PRACTICING TO TAKE THE

GRE® GENERAL TEST — No. 7

AN OFFICIAL PUBLICATION OF THE GRE BOARD

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INCLUD

- Three General Tests administered in 1988-89
- Instructions and answer sheets
- Percent of examinees answering each question correctly

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Published by Educational Testing Service
for the Graduate Record Examinations Board

The Graduate Record Examinations Program offers a General Test measuring verbal, quantitative, and analytical abilities and Subject Tests measuring achievement in the following fifteen fields:

Biology	Geology	Physics
Chemistry	History	Political Science
Computer Science	Literature in English	Psychology
Economics	Mathematics	Sociology
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The tests are administered by Educational Testing Service under policies determined by the Graduate Record Examinations Board, an independent board affiliated with the Association of Graduate Schools and the Council of Graduate Schools.

The Graduate Record Examinations Board has made available for purchase two official practice books, each containing three General Tests, of which this book is one. The Board has also made available one full-length edition of each Subject Test. The Subject Test practice books and *Practicing to Take the General Test — No. 6* may be purchased by using the order form on page 175.

Individual booklets describing each test and including sample questions are available free of charge for all fifteen Subject Tests. The *GRE Information Bulletin,* also available free of charge, contains the General Test that was administered in December 1984 and several examples of each type of question used in the test with explanations of how the answers are derived. Copies of the *Bulletin* and the Subject Test Descriptive Booklets may be requested by writing to:

Graduate Record Examinations Program
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PRACTICING TO TAKE THE GRE GENERAL TEST

The General Test is intended to measure verbal, quantitative, and analytical skills. Although a brief review will not dramatically change the abilities you have acquired over years, use of this book may help you evaluate your ability level and identify areas for further study before you take the General Test.

This practice book contains the three GRE® General Tests that were given at GRE test centers in December 1988, February 1989, and June 1989. The tests are complete except for the single section in each test that was not counted in the scoring. The location of the nonscored section varies from test to test. So, when you take the General Test to earn scores, the sections may not be in the same order as these tests are.

The practice book also contains detailed descriptions of the nine types of questions used in the General Test and suggested strategies for answering them. Forty-eight sample questions with explanations illustrate these strategies.

On the following pages are suggestions for the use of this practice book. To obtain maximum benefit, try the following:

- Take the first test, score it, and compare your scores with the scores of other people who took the test.
- Read the practice material on pages 5-20.
- Take the second test, score it, and compare these scores with your previous scores to note your improvement and any persistent areas of weakness.
- Review again the sample questions and explanations related to the problems you've encountered. This will help guide you to further study.
- When you are ready, take the third test. The scores you earn on this test are the best estimate of what your performance might be if you take the General Test under standard conditions in the near future.

TEST-TAKING STRATEGY

Your test taking strategy may affect your scores. In preparing to take the General Test, it is important that you become thoroughly familiar with the directions in the practice tests because they are the same as those in the actual test. Once you have done this, it will still be necessary to read the directions for each group of questions carefully during the actual test administration.

Work as rapidly as you can without being careless. Check frequently to make sure you are marking your answers in the appropriate rows on your answer sheet. Since all questions carry the same weight, do not spend too much time pondering questions you find extremely difficult or unfamiliar.

Your scores on the General Test will be determined by the number of questions for which you select the best answer from the choices given. Questions for which you mark no answer or more than one answer are not counted in scoring. Nothing is subtracted if you answer a question incorrectly. Therefore, to maximize your scores, it is better for you to guess at the answer than not to respond at all.

PROCEDURES FOR PRACTICING

To get an idea of your performance at this time, before further review, take the first practice test under conditions that simulate those at an actual test administration and evaluate the results.

Allow 30 minutes to complete each section of the test. Work on only one section of the test during each 30 minute time period. Do not go back to a previous section or work on a subsequent section. (If you do so at an actual test administration, you may be dismissed from the test.) Once you have completed the third section of the test, you may take a 10- to 15-minute break.

Do not use dictionaries or other books, compasses, rulers, slide rules, calculators, calculator/watch combinations, or any other aids since you will not be permitted to use them at a test center.

When you are ready to begin the test:

- Remove an answer sheet from the back of this book.
- Read the back cover of the test book (page 68) and complete the identification portion of the answer sheet.
- Read the inside back cover of the test book (page 67).
- Note the time and begin testing.

Once you have completed the test, determine your score and evaluate your performance, following the procedures outlined under the next two headings. If you find weaknesses in any types of questions, review the relevant sample questions and explanations. When you are ready, take the second test following the same procedures as you did with the first. Repeat the process of scoring and evaluation to determine if your practice proved beneficial. If you still note weaknesses, review again those sample questions and explanations and undertake whatever further study and review you consider necessary. When you are ready to take the third test, again try to simulate actual testing conditions. Take the test, score your answer sheet, and convert the scores. These scores are the best estimate of what your performance might be if you take the General Test in the near future.

Data on the General Test show that scores often rise, usually by only a small amount, as a result of taking the test more than once, although scores of some examinees do decline. By preparing to take the General Test as suggested here, you may be able to do better than you would if you took the test without any initial preparation.

HOW TO SCORE YOUR PRACTICE TEST

On the page following each test is a list of the correct answers. Match your answer to each question against the answer given in the list, crossing out questions you answered incorrectly or omitted. For test GR89-10, add the number of your correct answers in Sections 1 and 5 to obtain your raw verbal score, in Sections 2 and 6 to obtain your raw quantitative score, and in Sections 3 and 7 to obtain your raw analytical ability score. For test GR89-11, add the number of your correct answers in Sections 2 and 5 to obtain your raw verbal score, in Sections 3 and 7 to obtain your raw quantitative score, and in Sections 1 and 6 to obtain your raw analytical ability score. For GR89-12, add the number of your correct answers in Sections 1 and 5 to obtain your raw verbal score, in Sections 2 and 6 to obtain your raw quantitative score, and in Sections 3 and 7 to obtain your raw analytical ability score. In the conversion table for each test, you will find the scaled scores that correspond to your raw scores on that test. Convert your raw scores to scaled scores.

EVALUATING YOUR PERFORMANCE

To evaluate your performance, you may compare your scaled scores with those of others who have taken the General Test at GRE test centers between October 1, 1985, and September 30, 1988. The score conversion tables on pages 70, 118, and 168 indicate for each scaled score shown, the percentages of examinees who earned lower scores. For example, in the table on page 70, in the percent column next to the verbal ability scaled score 460 is the percent 45. This means that 45 percent of the examinees tested between October, 1985, and September, 1988, earned verbal ability scores below 460. For each score you earned on this practice test, note the percent of GRE examinees who earned lower scores. This is a reasonable indication of your rank among GRE General Test examinees if you follow the test-taking suggestions in this practice book.

The P + that appears to the right of the correct answer shown for each question in the test you have taken is based on the percent of examinees who actually took that edition of the test and answered the question correctly. (This percent, however, has been adjusted so that it is an estimate of the P + that would have been obtained if all examinees tested between October 1985 and September 1988 had had the opportunity to answer the question.) This information enables you to see how other examinees performed on each question. It can also help identify content areas in which you need more practice and review.

It is important to realize that ability patterns differ for people who have different interests and experience. The second table on page 168 shows you the average scores for people in various categories of intended graduate major fields. You can see that those whose interests lie in the physical sciences, which are highly mathematical, generally have relatively high scores in quantitative ability, whereas those interested in the humanities generally have relatively high verbal scores. Find the major field category most closely related to your career goal to see how your performance compares with that of others who are striving for similar goals.

ADDITIONAL INFORMATION

If you have any questions about any of the information in this book, please write to:

Graduate Record Examinations Program
P.O. Box 6000
Princeton, NJ 08541-6000

TEST PREPARATION MATERIAL

Purpose of the GRE General Test

The GRE General Test measures certain developed verbal, quantitative, and analytical abilities that are important for academic achievement. In doing so, the test necessarily reflects the opportunities and efforts that have contributed to the development of those abilities.

The General Test is only one of several means of evaluating likely success in graduate school. It is not intended to measure inherent intellectual capacity or intelligence. Neither is it intended to measure creativity, motivation, perseverance, or social worth. The test does, however, make it possible to compare students with different backgrounds. A GRE score of 500, for example, has the same meaning whether earned by a student at a small, private liberal arts college or by a student at a large public university.

Because several different forms (or editions) of the test are in active use, all students do not receive exactly the same test edition. However, all editions measure the same skills and meet the same specifications for content and difficulty. The scores from different editions are made comparable to one another by a statistical procedure known as equating. This process makes it possible to assure that all reported scores of a given value denote the same level of developed ability regardless of which edition of the test is taken.

Since students have wide-ranging backgrounds, interests, and skills, the *verbal sections* of the General Test use questions from diverse areas of experience. The areas range from the activities of daily life to broad categories of academic interest such as the sciences, social studies, and the humanities. Knowledge of high school level arithmetic, plane geometry, and algebra provides adequate preparation for the *quantitative sections* of the test. Questions in the *analytical sections* measure analytical skills developed in virtually all fields of study. No formal training in logic or methods of analysis is needed to do well in these sections.

How the Test is Developed

The General Test is composed of questions formulated by specialists in various fields. Each question is reviewed by several independent critics and revised if necessary. New questions are pretested in actual tests under standard testing conditions.

Questions appearing in a test for the first time are analyzed for usefulness and weaknesses; they are not used in computing scores. Questions that perform satisfactorily become part of a pool from which a new edition of the General Test will be assembled at a future date. Those that do not perform well are discarded or are rewritten to correct the flaws and tried out again.

When a General Test has been assembled, it is reviewed by other subject matter and test specialists from inside and outside ETS. After any problems raised in these reviews have been resolved, the test goes to a test editor, who may make further suggestions for change.

All reviewers except the editors, copyreaders, and proofreaders must attempt to answer each question without the help of the answer key. Thus, each reviewer "takes the test," uninfluenced by knowledge of what the question writer or test assembler believed each answer should be. The answer key is certified as official only after the reviewers have agreed independently on the best answer for each question.

The extensive procedure described above has been developed to assure that every question in the General Test is appropriate and useful and that the combination of questions is satisfactory. Even so, the appraisal is not complete until after the new edition has been administered and subjected to a rigorous item analysis to see whether each question yields the expected results.

Such an appraisal sometimes reveals that a question is not satisfactory after all. It may be ambiguous, require information beyond the scope of the test, or be otherwise unsuitable. Answers to such a question are not used in computing scores.

Description of the General Test

In this description, several examples of each type of question included in the verbal, quantitative, and analytical measures of the GRE General Test are discussed and explanations of the correct answers are provided.

Verbal Ability

The verbal ability measure is designed to test one's ability to reason with words in solving problems. Reasoning effectively in a verbal medium depends primarily upon the ability to discern, comprehend, and analyze relationships among words or groups of words and within larger units of discourse such as sentences and written passages. Such factors as knowledge of words and practice in reading will, of course, define the limits within which one can reason using these tools.

The verbal measure consists of four question types: analogies, antonyms, sentence completions, and reading comprehension sets. The examples of verbal questions in this section do not reflect precisely the difficulty range of the verbal measure. A greater number of difficult questions than would be encountered in the test have been included to provide practice in approaching more complex verbal questions.

ANALOGIES

Analogy questions test the ability to recognize relationships among words and the concepts they represent and to recognize when these relationships are parallel. The process of eliminating four incorrect answer choices requires one to formulate and then analyze the relationships linking six pairs of words (the given pair and the five answer choices) and to recognize which answer pair is most nearly analogous to the given pair. Some examples of relationships that might be found in analogy questions are kind, size, contiguity, or degree.

Some approaches that may be helpful in answering analogy questions:

- Before looking at the answer choices, try to establish a precise relationship between the words in the given pair. It is usually helpful to express that relationship in a phrase or sentence; for example, the relationship between the word pair THRIFTY : MISERLY could be expressed as "to be *miserly* is to be *thrifty* to an excessive degree." Next, look for the answer choice with the pair of words whose relationship is closest to that of the given pair and can be expressed in a similar fashion.

- Occasionally, more than one of the answer choices may seem at first to express a relationship similar to that of the given pair. Go back to the given pair and try to state the relationship more precisely or identify some aspect of the relationship between the given pair of words that is paralleled in only *one* answer choice pair.

- Remember that a single word can have several different meanings. If you are unable to establish a relationship between the given pair or to find a parallel relationship among the answer choice pairs, check to be sure you have not overlooked a possible second meaning for one of the words.

- *Never* decide on the best answer without reading *all* the answer choices. If you do not read all the answer choices, you may miss an answer choice that would have appeared superior to the choice you made or might have prompted you to reevaluate your understanding of the question.

- Practice recognizing and formulating relationships between word pairs. You can do this with the following sample questions and with the analogy questions in the practice test in this booklet.

Directions: **In each of the following questions, 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.**

1. COLOR : SPECTRUM :: **(A) tone : scale (B) sound : waves (C) verse : poem (D) dimension : space (E) cell : organism**

The relationship between *color* and *spectrum* is not merely that of part to whole, in which case (E) or even (C) might be defended as correct. A *spectrum* is made up of a progressive, graduated series of colors, as a *scale* is of a progressive, graduated sequence of tones. Thus, (A) is correct. Here, the best answer must be selected from a group of fairly close choices.

2. ABDICATION : THRONE : : **(A) paradox : argument (B) competition : match (C) defeat : election (D) bequest : will (E) resignation : office**

The relationship between *abdication* and *throne* is easy to perceive and only the correct answer, (E), expresses a similar relationship. (C) is incorrect because *defeat* is not voluntary, as are *abdication* and *resignation* and because *election*, the process of attaining a particular status, is not parallel to *throne* and *office*.

3. DESICCATE : MOISTURE : : **(A) pulverize : dust (B) varnish : deterioration (C) shatter : shards (D) bend : contents (E) darken : light**

To *desiccate* an object is to cause it to dry up by depriving it of *moisture*. Among the answer choices, only (E) has a similar relationship between its two words: to *darken* an object is to make it darker by depriving it of *light*. In the other four choices, the first words, *pulverize, varnish, shatter,* and *bend,* are parallel to *desiccate* in that they describe actions that alter the condition of an object, but the second word is not something of which an object is deprived as a result of the action the first word describes. In (A) and (C), the second words, *dust* and *shards,* are the results of pulverizing and shattering, respectively. *Deterioration* in (B) may be prevented through varnishing, and *contents* in (D) bears no relationship to bending that resembles the relationship between *desiccate* and *moisture*.

4. HEADLONG : FORETHOUGHT : : **(A) barefaced : shame (B) mealymouthed : talent (C) heartbroken : emotion (D) levelheaded : resolve (E) singlehanded : ambition**

The difficulty of this question probably derives primarily from the complexity of the relationship between *headlong* and *forethought* rather than from any inherent difficulty in the words. Analysis of the relationship between *headlong* and *forethought* reveals the following: an action or behavior that is *headlong* reveals lack of *forethought*. Only answer choice (A) displays the same relationship between its two terms.

ANTONYMS

Although antonym questions test knowledge of vocabulary more directly than do any of the other verbal question types, the purpose of the antonym questions is to measure not merely the strength of one's vocabulary but also the ability to reason from a given concept to its opposite. Antonyms may require only rather general knowledge of a word or they may require one to make fine distinctions among answer choices. Antonyms are generally confined to nouns, verbs, and adjectives; answer choices may be single words or phrases.

Some approaches that may be helpful in answering antonym questions:

- Remember that you are looking for the word that is the most nearly *opposite* to the given word; you are *not* looking for a synonym. Since many words do not have a precise opposite, you must look for the answer choice that expresses a concept *most nearly* opposite to that of the given word. For this reason, antonym questions are not measures of rote vocabulary knowledge; rather, these questions ask you to evaluate shades of meaning and the interaction of meaning between words.
- In some cases more than one of the answer choices may appear at first to be opposite to the given word. Questions that require you to make fine distinctions among two or more answer choices are best handled by defining more precisely or in greater detail the meaning of the given word.
- It is often useful, in weighing answer choices, to make up a sentence using the given word; if you do not know the precise dictionary meaning of a word but have a general sense of how the word might be used, try to make up a phrase or sentence with the word. Substituting the answer choices in the phrase or sentence and seeing which best "fits," in that it reverses the meaning or tone of the sentence or phrase, may help you determine the best answer.
- Remember that a particular word may have more than one meaning, so if you are unable to find an answer choice that appears opposite to the given word, examine all the words for possible second meanings.
- Use your knowledge of root, prefix, and suffix meanings to help you determine the meanings of words with which you are not entirely familiar.

Directions: **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. Since 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.**

5. DIFFUSE : **(A) concentrate (B) contend (C) imply (D) pretend (E) rebel**

The answer is (A). *Diffuse* means to permit or cause to spread out; only (A) presents an idea that is in any way opposite to *diffuse*.

6. COINCIDENCE : **(A) depletion (B) incongruity (C) pessimism (D) ill fortune (E) lack of ideas**

One meaning of *coincidence* is being in harmony or accord; another is corresponding in nature, character, or function. *Incongruity,* the correct answer, means lack of harmony or lack of conformity. Answer choice (D) may seem plausible at first glance since a *coincidence* of events is often a pleasant chance occurrence ("good luck" as opposed to "bad luck"), but careful reflection reveals that a *coincidence* is not necessarily a positive phenomenon.

7. MULTIFARIOUS : **(A) deprived of freedom (B) deprived of comfort (C) lacking space (D) lacking stability (E) lacking diversity**

Multifarious means having or occurring in great variety, so the correct answer is (E). Even if one is not entirely familiar with the meaning of *multifarious,* it is possible to use the clue provided by "multi-" to help find the right answer to this question.

8. PARSIMONIOUS : **(A) initial (B) vegetative (C) prodigal (D) affluent (E) impromptu**

The answer to this question is (C); *parsimonious* means frugal to the point of stinginess, and *prodigal,* which means

extravagant to the point of wastefulness, is the only answer choice opposite in meaning. At first, answer choice (D), *affluent,* may seem plausible in that it may be thought that wealth is an opposite concept to frugality—but it is well known that not all wealthy persons are generous.

SENTENCE COMPLETIONS

The purpose of the sentence completion questions is to measure the ability to recognize words or phrases that both logically and stylistically complete the meaning of a sentence. In deciding which of five words or sets of words can best be substituted for blank spaces in a sentence, one must analyze the relationships among the component parts of the incomplete sentence. One must consider each answer choice and decide which completes the sentence in such a way that the sentence has a logically satisfying meaning and can be read as a stylistically integrated whole.

Sentence completion questions provide a context within which to analyze the function of words as they relate to and combine with one another to form a meaningful unit of discourse.

Some approaches that may be helpful in answering sentence completion questions:

- Read the entire sentence carefully before you consider the answer choices; be sure you understand the ideas expressed in the sentence and examine the sentence for possible indications of tone (irony, humor, and the like).

- Before reading the answer choices you may find it helpful to fill in the blanks with a word or words of your own that complete the meaning of the sentence. Then examine the answer choices to see if any of them parallels your own completion of the sentence.

- Pay attention to grammatical clues in the sentence. For example, words like *although* and *nevertheless* indicate that some qualification or opposition is taking place in the sentence, whereas *moreover* implies an intensification or support of some idea in the sentence. Pay attention also to the style of, and choice of words in, the sentence; sometimes determining the best answer depends in whole or in part on considerations of stylistic consistency among the parts of the sentence.

- If a sentence has two blanks, be sure that *both* parts of your answer choice fit logically and stylistically into the sentence. Do not choose an answer on the basis of the fit of the first word alone.

- When you have chosen an answer, read the complete sentence through to check that it has acquired a logically and stylistically satisfying meaning.

Directions: **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.**

9. Early ------- of hearing loss is ------- by the fact that the other senses are able to compensate for moderate amounts of loss, so that people frequently do not know that their hearing is imperfect.

(A) discovery . . indicated
(B) development . . prevented
(C) detection . . complicated
(D) treatment . . facilitated
(E) incidence . . corrected

The statement that the other senses compensate for partial loss of hearing indicates that the hearing loss is not *prevented* or *corrected*; therefore, choices (B) and (E) can be eliminated. Furthermore, the ability to compensate for hearing loss certainly does not facilitate the early *treatment* (D) or the early *discovery* (A) of hearing loss. It is reasonable, however, that early *detection* of hearing loss is *complicated* by the ability to compensate for it. The correct answer is (C).

10. The ------- science of seismology has grown just enough so that the first overly bold theories have been -------.

(A) magnetic . . accepted
(B) fledgling . . refuted
(C) revolutionary . . analyzed
(D) predictive . . protected
(E) exploratory . . recalled

At first reading, there may appear to be several answer choices that "make sense" when substituted in the blanks of the sentence. (A) and (D) can be dismissed fairly readily when it is seen that *accepted* and *protected* are not compatible with *overly bold* in the sentence. The sentence yielded by (C) is logically more acceptable but not as strong as the sentences yielded by (B) and (E). Of these two latter choices, (B) is superior on stylistic grounds: theories are not *recalled* (E), and *fledgling* (B) reflects the idea of growth present in the sentence.

11. If her characters are still being written about as unfathomable riddles, it is to be attributed more to a human passion for ------- than to dubious complexities of her art.

(A) conundrums (B) platitudes (C) scapegoats (D) euphemisms (E) stereotypes

The answer to this question is (A). While any of the answer choices may be argued to be an object of human passion, only *conundrums* enables the sentence *as a whole* to acquire a coherent meaning. It is necessary, in choosing an answer, to complete the sentence in such a way as to make clear why the writer's characters are seen as *unfathomable riddles.* A human penchant for *conundrums,* or puzzling questions whose answers can only be conjectural, will account for this.

READING COMPREHENSION

The purpose of the reading comprehension questions is to measure the ability to read with understanding, insight, and discrimination. This type of question explores the examinee's ability to analyze a written passage from several perspectives, including the ability to recognize both explicitly stated elements in the passage and assumptions underlying statements or arguments in the passage as well as the implications of those statements or arguments. Because the written passage upon which reading comprehension questions are based presents a sustained discussion of a particular topic, there is ample context for

analyzing a variety of relationships; for example, the function of a word in relation to a larger segment of the passage, the relationships among the various ideas in the passage, or the relation of the author to his or her topic or to the audience.

There are six types of reading comprehension questions. These types focus on (1) the main idea or primary purpose of the passage; (2) information explicitly stated in the passage; (3) information or ideas implied or suggested by the author; (4) possible application of the author's ideas to other situations; (5) the author's logic, reasoning, or persuasive techniques; and (6) the tone of the passage or the author's attitude as it is revealed in the language used.

In each edition of the General Test, there are two relatively long reading comprehension passages, each providing the basis for answering seven or eight questions, and two relatively short passages, each providing the basis for answering three or four questions. The four passages are drawn from four different subject matter areas: the humanities, the social sciences, the biological sciences, and the physical sciences.

Some approaches that may be helpful in answering reading comprehension questions:

- Since reading passages are drawn from many different disciplines and sources, you should not expect to be familiar with the material in all the passages. However, you should not be discouraged by encountering material with which you are not familiar; questions are to be answered on the basis of the information provided in the passage, and you are not expected to rely on outside knowledge, which you may or may not have, of a particular topic. You may, however, want to save for last a passage that seems particularly difficult or unfamiliar.
- There are different strategies for approaching reading comprehension questions; you must decide which works most effectively for you. You might try different strategies as you do the reading comprehension questions in the practice test in this booklet. Some different strategies are: reading the passage very closely and then proceeding to the questions; skimming the passage, reading quickly through the questions, and then rereading the passage closely; and reading the questions first, then reading the passage closely. You may find that different strategies work better for different kinds of passages; for example, it might be helpful with a difficult or unfamiliar passage to read through the questions first.
- Whatever strategy you choose, you should analyze the passage carefully before answering the questions. As with any kind of close and thoughtful reading, you should be sensitive to clues that will help you understand less explicit aspects of the passage. Try to separate main ideas from supporting ideas or evidence; try also to separate the author's own ideas or attitudes from information he or she is simply presenting. It is important to note transitions from one idea to the next and to examine the relationships among the different ideas or parts of the passage: Are they contrasting? Are they complementary?, for example. You should consider both the points the author makes and the conclusions he or she draws and also how and why those points are made or conclusions drawn.
- You may find it helpful to underline or mark key parts of the passage. For example, you might underline main ideas or important arguments or you might circle transitional words that will help you map the logical structure of the passage (*although, nevertheless, correspondingly,* and the like) or descriptive words that will help you identify the author's attitude toward a particular idea or person.
- Read each question carefully and be certain that you understand exactly what is being asked.
- *Always* read all the answer choices before selecting the best answer.
- The best answer is the one that most accurately and most completely answers the question being posed. Be careful not to pick an answer choice simply because it is a true statement; be careful also not to be misled by answer choices that are only partially true or only partially satisfy the problem posed in the question.
- Answer the questions on the basis of the information provided in the passage and do not rely on outside knowledge. Your own views or opinions may sometimes conflict with the views expressed or the information provided in the passage; be sure that you work within the context provided by the passage. You should not expect to agree with everything you encounter in reading passages.

Directions: The passage is followed by questions based on its content. After reading the passage, choose the best answer to each question. Answer all questions following the passage on the basis of what is *stated* or *implied* in the passage.

Picture-taking is a technique both for annexing the objective world and for expressing the singular self. Photographs depict objective realities that already exist, though only the camera can disclose them. And they depict an individual photographer's temperament, discovering itself through the camera's cropping of reality. That is, photography has two antithetical ideals: in the first, photography is about the world and the photographer is a mere observer who counts for little; but in the second, photography is the instrument of intrepid, questing subjectivity and the photographer is all.

These conflicting ideals arise from a fundamental uneasiness on the part of both photographers and viewers of photographs toward the aggressive component in "taking" a picture. Accordingly, the ideal of a photographer as observer is attractive because it implicitly denies that picture-taking is an aggressive act. The issue, of course, is not so clear-cut. What photographers do cannot be characterized as simply predatory or as simply, and essentially, benevolent. As a consequence, one ideal of picture-taking or the other is always being rediscovered and championed.

An important result of the coexistence of these two ideals is a recurrent ambivalence toward photography's means. Whatever the claims that photography might make to be a form of personal expression on a par with painting, its originality is inextricably linked to the powers of a machine. The steady growth of these powers has made possible the extraordinary informativeness and imaginative formal beauty of many photographs, like Harold Edgerton's high-speed photographs of a bullet hitting its target or of the swirls and eddies of a tennis stroke. But as cameras become more sophisticated, more automated, some photographers are tempted to disarm themselves or to suggest that they are not really armed, preferring to

submit themselves to the limits imposed by premodern camera technology because a cruder, less high-powered machine is thought to give more interesting or emotive results, to leave more room for creative accident. For example, it has been virtually a point of honor for many photographers, including Walker Evans and Cartier-Bresson, to refuse to use modern equipment. These photographers have come to doubt the value of the camera as an instrument of "fast seeing." Cartier-Bresson, in fact, claims that the modern camera may see too fast.

This ambivalence toward photographic means determines trends in taste. The cult of the future (of faster and faster seeing) alternates over time with the wish to return to a purer past—when images had a handmade quality. This nostalgia for some pristine state of the photographic enterprise is currently widespread and underlies the present-day enthusiasm for daguerreotypes and the work of forgotten nineteenth-century provincial photographers. Photographers and viewers of photographs, it seems, need periodically to resist their own knowingness.

12. According to the passage, the two antithetical ideals of photography differ primarily in the

(A) value that each places on the beauty of the finished product
(B) emphasis that each places on the emotional impact of the finished product
(C) degree of technical knowledge that each requires of the photographer
(D) extent of the power that each requires of the photographer's equipment
(E) way in which each defines the role of the photographer

The answer to this question is (E). Photography's two ideals are presented in lines 7-12. The main emphasis in the description of these two ideals is on the relationship of the photographer to the enterprise of photography, with the photographer described in the one as a passive observer and in the other as an active questioner. (E) identifies this key feature in the description of the two ideals—the way in which each ideal conceives or defines the role of the photographer in photography. (A) through (D) present aspects of photography that are mentioned in the passage, but none of these choices represents a primary difference between the two ideals of photography.

13. According to the passage, interest among photographers in each of photography's two ideals can be described as

(A) rapidly changing
(B) cyclically recurring
(C) steadily growing
(D) unimportant to the viewers of photographs
(E) unrelated to changes in technology

This question requires one to look for comments in the passage about the nature of photographers' interest in the two ideals of photography. While the whole passage is, in a sense, about the response of photographers to these ideals, there are elements in the passage that comment specifically on this issue. Lines 21-23 tell us that the two ideals alternate in terms of their perceived relevance and value, that each ideal has periods of popularity and of neglect. These lines support (B). Lines 24-26 tell us that the two ideals affect attitudes toward "photography's means," that is, the technology of the camera (E), therefore, cannot be the correct answer. In lines 49-53, attitudes toward photographic means (which result from the two ideals) are said to alternate over time; these lines provide further support for B. (A) can be eliminated because, although the passage tells us that the interest of photographers in each of the ideals fluctuates over time, it nowhere indicates that this fluctuation or change is rapid. Nor does the passage say anywhere that interest in these ideals is growing; the passage *does* state that the powers of the camera are steadily growing (lines 29-30), but this does not mean that interest in the two ideals is growing. Thus (C) can be eliminated. (D) can be eliminated because the passage nowhere states that reactions to the ideals are either important or unimportant to viewers' concerns. Thus (B) is the correct answer.

14. Which of the following statements would be most likely to begin the paragraph immediately following the passage?

(A) Photographers, as a result of their heightened awareness of time, are constantly trying to capture events and actions that are fleeting.
(B) Thus the cult of the future, the worship of machines and speed, is firmly established in spite of efforts to the contrary by some photographers.
(C) The rejection of technical knowledge, however, can never be complete and photography cannot for any length of time pretend that it has no weapons.
(D) The point of honor involved in rejecting complex equipment is, however, of no significance to the viewer of a photograph.
(E) Consequently the impulse to return to the past through images that suggest a handwrought quality is nothing more than a passing fad.

Answering this question requires one to think about where the discussion in the passage as a whole is moving and in particular where the final paragraph points. The last two paragraphs discuss the effect of the two ideals of photography on photographers' attitudes toward the camera. The final paragraph describes two such attitudes, or trends in taste (or in which the technology of today's camera is valued and one in which it is seen as a handicap), and tells us that these two attitudes alternate, with the second currently predominating. (B) and (E) can be eliminated because they both suggest that the first attitude will prevail, thus contradicting information in the last paragraph. (A) is not connected in any way to the discussion of attitudes toward the use of the present-day camera and so is not a good choice. (D) appears related to the previous material in the passage in that it discusses the second attitude; however, it introduces an idea—consideration of the viewer—that has not been developed in the passage. (C), the correct answer, is superior not only because it comments on the second attitude but also because it reiterates the idea that neither attitude will prevail. (C) is strengthened through its stylistic relation to earlier elements in the passage: the use of the word *weapons* recalls the references in lines 36 and 37 to photographers as *armed* with cameras.

Quantitative Ability

The quantitative sections of the General Test are designed to measure basic mathematical skills, understanding of elementary mathematical concepts, and ability to reason quantitatively

nd to solve problems in a quantitative setting. The mathemat- s required does not extend beyond that assumed to be com- non to the mathematics background of almost all examinees. he questions include three broad content areas: arithmetic, algebra, and geometry. Although a question in these areas may e posed in either English or metric units of measure, neither he knowledge required for converting units in one system to nits in another system, nor the ability to convert from one unit o another in the same system, is tested. If an answer to a ques- tion is expected to be in a unit of measure different from the nit in which the question is posed, a relationship between the nits is provided unless the relationship is a common one, such as minutes to hours.

ARITHMETIC

Questions classified as *arithmetic* include those involving the following topics: arithmetic operations (addition, subtraction, multiplication, division, and nonnegative powers) on rational numbers, estimation, percent, average, interpretation of graphs and tables, properties of numbers (such as those relating to odd and even integers, primes, and divisibility), factoring, and elementary counting and probability.

Some facts about numbers that might be helpful. An odd integer power of a negative number is negative, and an even integer power is positive; for example, $(-2)^3 = -8$, but $(-2)^2 = 4$.

Squaring a number between 0 and 1 (or raising it to a higher power) results in a smaller number; for example, $(\frac{1}{3})^2 = \frac{1}{9}$, and $(0.5)^3 = 0.125$.

The sum and product of even and odd integers will be even or odd depending on the operation and the kinds of integers; for example, the sum of an odd integer and an even integer is odd.

If an integer P is a divisor (or a factor) of another integer N, en N is the product of P and another integer, and N is said to e a multiple of P; for example, 3 is a divisor (or a factor) of 6, nd 6 is a multiple of 3.

A *prime* number is an integer that has only two distinct posi- ve divisors, 1 and itself; for example, 2, 3, 5, 7, and 11 are primes, but 9 is not a prime because it has three positive divi- sors: 1, 3, and 9.

The sum and product of signed numbers will be positive or negative depending on the operation and the kinds of numbers; for example, the product of a negative number and a positive number is negative.

For any two numbers on the number line, the number on the left is less than the number on the right; for example, $2 < 3$ and $-4 < -3$.

The radical sign "$\sqrt{}$" means "the nonnegative square root of". For example, $\sqrt{0} = 0$ and $\sqrt{4} = 2$.

If n is a positive integer, then "x^n" denotes the product of n factors of x; for example, 3^4 means $3 \cdot 3 \cdot 3 \cdot 3 = 81$.

Note also that $3^0 = 1$, and that division by zero is undefined; that is, $\frac{5}{0}$ has no meaning.

ALGEBRA

Questions classified as *algebra* include those involving operations with radical expressions, factoring and simplifying algebraic expressions, equations and inequalities, and absolute value. The skills required include the ability to solve first and second degree equations and inequalities, and simultaneous equations; the ability to read a word problem and set up the necessary equations or inequalities to solve it; and the ability to apply basic algebraic skills to solve unfamiliar problems. In general, the algebra required does not extend beyond that usually covered in a first-year high school course, and it is expected that examinees will be familiar with conventional symbolism, such as: $x < y$ (x is less than y), $x \neq y$ (x is not equal to y); and $|x|$, which is equal to x if $x \geq 0$ and $-x$ if $x < 0$; for example, $|8| = 8$ and $|-8| = -(-8) = 8$. Nonstandard notation is used only when it is explicitly defined in a particular question.

Some facts about algebra that might be helpful. If $ab = 0$, then either $a = 0$ or $b = 0$; for example, if $(x - 1)(x + 2) = 0$, it follows that either $x - 1 = 0$ or $x + 2 = 0$. Therefore, $x = 1$ or $x = -2$.

Adding a number to or subtracting a number from both sides of an equation preserves the equality. Similarly, multiplying or dividing both sides of an equation by a nonzero number preserves the equality. Similar rules apply to inequalities, with the exception that in the case of multiplying or dividing by a *negative* number, the inequality reverses. For example: multiplying the inequality $3x - 4 > 5$ by 4 yields the inequality $12x - 16 > 20$. However, multiplying that same inequality by -4 yields $-12x + 16 < -20$.

The following rules for exponents are useful. If r, s, x, and y are positive integers, then

(a) $x^r \cdot x^s = x^{r+s}$; e.g. $3^2 \cdot 3^4 = 3^6 = 729$

(b) $x^r \cdot y^r = (xy)^r$; e.g. $3^4 \cdot 2^4 = 6^4 = 1{,}296$

(c) $(x^r)^s = x^{rs}$; e.g. $(2^3)^4 = 2^{12} = 4{,}096$

(d) $\frac{x^r}{x^s} = x^{r-s}$; e.g. $\frac{4^5}{4^2} = 4^3 = 64$

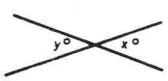
GEOMETRY

Questions classified as *geometry* include those involving the following topics: properties associated with parallel lines, circles and their inscribed and central angles, triangles, rectangles, other polygons, measurement-related concepts of area, perimeter, volume, the Pythagorean Theorem, and angle measure in degrees. Knowledge of simple coordinate geometry and special triangles such as isosceles, equilateral, and $30° - 60° - 90°$ triangles are also tested. The ability to construct proofs is not measured.

It is expected that examinees will be familiar with the conventional symbolism used in elementary geometry, such as the following: $\parallel$ (this means *is parallel to*), $\perp$ (this means *is perpendicular to*), and 

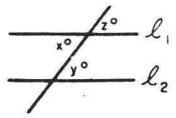
(this means that $\angle ABC$ is a right angle).

Some facts about geometry that might be helpful. If two lines intersect, the vertical angles are equal; for example, in the figure



, $x = y$.

If two parallel lines are intersected by a third line, some of the angles formed are equal; for example, in the figure



where $\ell_1 \parallel \ell_2$, y = x = z.

The number of degrees of arc in a circle is 360; for example, in the figure 

if x = 60, then the length of arc ABC is $\frac{60}{360}$ of the circumference of the circle.

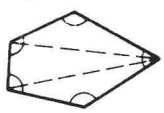
The sum of the degree measures of the angles of a triangle is 180.

The volume of a rectangular solid or of a right circular cylinder is the product of the area of the base and the height; for example, the volume of a cylinder with base of radius 2 and height 5 is $\pi (2^2) (5) = 20\pi$.

The square of the length of the hypotenuse of a right triangle is equal to the sum of the squares of the lengths of the two legs.

The coordinates of a point (x,y) give the location of the point in the coordinate plane; for example, the point (2, − 3) is located in the fourth quadrant 2 units to the right of the Y-axis and 3 units below the X-axis.

The sides of a 45° − 45° − 90° triangle are in the ratio $1 : 1 : \sqrt{2}$, and the sides of a 30° − 60° − 90° triangle are in the ratio $1 : \sqrt{3} : 2$.

Drawing in lines that are not shown in a figure can sometimes help in solving a geometry problem; for example, by drawing the dashed lines in the pentagon  , the number of degrees in the pentagon can be found by adding up the number of degrees in the three triangles.

The quantitative measure employs three types of questions: quantitative comparison, discrete quantitative, and data interpretation. Pacing yourself on all of these question types is important. Do not spend an excessive amount of time pondering over problems you find difficult. Go on to the next question and, if time permits, come back to the difficult questions when you have completed the section.

The following information on numbers and figures applies to all questions in the quantitative sections.

Numbers: **All numbers used are real numbers.**

Figures: **Position of points, angles, regions, etc. can be assumed to be in the order shown, and angle measures can be assumed to be positive.**

Lines shown as straight can be assumed to be straight.

Figures can be assumed to lie in a plane unless otherwise indicated.

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 by measurement, but by using your knowledge of mathematics.

QUANTITATIVE COMPARISON

The quantitative comparison questions test the ability to reason quickly and accurately about the relative sizes of two quantities or to perceive that not enough information is provided to make such a decision. To solve a quantitative comparison problem, you compare the quantities given in two columns, Column A and Column B, and decide whether one quantity is greater than the other, whether the two quantities are equal, or whether the relationship cannot be determined from the information given. Some questions only require some manipulation to determine which of the quantities is greater; other questions require you to reason more or to think of special cases in which the relative sizes of the quantities reverse.

The following strategies might help in answering quantitative comparison questions.

- Do not waste time performing needless computations in order to eventually compare two specific numbers. Simplify or transform one or both of the given quantities only as much as is necessary to determine which quantity is greater or whether the two quantities are equal. Once you have determined that one quantity is greater than the other, do not take time to find the exact sizes of the quantities. Answer and go on to the next question.
- If both quantities being compared involve no variables, then the correct answer can never be (D), which states that the relationship cannot be determined. The answer is then reduced to three choices.
- Consider all kinds of numbers before you make a decision. As soon as you establish that quantity A is greater in one case while quantity B is greater in another case, choose answer (D) immediately and move on to the next comparison.
- Geometric figures may not be drawn to scale. Comparisons should be made based on knowledge of mathematics rather than appearance. However, you can sometimes find a clue by sketching another figure in your test book. Try to visualize the parts of a figure that are fixed by the information given and the parts that are collapsible and changeable. If a figure can flow into other shapes and sizes while conforming to given information, the answer is probably (D).

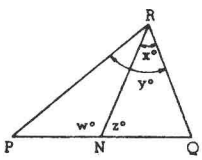
Directions for quantitative comparison questions and some examples with explanations follow.

Directions: **Each of the following questions consists of two quantities, one in Column A and one in Column B. You are to compare the two quantities and choose**

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 the relationship cannot be determined from the information given.

Note: **Since there are only four choices, NEVER MARK (E).**

Common Information: **In a question, 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.**

	Column A	Column B	Sample Answers
Example 1:	2×6	$2 + 6$	● Ⓑ Ⓒ Ⓓ Ⓔ
Examples 2-4 refer to △PQR.			
Example 2:	PN	NQ	Ⓐ Ⓑ Ⓒ ● Ⓔ (since equal measures cannot be assumed, even though PN and NQ appear equal)
Example 3:	x	y	Ⓐ ● Ⓒ Ⓓ Ⓔ (since N is between P and Q)
Example 4:	$w + z$	180	Ⓐ Ⓑ ● Ⓓ Ⓔ (since PQ is a straight line)

	Column A	Column B
15.	**9.8**	$\sqrt{100}$

$\sqrt{100}$ denotes 10, the positive square root of 100. (For any positive number x, $\sqrt{x}$ denotes the *positive* number whose square is x.) Since 10 is greater than 9.8, the correct answer is B. It is important not to confuse this question with a comparison of 9.8 and x where $x^2 = 100$. The latter comparison would yield D as the correct answer because $x^2 = 100$ implies that either $x = \sqrt{100}$ or $x = -\sqrt{100}$, and there is no way to determine which value x actually would have. However, this question asks for a comparison of 9.8 and $\sqrt{100}$, and $9.8 < \sqrt{100}$ for the reasons previously given.

16.	$(-6)^4$	$(-6)^5$

Since $(-6)^4$ is the product of four negative factors and the product of an even number of negative numbers is positive, $(-6)^4$ is positive. Since the product of an odd number of negative numbers is negative, $(-6)^5$ is negative. Therefore $(-6)^4$ is greater than $(-6)^5$ since any positive number is greater than any negative number. The correct answer is A. Do not waste time determining that $(-6)^4 = 1{,}296$ and that $(-6)^5 = -7{,}776$. This information is not needed to make the comparison.

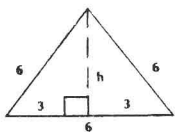
$$x + y = 10$$
$$x - y = 2$$

17.	$x^2 - y^2$	19

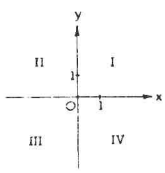
Since $x^2 - y^2 = (x + y)(x - y)$ and, from the information given, $(x + y)(x - y) = 10 \cdot 2 = 20$, which is greater than 19, the correct answer is A. The two equations could be solved for x and y, giving $x = 6$ and $y = 4$, and then $x^2 - y^2$ could be computed, but this solution is more time-consuming.

	Column A	Column B
18.	The area of an equilateral triangle with side 6	The area of a right triangle with legs $\sqrt{3}$ and 9

The area of a triangle is one half the product of the lengths of the base and the altitude. In column A, the length of the altitude must first be determined. A sketch of the triangle may be helpful.



The altitude h divides the base of an equilateral triangle into two equal parts. From the Pythagorean theorem, $h^2 + 3^2 = 6^2$ or $h = 3\sqrt{3}$. Therefore the area of the triangle in column A is $\frac{1}{2} \cdot 6 \cdot 3\sqrt{3} = 9\sqrt{3}$. In column B, the base and the altitude of the right triangle are the two legs, and therefore the area is $\frac{9\sqrt{3}}{2}$. Since $9\sqrt{3}$ is greater than $\frac{9\sqrt{3}}{2}$, the correct answer is A.



A point (x,y) is in region III.

19.	x	y

From the fact that point (x,y) is in region III, it is clear that x and y are both negative. However, since the location of the point within the region is not known, the relative sizes of x and y cannot be determined; for example, if the point is $(-3, -6)$, $x > y$ but if the point is $(-6, -3)$, $x < y$. Thus the answer is D.

$$(273 \times 87) + q = 29{,}235$$
$$(273 \times 87) + p = 30{,}063$$

20.	p	q

It is not necessary to do a lot of computation to solve this problem. The sum of a number and q is less than the sum of the same number and p. Therefore $q < p$, and the answer is A.

$$x^2 = y^2 + 1$$

21.	x	y

From the given equation, it can be determined that $x^2 > y^2$; however, the relative sizes of x and y cannot be determined. For example, if $y = 0$, x could be 1 or -1 and, since there is no way to tell which number x is, the answer is D.