. Meticulous planning of artistic works is a likely characteristic of classicism. The passage talks of the carefully planned compositions of the classicist Dante; it also tells of the structurally flawed compositions of the romantic Goethe. Therefore, you can eliminate Choice A. Only Choice D is left. It is the correct answer.

9. D. The author both admires Goethe's writings and notes their flaws; his attitude is one of measured admiration.

10. E. The opposite of nebulous (vague, cloudy) is distinct. Think of "a nebulous memory."

11. C. The opposite of decorum (correctness, good taste) is impropriety or unseemliness. Think of "dignity and decorum."

12. E. The opposite of to denigrate (belittle or defame) is to exalt or praise. Think of "denigrating someone's efforts."

13. B. If neutron stars are the remnants or remaining traces of exploding stars, then they are the products or results of violent natural processes. Choice A is incorrect. The neutron stars did not cause the explosions; they were caused by the explosions. Choice C is incorrect. There is nothing equivocal or inconclusive about the explosion of a star. Choice D is incorrect. Nothing in the statement suggests that the creation of neutron stars justifies or vindicates the explosion of a star. In addition, harsh is far too weak a word to describe a stellar explosion. Choice E is incorrect. Neutron stars come into existence after a supernova explodes. Thus, they are not precursors or forerunners of the explosion.

14. B. Clarity in explaining complicated financial matters would do a great deal to offset or compensate for shortcomings in a text. Note the use of and linking the positive phrase "sheer importance of his text" with the second blank. This indicates that the second missing word must be a positive term.

15. D. A scholar is by definition erudite or learned. A liar is by definition mendacious or dishonest. Beware answer pairs that are loosely linked. While travelers may meander (stroll or wander aimlessly), they may equally as well proceed directly to their destination. (Defining Characteristic)

16. C. Something feral or wild lacks domestication or taming. Something crude or rough lacks refinement or polish. (Antonym Variant)

17. C. The three men are cited as examples of scholars who were encouraged to resume their earlier researches in black history. Choices A, B, and E are incorrect. None of the three men were identified in the passage with these concerns. Choice D is incorrect. Only Logan is identified with research on blacks in nineteenth-century North Carolina.

18. D. You can arrive at the correct answer by the process of elimination. Statement I is supported by the passage. At the time Bennett and Logan wrote, both the pre-Mayflower period of black history and the nineteenth-century life of blacks in North Carolina were relatively unexplored. Therefore, you can eliminate Choices B and E. Statement II is unsupported by the passage. Bennett's work was a popularization intended for a wide general audience. It was not aimed at academics. Therefore, you can eliminate Choice C. Statement III is supported by the passage. Bennett's work appeared first as a series of magazine articles, then as a book. Logan's work first appeared as a doctoral thesis, then (with revisions) as a book. Therefore, you can eliminate Choice A. Only Choice D is left. It is the correct answer.

19. D. According to the passage, prior to the early 1960s Negro history was not an object of particularly great renown in academia. In the 1950s, the advice given to Blossingame to avoid black history if he desired "a future in the historical profession" seemed wise—graduate students of the caliber of Huggins and Litwack felt an ambivalence about entering the field because of "practical concerns." What these concerns boiled down to was the sense that to choose black history as one's
specialization would be detrimental or harmful to one's career.

20. C. The opposite of destitution (privation; lack of life's necessities) is affluence or wealth. Think of "the poor living in destitute." 


22. C. The passage states that molecules are made of atoms; logically, therefore, an atom is smaller, not larger, than the molecule to which it belongs. Choice A is incorrect. Line 5 states that atoms "have never been seen or graphed." Choice B is incorrect. Lines 21-22 mention the presence of positive electric elements. Choice D is incorrect. Lines 5-8 note the ingenious laboratory experiments that determine its operations or processes. Choice E is incorrect. Lines 14-15 mention the average diameter of a molecule is 1/125 millionth of an inch. Atoms are smaller yet.

23. E. The comparison emphasizes the smallness or minuteness of atoms.

24. C. The satellites circle the planet. The electrons swirl around the proton. As depicted, the relationships are comparable. Choice A is incorrect. A hawk swoops down upon its prey. The proton does not swoop down upon the electrons. Choice B is incorrect. A blueprint is an outline or plan. A framework is a skeletal structure, possibly constructed in accordance with a blueprint. The relationships are not comparable. Choice D is incorrect. Iron filings are drawn or attracted to a magnet. Electrons swirl around a proton. Choice E is incorrect. A compound is made up of elements. A proton is not made up of electrons.

25. D. To gibber (chatter foolishly) is to speak without sense. To vacillate (waver) is to act without resolution (firmness of resolve). (Antonym Variant)

26. D. Something uproarious is by definition extremely amusing. Something reprehensible is by definition extremely disgraceful. (Degree of Intensity)

27. B. If nine-tenths of the works of art in the gallery have their faces turned to the wall, then the visitor to the gallery has no clue whatsoever to what wonders they contain. Similarly, a person un instructed in natural history wanders through the world with no clue whatsoever to nine-tenths of the natural wonders that surround him.

28. D. A spate or flood of examples of fraud suggests that the review system intended to catch such frauds is severely taxed or burdened. 

29. D. The opposite of precipitate or hasty is dilatory or tardy. Think of "a precipitate departure." 

30. B. The opposite of tortuous or winding is direct. Beware eye-catchers, Tortuous has nothing to do with torture. Think of "a tortuous mountain road.

Section 2—Quantitative Ability

Two asterisks (**) indicate an alternative method of solving.


2. B. The only primes whose sum is 12 are 5 and 7, both of which are less than 8. Note that 1 + 11 = 12, but 1 is not a prime. (KEY FACT A2). Column B is greater.

3. A. In any triangle, if one side is longer than a second side, the angle opposite the longer side is greater than the angle opposite the shorter side (KEY FACT A3), so \( \alpha = 12\). Column A is greater. (It is irrelevant that the third angle is 138\(^\circ\)).

4. A. It makes no difference how many students took the test or how many were boys and how many were girls. More than half the boys and more than half the girls scored over 90, so more than half of all the grades were over 90. Column A is greater. 

**Use TACTIC 2, Chapter 12. Assume 7 boys and 11 girls took the exam. Then 11 students (4 boys and 7 girls) got over 90 and the other 7 got 90 or less.

5. D. For problems such as this, always draw a diagram.

![Diagram](image)

The measure of each of the 12 central angles from one number to the next on the clock is
30°. At 1:50 the minute hand is pointing at 10, and the hour hand has gone \( \frac{50}{60} = \frac{5}{6} \) of the way from 1 to 2. Then, from 10 to 1 on the clock is 90°, and from 1 to the hour hand is \( \frac{5}{6} \times 30° = 25° \), for a total of 90° + 25° = 115°.

6. C. The sum of three consecutive integers can be expressed as
\[ n + (n + 1) + (n + 2) = 3n + 3 = 3(n + 1), \]
and so must be a multiple of 3. Only 28, Choice C, is not a multiple of 3.
**Quickly add up sets of three consecutive integers: 4 + 5 + 6 = 15, 5 + 6 + 7 = 18, 6 + 7 + 8 = 21, and so on, and see the pattern (they're all multiples of 3); or cross off the choices as you come to them.

7. E. Set up a table.

<table>
<thead>
<tr>
<th>Time</th>
<th>Nicholas</th>
<th>Sandrine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Now</td>
<td>x</td>
<td>5x</td>
</tr>
<tr>
<td>In 7 years</td>
<td>x + 7</td>
<td>5x + 7</td>
</tr>
</tbody>
</table>

Then
\[ 5x + 7 = 3(x + 7) \Rightarrow 5x + 7 = 3x + 21 \Rightarrow 2x = 14 \Rightarrow x = 7. \]
Sandrine, therefore, is 35.
**Use TACTIC 1, Chapter 11, but since Sandrine is 5 times as old as Nicholas, avoid Choice C, the only answer that is not a multiple of 5. Try Choice B, 20. Then Nicholas is 4. In 7 years, he'll be 11 and Sandrine will be 27, which is less than 3 times as old. Try a larger number: 25 or 35.

8. D. Use TACTIC 4, Chapter 12. Could x and y be equal? Yes; the two small triangles could be right triangles, and x and y could each be 40. Must they be equal? No; see the figure at the right, in which x < y. Neither column is always greater, and the columns are not always equal (D).

9. D. If a and b had to be integers, the greatest \( a + b \) could be is 49 (when the numbers are 1 and 48). However, the variables do not have to be integers. If \( a = 1 \) and \( b = 480 \), then \( ab = 48 \), and \( a + b = 481 \). Neither column is always greater, and the two columns are not always equal (D).

10. B. \( bd = (3^3)(3^4) = 3^{11} \). [KEY FACT A16]
**Use TACTIC 2, Chapter 11. Pick easy-to-use numbers for \( a \) and \( c \); \( a = 1 \) and \( c = 2 \); for example. Then, \( b = 3^1 = 3 \) and \( d = 3^2 = 9 \), so \( bd = 27 \). Check the choices. Only 3\(^{11} \) works.

11. C. Let the number of male and female employees be 3x and 2x, respectively. Then Column A = 20%\( (3x) \) = 6x and Column B = 30%\( (2x) \) = 6x. The columns are equal.
**Do the same thing, except use a number. Assume there are 300 men and 200 women and calculate.

12. C. Mentally, or by using a Venn diagram,

<table>
<thead>
<tr>
<th>Basketball</th>
<th>Volleyball</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

determine the number of girls who play only one sport. 40 play only basketball and 30 play only volleyball. The ratio is 40:30 = \( \frac{4}{3} \). The columns are equal (C).

13. D. Since \( ab \neq 0 \), neither \( a \) nor \( b \) is 0 [KEY FACT A3]. If \( a \) and \( b \) are each 1, then Column A = 4, and Column B = 0; if, however, \( a = 1 \) and \( b = -1 \), then Column A = 0 and Column B = 4. Neither column is always greater, and the two columns are not always equal (D).
**Column A = \( a^2 + 2ab + b^2 \),
Column B = \( a^2 - 2ab + b^2 \).
After subtracting \( a^2 + b^2 \) from each column, we have to compare \( 2ab \) and \(-2ab\); either one could be positive and the other negative.

14. C. In 1996, 50% of eleventh-graders used computers in school at least once a week, and 50% did not. Of the 50% that did not use computers in school at least once a week, 20% of them did use them the following year; 20% of 50% = .20 \times .50 = .10 = 10%. So, in 1997, 60% (50% + 10%) of the twelfth-graders used computers in school at least once a week.

15. E. Of the 3,000,000 fourth-graders in 1990, approximately 70%, or 2,100,000, of them used a computer in school at least once a week. Four years later, in 1994, those 3,000,000 were eighth-graders, and 45%, or 1,350,000, of them used a computer in school at least once a week. This is a difference of 2,100,000 - 1,350,000 = 750,000.
16. C. In each triangle the largest angle is the sum of the two smaller ones (3 = 1 + 2 and 9 = 2 + 7), so each is a 90° angle. The columns are equal (C).

Use TACTIC D2: In ratio problems, write x after each number and solve.
Column A: \(x + 2x + 3x = 180 \Rightarrow 6x = 180 \Rightarrow x = 30 \Rightarrow 3x = 90\).
Column B: \(2x + 7x + 9x = 180 \Rightarrow 18x = 180 \Rightarrow x = 10 \Rightarrow 9x = 90\).

17. B. The perimeter of the shaded region is given as \(4 + 2\pi\). You can easily prove that the lengths of the curved parts of the region are \(2\pi\) and that the straight edges have a total length of 4, but you should just assume these values. Then each side of the square is 2, and its area is 4. From that subtract \(\pi\), the area of a circle (two semicircles) of radius 1.

Since \(\pi\) is slightly greater than 3, then \(4 - \pi\) is less than 1. Column B is greater.

18. C. Use TACTIC 1, Chapter 10. Draw a diagram. Since the distance between \((-4,1)\) and \((2,1)\) is 6, the diameter of the circle is 6 and the radius is 3. Then the area is \(\pi(3)^2 = 9\pi\).

19. E. By TACTIC E1, if the average of 5 numbers is 60, their sum is \(5 \times 60 = 300\). The 4 given numbers add up to 100 (10 + 20 + 30 + 40), so the fifth one, \(x\), is 200 (300 - 100).

Use TACTIC 1, Chapter 11. Test the choices, starting with 100. The average of 10, 20, 30, 40, and 100 is 40. That’s too small. Eliminate Choices A, B, and C, and try a larger number—150 or 200; 200 works.

20. A. Each of the given statements is true except Choice A.
(A) In 1991, more than 50% of the adults whose highest degree was at least a bachelor’s degree participated in adult education, whereas among those whose highest educational attainment was a high school diploma or GED (high school equivalency diploma) fewer than 25% participated.

(B) From 1991 to 1995, among those adults whose highest educational attainment was grades 9-12, without earning a high school diploma, the rate of participation in adult education increased from about 15% to 23%, an increase of about 50%. None of the other groups had nearly that great an increase.

(C) Since the population of the country grew between 1991 and 1995, and the rate of participation in adult education programs increased in every category, the total number of people participating had to increase.

(D) From 1991 to 1995 the rate of participation in adult education for those who had attained at least a bachelor’s degree increased from about 52% to 58%, the least increase of any group on both an absolute and percent basis.

(E) Without knowing how many adults have earned a college degree and how many have attended some college without earning a college degree, it is impossible to make this conclusion. For example, 50% of 100,000,000 is much more than 58% of 50,000,000.

21. E. 50% of 50,000,000 = 25,000,000;
20% of 20,000,000 = 4,000,000.
25,000,000 - 4,000,000 = 21,000,000.

22. E. The total rent is \(a + b\), so Bob’s fractional share is \(\frac{a}{a+b}\). To convert to a percent, simply multiply by 100%: \(\frac{100a}{a+b}\%\).

Use TACTIC 2, Chapter 11. Pick two easy-to-use numbers. If Bob pays $1 and Jack pays $2, then Bob pays \(\frac{1}{3}\) or \(33\frac{1}{3}\%\) of the rent.

Only \(\frac{100a}{a+b}\%\) is equal to \(33\frac{1}{3}\%\) when \(a = 1\) and \(b = 2\).

23. C. Draw diagrams.

The triangles in the two columns have the same base, \(AB\), and the same height. \(BC\), the distance between the two parallel sides. The areas of \(\triangle ABC\) and \(\triangle ABE\) are equal. The columns are equal (C).

24. A. The area of each face of the large red cube is \((3)^2 = 9\). Therefore, the total surface area is \(6 \times 9 = 54\). The surface area of each small cube is \((1)^2 = 6\). So, the total surface area of the 27 small cubes is \(27 \times 6 = 162\). Of the 162 small faces, 54 are painted red and \(162 - 54 = 108\) are unpainted. Column A is greater.
25. B. Since the sum of two two-digit numbers must be less than 200, A has to be 1, and the sum is 111. Therefore, $B + D$, the quantity in column B, is 111, whereas $A + C$, the quantity in Column A, is 10 (which when added to the 1 that was carried from the units digit gives 11). Column B is greater.

26. A. $a + 10\% (a) = a + .1a = 1.1a$. Also, $b - 10\% (b) = b - .1b = .9b$. Then, $1.1a = .9b$.

$$\frac{a}{b} = \frac{.9}{1.1} = \frac{9}{11}$$

***If after increasing $a$ and decreasing $b$ the results are equal, $a$ must be smaller than $b$. So, the ratio of $a$ to $b$ must be less than 1.

Eliminate Choices C, D, and E. Now, either test Choices A and B or just guess. To test B, pick 2 numbers in the ratio of 9 to 10—90 and 100, for example: 90 increased by 10% is 99. 100 decreased by 10% is 90. They’re not equal. Eliminate Choice B. The answer is Choice A. (110 decreased by 10% is 99.)

27. B. Let $x$ and $y$ be the radii of the two semicircles. Then the legs of right triangle $ACB$ are $2x$ and $2y$, and by the Pythagorean theorem $(2x)^2 + (2y)^2 = 4$. Then $4x^2 + 4y^2 = 16$, and $x^2 + y^2 = 4$. Since the area of a semicircle of radius $r$ is $\frac{1}{2} \pi r^2$, the sum of the areas of the semicircles is

$$\frac{1}{2} \pi x^2 + \frac{1}{2} \pi y^2 = \frac{1}{2} \pi (x^2 + y^2) = \frac{1}{2} \pi (4) = 2\pi.$$ **Use TACTIC 2, Chapter 11.** Pick numbers $a$ and $b$ for the legs of the triangle. For example, if $a$ is 2, then by the Pythagorean theorem $2^2 + b^2 = 4$.

28. D. For $(m - 5)(m - 45)$ to be positive, either both factors are positive or both factors are negative. For $(m - 5)$ to be negative, $m$ must be less than 5, so $m = 1, 2, 3, or 4$ (4 values). For $(m - 45)$ to be positive, $m$ must greater than 45, so $m = 46, 47, \ldots, 100$ (55 values). The answer is 59. [Note that from 46 to 100 there are 100 - 46 + 1 = 55 integers, just as there are 4 - 4 + 1 = 4 integers from 1 to 4 (KEY FACT 01).]

**Section 3—Analytical Writing**

There are no “correct answers” to this section.
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