Graduate **Management** **Admission** **Council**®

ETS®

Educational Testing Service

Graduate Management Admission Test® (GMAT®)

Disclosed Edition

Test Code 31

ABOUT THIS EDITION OF THE GMAT®

This booklet contains the questions that were used to derive scores on the edition of the Graduate Management Admission Test (GMAT®) with test code 31. If the first two digits of the test code on your answer sheet (item 5 on Side 1) are not 31, please contact GMAC® to send you the correct booklet to match your answer sheet. The answer key follows the test questions. This booklet also contains instructions for calculating raw scores corrected for guessing. These are followed by unique tables for converting raw scores to the reported scaled scores for test code 31.

In this edition of the GMAT, the following essay and multiple-choice sections contributed to your scores:

Analytical Writing Assessment

       Essay 1   Analysis of an Argument

       Essay 2   Analysis of an Issue

Verbal Assessment

       Section 1   Reading Comprehension

       Section 4   Sentence Correction

       Section 6   Critical Reasoning

Quantitative Assessment

       Section 2   Data Sufficiency

       Section 5   Problem Solving

       Section 7   Problem Solving

GMAT Total

       All six verbal and quantitative sections combined as one score

Section 3 in this edition of the GMAT contained trial or equating questions and does not contribute to your score. Questions from this section are not included in this booklet.

Analytical Writing 1

ANALYSIS OF AN ARGUMENT

Time—30 minutes

<u>Directions:</u> In this section you will be asked to write a critique of the argument presented below. Note that you are *not* being asked to present your own views on the subject. Instead, you may need to consider what questionable assumptions underlie the thinking, what alternative explanations or counterexamples might weaken the conclusion, or what sort of evidence could help strengthen or refute the argument.

Read the argument and the instructions that follow it, and then make any notes in your test booklet that will help you plan your response. Begin writing your response on the separate answer document. Make sure that you use the answer document that goes with this writing task.

The following appeared in a memorandum from the directors of a security and safety consulting service.

"Our research indicates that over the past six years no incidents of employee theft have been reported within ten of the companies that have been our clients. In analyzing the security practices of these ten companies, we have further learned that each of them requires its employees to war photo identification badges while at work. In the future, therefore, we should recommend the use of such identification badges to all of our clients."

Discuss how well reasoned you find this argument. In your discussion, be sure to analyze the line of reasoning and the use of evidence in the argument. You can also discuss what, if anything, would make the argument more sound and persuasive or would help you to better evaluate its conclusion.

NOTES

Use the space below or on the facing page to plan your response. Any writing on these pages will not be evaluated.

S T O P

IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK ON THIS SECTION ONLY.

DO NOT TURN TO ANY OTHER SECTION IN THE TEST.

Analytical Writing 2

ANALYSIS OF AN ISSUE

Time—30 minutes

"As technologies and the demand for certain services change, many workers will lose their jobs. The responsibility for those people to adjust to such change should belong to the individual worker, not to government or to business."

Discuss the extent to which you agree or disagree with the opinion stated above. Support your position with specific reasons and/or examples drawn from your reading, your observations, or your own experience.

NOTES

Use the space below or on the facing page to plan your response. Any writing on these pages will not be evaluated.

S T O P

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DO NOT TURN TO ANY OTHER SECTION IN THE TEST.

ANSWER SHEET – Test Code 31

Section 1	Section 2	Section 4	Section 5	Section 6	Section 7
1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	2.
3.	3.	3.	3.	3.	3.
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5.	5.	5.	5.	5.	5.
6.	6.	6.	6.	6.	6.
7.	7.	7.	7.	7.	7.
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9.	9.	9.	9.	9.	9.
10.	10.	10.	10.	10.	10.
11.	11.	11.	11.	11.	11.
12.	12.	12.	12.	12.	12.
13.	13.	13.	13.	13.	13.
14.	14.	14.	14.	14.	14.
15.	15.	15.	15.	15.	15.
16.	16.	16.	16.	16.	16.
17.	17.	17.			
18.	18.	18.			
	19.	19.			
	20.	20.			
		21.			
		22.			

SECTION 1

Time—25 minutes

18 Questions

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

Traditionally, the first firm to commercialize a new technology has benefited from the unique opportunity to shape product definitions, forcing followers to adapt to a standard or invest in an unproven alternative. Today, however, the largest payoffs may go to companies that lead in developing integrated approaches for successful mass production and distribution.

Line
(5)

Producers of the Beta format for videocassette recorders (VCR's), for example, were first to develop the VCR commercially in 1975, but producers of the rival VHS (Video Home System) format proved to be more successful at forming strategic alliances with other producers and distributors to manufacture and market their VCR format. Seeking to maintain exclusive control over VCR distribution, Beta producers were reluctant to form such alliances and eventually lost ground to VHS in the competition for the global VCR market.

(10)

(15)

Despite Beta's substantial technological head start and the fact that VHS was neither technically better nor cheaper than Beta, developers of VHS quickly turned a slight early lead in sales into a dominant position. Strategic alignments with producers of prerecorded tapes reinforced the VHS advantage. The perception among consumers that prerecorded tapes were more available in VHS format further expanded VHS's share of the market. By the end of the 1980's, Beta was no longer in production.

(20)

(25)

1. The passage is primarily concerned with which of the following?

    (A) Evaluating two competing technologies

    (B) Tracing the impact of a new technology by narrating a sequence of events

    (C) Reinterpreting an event from contemporary business history

    (D) Illustrating a business strategy by means of a case history

    (E) Proposing an innovative approach to business planning

2. According to the passage, today's successful firms, unlike successful firms in the past, may earn the greatest profits by

    (A) investing in research to produce cheaper versions of existing technology

    (B) being the first to market a competing technology

    (C) adapting rapidly to a technological standard previously set by a competing firm

    (D) establishing technological leadership in order to shape product definitions in advance of competing firms

    (E) emphasizing the development of methods for the mass production and distribution of a new technology

3. According to the passage, consumers began to develop a preference for VCR's in the VHS format because they believed which of the following?

    (A) VCR's in the VHS format were technically better than competing-format VCR's.

    (B) VCR's in the VHS format were less expensive than competing-format VCR's.

    (C) VHS was the first standard format for VCR's.

    (D) VHS prerecorded videotapes were more available than Beta-format tapes.

    (E) VCR's in the Beta format would soon cease to be produced.

GO ON TO THE NEXT PAGE.

4. The author implies that one way that VHS producers won control over the VCR market was by

(A) carefully restricting access to VCR technology

(B) giving up a slight early lead in VCR sales in order to improve long-term prospects

(C) retaining a strict monopoly on the production of prerecorded videotapes

(D) sharing control of the marketing of VHS-format VCR's

(E) sacrificing technological superiority over Beta-format VCR's in order to remain competitive in price

5. The alignment of producers of VHS-format VCR's with producers of prerecorded videotapes is most similar to which of the following?

(A)The alignment of an automobile manufacturer with another automobile manufacturer to adopt a standard design for automobile engines

(B)The alignment of an automobile manufacturer with an automotive glass company whereby the manufacturer agrees to purchase automobile windshields only from that one glass company

(C)The alignment of an automobile manufacturer with a petroleum company to ensure the widespread availability of the fuel required by a new type of engine developed by the manufacturer

(D)The alignment of an automobile manufacturer with its dealers to adopt a plan to improve automobile design

(E)The alignment of an automobile dealer with an automobile rental chain to adopt a strategy for an advertising campaign to promote a new type of automobile

6. Which of the following best describes the relation of the first paragraph to the passage as a whole?

(A) It makes a general observation to be exemplified.
(B) It outlines a process to be analyzed.
(C) It poses a question to be answered.
(D) It advances an argument to be disputed.
(E) It introduces conflicting arguments to be reconciled.

GO ON TO THE NEXT PAGE.

Australian researchers have discovered electroreceptors (sensory organs designed to respond to electrical fields) clustered at the tip of the spiny anteater's snout. The researchers made this discovery by exposing small areas of the snout to extremely weak electrical fields and recording the transmission of resulting nervous activity to the brain. While it is true that tactile receptors, another kind of sensory organ on the anteater's snout, can also respond to electrical stimuli, such receptors do so only in response to electrical field strengths about 1,000 times greater than those known to excite electroreceptors.

Having discovered the electroreceptors, researchers are now investigating how anteaters utilize such a sophisticated sensory system. In one behavioral experiment, researchers successfully trained an anteater to distinguish between two troughs of water, one with a weak electrical field and the other with none. Such evidence is consistent with researchers' hypothesis that anteaters use electroreceptors to detect electrical signals given off by prey; however, researchers as yet have been unable to detect electrical signals emanating from termite mounds, where the favorite food of anteaters live. Still, researchers have observed anteaters breaking into a nest of ants at an oblique angle and quickly locating nesting chambers. This ability to quickly locate unseen prey suggests, according to the researchers, that the anteaters were using their electroreceptors to locate the nesting chambers.

7. According to the passage, which of the following is a characteristic that distinguishes electroreceptors from tactile receptors?

(A) The manner in which electroreceptors respond to electrical stimuli

(B) The tendency of electroreceptors to be found in clusters

(C) The unusual locations in which electroreceptors are found in most species

(D) The amount of electrical stimulation required to excite electroreceptors

(E) The amount of nervous activity transmitted to the brain by electroreceptors when they are excited

8. Which of the following can be inferred about the experiment described in the first paragraph?

(A) Researchers had difficulty verifying the existence of electroreceptors in the anteater because electroreceptors respond to such a narrow range of electrical field strengths.

(B) Researchers found that the level of nervous activity in the anteater's brain increased dramatically as the strength of the electrical stimulus was increased.

(C) Researchers found that some areas of the anteater's snout were not sensitive to a weak electrical stimulus.

(D) Researchers found that the anteater's tactile receptors were more easily excited by a strong electrical stimulus than were the electroreceptors.

(E) Researchers tested small areas of the anteater's snout in order to ensure that only electroreceptors were responding to the stimulus.

9. The author of the passage most probably discusses the function of tactile receptors (lines 7-11) in order to

(A) eliminate an alternative explanation of anteaters' response to electrical stimuli

(B) highlight a type of sensory organ that has a function identical to that of electroreceptors

(C) point out a serious complication in the research on electroreceptors in anteaters

(D) suggest that tactile receptors assist electroreceptors in the detection of electrical signals

(E) introduce a factor that was not addressed in the research on electroreceptors in anteaters

10. Which of the following can be inferred about anteaters from the behavioral experiment mentioned in the second paragraph?

(A) They are unable to distinguish between stimuli detected by their electroreceptors and stimuli detected by their tactile receptors.

(B) They are unable to distinguish between the electrical signals emanating from termite mounds and those emanating from ant nests.

(C) They can be trained to recognize consistently the presence of a particular stimulus.

(D) They react more readily to strong than to weak stimuli.

(E) They are more efficient at detecting stimuli in a controlled environment than in a natural environment.

11. The passage suggests that the researchers mentioned in the second paragraph who observed anteaters break into a nest of ants would most likely agree with which of the following statements?

(A) The event they observed provides conclusive evidence that anteaters use their electroreceptors to locate unseen prey.

(B) The event they observed was atypical and may not reflect the usual hunting practices of anteaters.

(C) It is likely that the anteaters located the ants' nesting chambers without the assistance of electroreceptors.

(D) Anteaters possess a very simple sensory system for use in locating prey.

(E) The speed with which the anteaters located their prey is greater than what might be expected on the basis of chance alone.

12. Which of the following, if true, would most strengthen the hypothesis mentioned in lines 17-19?

(A) Researchers are able to train anteaters to break into an underground chamber that is emitting a strong electrical signal.

(B) Researchers are able to detect a weak electrical signal emanating from the nesting chamber of an ant colony.

(C) Anteaters are observed taking increasingly longer amounts of time to locate the nesting chambers of ants.

(D) Anteaters are observed using various angles to break into nests of ants.

(E) Anteaters are observed using the same angle used with nests of ants to break into the nests of other types of prey.

GO ON TO THE NEXT PAGE.

When A. Philip Randolph assumed the leadership of the Brotherhood of Sleeping Car Porters, he began a ten-year battle to win recognition from the Pullman Company, the largest private
(5) employer of Black people in the United States and the company that controlled the railroad industry's sleeping car and parlor service. In 1935 the Brotherhood became the first Black union recognized by a major corporation. Randolph's efforts in the
(10) battle helped transform the attitude of Black workers toward unions and toward themselves as an identifiable group; eventually, Randolph helped to weaken organized labor's antagonism toward Black workers.

In the Pullman contest Randolph faced formidable obstacles. The first was Black workers'
(15) understandable skepticism toward unions, which had historically barred Black workers from membership. An additional obstacle was the union that Pullman itself had formed, which weakened support among Black workers for an independent entity.

(20) The Brotherhood possessed a number of advantages, however, including Randolph's own tactical abilities. In 1928 he took the bold step of threatening a strike against Pullman. Such a threat, on a national scale, under Black leadership, helped
(25) replace the stereotype of the Black worker as servant with the image of the Black worker as wage earner. In addition, the porters' very isolation aided the Brotherhood. Porters were scattered throughout the country, sleeping in dormitories in Black
communities; their segregated life protected the
(30) union's internal communications from interception. That the porters were a homogeneous group working for a single employer with a single labor policy, thus sharing the same grievances from city to city, also strengthened the Brotherhood and encouraged racial identity and solidarity as well. But it was only in the
(35) early 1930's that federal legislation prohibiting a company from maintaining its own unions with company money eventually allowed the Brotherhood to become recognized as the porters' representative.

Not content with this triumph, Randolph brought
(40) the Brotherhood into the American Federation of Labor, where it became the equal of the Federation's 105 other unions. He reasoned that as a member union, the Brotherhood would be in a better position to exert pressure on member unions that practiced race restrictions. Such restrictions were eventually found unconstitutional in 1944.

13. According to the passage, by 1935 the skepticism of Black workers toward unions was

(A) unchanged except among Black employees of railroad-related industries

(B) reinforced by the actions of the Pullman Company's union

(C) mitigated by the efforts of Randolph

(D) weakened by the opening up of many unions to Black workers

(E) largely alleviated because of the policies of the American Federation of Labor

14. In using the word "understandable" (line 14), the author most clearly conveys

(A) sympathy with attempts by the Brotherhood between 1925 and 1935 to establish an independent union

(B) concern that the obstacles faced by Randolph between 1925 and 1935 were indeed formidable

(C) ambivalence about the significance of unions to most Black workers in the 1920's

(D) appreciation of the attitude of many Black workers in the 1920's toward unions

(E) regret at the historical attitude of unions toward Black workers

15. The passage suggests which of the following about the response of porters to the Pullman Company's own union?

(A) Few porters ever joined this union.

(B) Some porters supported this union before 1935.

(C) Porters, more than other Pullman employees, enthusiastically supported this union.

(D) The porters' response was most positive after 1935.

(E) The porters' response was unaffected by the general skepticism of Black workers concerning unions.

16. The passage suggests that if the grievances of porters in one part of the United States had been different from those of porters in another part of the country, which of the following would have been the case?

(A) It would have been more difficult for the Pullman Company to have had a single labor policy.

(B) It would have been more difficult for the Brotherhood to control its channels of communication.

(C) It would have been more difficult for the Brotherhood to build its membership.

(D) It would have been easier for the Pullman Company's union to attract membership.

(E) It would have been easier for the Brotherhood to threaten strikes.

17. The passage suggests that in the 1920's a company in the United States was able to

(A) use its own funds to set up a union

(B) require its employees to join the company's own union

(C) develop a single labor policy for all its employees with little employee dissent

(D) pressure its employees to contribute money to maintain the company's own union

(E) use its resources to prevent the passage of federal legislation that would have facilitated the formation of independent unions

18. The passage supplies information concerning which of the following matters related to Randolph?

(A) The steps he took to initiate the founding of the Brotherhood

(B) His motivation for bringing the Brotherhood into the American Federation of Labor

(C) The influence he had on the passage of legislation overturning race restrictions in 1944

(D) The influence he had on the passage of legislation to bar companies from financing their own unions

(E) The success he and the Brotherhood had in influencing the policies of the other unions in the American Federation of Labor

S T O P

IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK ON THIS SECTION ONLY.

DO NOT TURN TO ANY OTHER SECTION IN THE TEST.

Directions: Each of the data sufficiency problems below consists of a question and two statements, labeled (1) and (2), in which certain data are given. You have to decide whether the data given in the statements are <u>sufficient</u> for answering the question. Using the data given in the statements <u>plus</u> your knowledge of mathematics and everyday facts (such as the number of days in July or the meaning of *counterclockwise*), choice the best answer.

A if statement (1) ALONE is sufficient, but statement (2) alone is not sufficient to answer the question asked;

B if statement (2) ALONE is sufficient, but statement (1) alone is not sufficient to answer the question asked;

C if BOTH statements (1) and (2) TOGETHER are sufficient to answer the question asked, but NEITHER statement ALONE is sufficient;

D if EACH statement ALONE is sufficient to answer the question asked;

E if statements (1) and (2) TOGETHER are NOT sufficient to answer the question asked, and additional data specific to the problem are needed.

Numbers: All numbers used are real numbers.

Figures: A figure in a data sufficiency problem will conform to the information given in

the question, but will not necessarily conform to the additional information given

in statements (1) and (2).

You may assume that lines shown as straight are straight and that angle measures are greater than zero.

You may assume that the positions of points, angles, regions, etc., exist in the order shown.

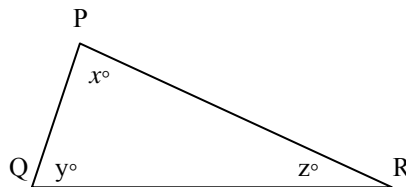All figures lie in a plane unless otherwise indicated.

Note: In questions that ask for the value of a quantity, the data given in the statements are

sufficient only when it is possible to determine exactly one numerical value for

the quantity.

Example:

In $\triangle PQR$, what is the value of x?

(1) $PQ = PR$

(2) $y = 40$

Explanation: According to statement (1), $PQ = PR$; therefore, $\triangle PQR$ is isosceles and $y = z$. Since $x + y + z = 180$, it follows that $x + 2y = 180$. Since Statement (1) does not give a value for y, you cannot answer the question using statement (1) alone. According to Statement (2), $y = 40$; therefore, $x + z = 140$. Since statement (2) does not give a value for z, you cannot answer the question using statement (2) alone. Using both statements together, since $x + 2y = 180$ and the value of y is given, you can find the value of x. Therefore, the answer is C.

A   Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
B   Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
C   BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
D   EACH Statement ALONE is sufficient.
E   Statements (1) and (2) TOGETHER are NOT sufficient.

1.   Is x greater than 75 percent of y?

(1) $x = 40$

(2) $y = 50$

2.   The integer x is how much greater than 3 ?

(1) $10^x = 100,000$

(2) $\dfrac{1}{10^x} = 0.00001$

3.   A citrus fruit grower receives $15 for each crate of oranges shipped and $18 for each crate of grapefruit shipped. How many crates of oranges did the grower ship last week?

(1) Last week the number of crates of oranges that the grower shipped was 20 more than twice the number of crates of grapefruit shipped.

(2) Last week the grower received a total of $38,700 from the crates of oranges and grapefruit shipped.

4.   In the figure above, what is the length of AC?

(1) $x + y = 13$

(2) $xy = 36$

5.   The charge for a telephone call between City R and City S is $0.42 for each of the first 3 minutes and $0.18 for each additional minute. A certain call between these two cities lasted for x minutes, where x is an integer. How many minutes long was the call?

(1) The charge for the first 3 minutes of the call was $0.36 less than the charge for the remainder of the call.

(2) The total charge for the call was $2.88.

6.   Is the integer P odd?

(1) The sum of P, $P + 4$, and $P + 11$ is even.

(2) The sum of $P - 3$, P, and $P + 11$ is odd.

7.   If a certain grove consists of 36 pecan trees, what was the yield per tree last year?

(1) The yield per tree for the 18 trees in the northern half of the grove was 60 kilograms last year.

(2) The yield per tree for the 18 trees in the eastern half of the grove was 55 kilograms last year.

8.   What was the percent increase in the value of a certain antique from January 1, 1981, to December 31, 1981?

(1) The value of the antique on January 1, 1981, was $3,000.

(2) The value of the antique on December 31, 1981, was double the value of the antique on January 1, 1981.

9.   In the xy–plane, is point $(2, -3)$ on line ℓ ?

(1) Point $(-2, 3)$ is on line ℓ.

(2) ℓ is not perpendicular to the x – axis.

10. If r is represented by the decimal $0.t5$, what is the digit t ?

(1) $r < \dfrac{1}{3}$

(2) $r < \dfrac{1}{10}$

11. Is $7 < \sqrt{n} < 8$?

(1) $n > 50$

(2) $n < 60$

GO ON TO THE NEXT PAGE.

12.   If a total of 84 students are enrolled in two sections of a calculus course, how many of the 84 students are female?

(1) $\frac{2}{3}$ of the students in Section 1 are female.

(2) $\frac{1}{2}$ of the students in Section 2 are male.
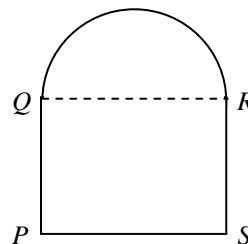
13.   What is the value of the greater of two numbers if one of the numbers is twice the other number?

(1) One number is 5.

(2) The sum of the two numbers is 15.

14.   If $r > 0$ and $s > 0$, is $\frac{r}{s} < \frac{s}{r}$?

(1) $\frac{r}{3s} = \frac{1}{4}$

(2) $s = r + 4$

15.   Company R's annual profit has increased by a constant amount each calendar year since 1985. What was Company R's annual profit in 1991?

(1) In 1985 Company R's annual profit was $212,000; in 1989 Company R's annual profit was $242,000.

(2) Company R's annual profit has increased by $7,500 each year since 1985.

16   If x is an integer, is $\frac{54 + 27}{x}$ an integer?

(1) $6 \le x \le 81$

(2) x is a multiple of 3.

17.   The figure above shows the shape of a flower bed. If arc QR is a semicircle and $PQRS$ is a rectangle with $QR > RS$. What is the perimeter of the flower bed?

(1) The perimeter of rectangle $PQRS$ is 28 feet.

(2) Each diagonal of rectangle $PQRS$ is 10 feet long.

18.   If $4x = 5y = 10z$, what is the value of $x + y + z$?
(1) $x - y = 6$
(2) $y + z = 36$

19.   Committee X and Committee Y, which have no common members, will combine to form Committee Z. Does Committee X have more members than Committee Y ?

(1) The average (arithmetic mean) age of the members of Committee X is 25.7 years and the average age of the members of Committee Y is 29.3 years.

(2) The average (arithmetic mean) age of the members of Committee Z will be 26.6 years.

20.   What is the value of y ?

(1) $y^2 - 7y + 12 = 0$

(2) $y > 0$

S T O P

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DO NOT TURN TO ANY OTHER SECTION IN THE TEST.

SECTION 4

Time—25 minutes

22 Questions

Directions: In each of the following sentences, some part of the sentence or the entire sentence is underlined. Beneath each sentence you will find five ways of phrasing the underlined part. The first of these repeats the original; the other four are different. If you think the original is the best of these answer choices, choose answer A; otherwise, choose one of the others. Select the best version.

This is a test of correctness and effectiveness of expression. In choosing answers, follow the requirements of standard written English; that is, pay attention to grammar, choice of words, and sentence construction. Choose the answer that produces the most effective sentence; this answer should be clear and exact, without awkwardness, ambiguity, redundancy, or grammatical error.

1.   Machines replacing human labor, there was wide anticipation that the workweek would continue to become shorter.

(A) Machines replacing human labor, there was wide anticipation that

(B) When machines replaced human labor, there was wide anticipation

(C) As machines replaced human labor, it was widely anticipated that

(D) Insofar as machines replaced human labor, it was widely anticipated

(E) Human labor being replaced by machines, there was wide anticipation that

2.   More ancient Egyptian temples were constructed in the reign of Ramses II as in any other.

(A) as in any other

(B) as any other

(C) as in others

(D) than others

(E) than in any other

3.   Because the financial review covered only the last few fiscal years, and therefore the investigators were unable to determine the extent of possible earlier overpayments.

(A) and therefore the investigators were unable to determine the extent of possible

(B) so therefore the investigators were not capable of determining the possible extent of

(C) therefore the investigators were unable to determine the possible extent of

(D) the investigators were not capable of determining the possible extent of

(E) the investigators were unable to determine the extent of possible

4.   At ground level, ozone is a harmful pollutant, but in the stratosphere it shields the Earth from the most biologically harmful radiation emitted by the Sun, radiation in the ultraviolet band of the spectrum.

(A) in the stratosphere

(B) in the stratosphere, in which

(C) it is in the stratosphere in which

(D) in the stratosphere where

(E) it is in the stratosphere and

GO ON TO THE NEXT PAGE.

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5.   Socrates could have fled from Athens after he was sentenced to death, but he refused to do it.

(A) Socrates could have fled from Athens after he was sentenced to death, but he refused to do it.

(B) After he was sentenced to death, Socrates might have fled from Athens, but he refused to do it.

(C) After he was sentenced to death, Socrates could have fled from Athens, but he refused to do so.

(D) Refusing to flee from Athens, Socrates could have done so after he was sentenced to death.

(E) Socrates could have fled from Athens but refused to after he was sentenced to death.

6.   As sales of cars and light trucks made in North America were declining 13.6 percent in late February, many analysts conclude that evidence of a recovering automotive market remains slight.

(A) As sales of cars and light trucks made in North America were declining 13.6 percent in late February, many analysts conclude

(B) Since sales of cars and light trucks made in North America declined 13.6 percent in late February, and many analysts conclude

(C) With sales of cars and light trucks made in North America declining 13.6 percent in late February, with many analysts concluding

(D) Because sales of cars and light trucks made in North America declined 13.6 percent in late February, many analysts concluded

(E) Because of sales of cars and light trucks made in North America declining 13.6 percent in late February, therefore, many analysts concluded

7.   A prolific architect who worked from the turn of the century until the late 1950's, Julia Morgan designed nearly 800 buildings in California, perhaps most notably William Randolph Hearst's monumental estate at San Simeon.

(A) Julia Morgan designed nearly 800 buildings in California, perhaps most notably William Randolph Hearst's monumental estate at San Simeon

(B) perhaps the most notable of the nearly 800 buildings in California designed by Julia Morgan was William Randolph Hearst's monumental estate at San Simeon

(C) of the nearly 800 buildings in California designed by Julia Morgan, perhaps the most notable was William Randolph Hearst's monumental estate at San Simeon

(D) nearly 800 buildings in California were designed by Julia Morgan, of which William Randolph Hearst's monumental estate at San Simeon is perhaps the most notable

(E) William Randolph Hearst's monumental estate at San Simeon is perhaps the most notable of the nearly 800 buildings in California designed by Julia Morgan

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8. The new regulations mandate <u>that a company allows their retiring employees who would otherwise lose group health care coverage to continue</u> the same insurance at their own expense for a specific period.

(A) that a company allows their retiring employees who would otherwise lose group health care coverage to continue

(B) companies to allow their retiring employees who would otherwise lose group health care coverage that they can continue

(C) that a company allow its retiring employees who would otherwise lose group health care coverage to continue

(D) companies allowing a retiring employee whose group health care coverage would otherwise be lost the continuation of

(E) companies to allow a retiring employee whose group health care coverage would otherwise be lost the continuation of

9. Studies show that young people with higher-than-average blood pressure <u>and their families have a history of high blood pressure</u> are more likely than others to develop a severe form of the condition.

(A) and their families have a history of high blood pressure

(B) whose families have a history of high blood pressure

(C) and a history of high blood pressure runs in the family

(D) whose families have a history of high blood pressure running in them

(E) with a history of high blood pressure running in their family

10. <u>During the 1980's approximately $50 billion in private investment capital is estimated to have left Mexico and added</u> to the strain on the country's debt-ridden economy.

(A) During the 1980's approximately $50 billion in private investment capital is estimated to have left Mexico and added

(B) During the 1980's it is estimated that approximately $50 billion in private investment capital left Mexico and added

(C) It is estimated that there was approximately $50 billion in private investment capital that left Mexico during the 1980's and added

(D) It is estimated that during the 1980's approximately $50 billion in private investment capital left Mexico, adding

(E) Approximately $50 billion in private investment capital is estimated as having left Mexico during the 1980's, adding

11. Like the color-discriminating apparatus of the human eye, <u>insects' eyes depend on</u> recording and comparing light intensities in three regions of the electromagnetic spectrum.

(A) insects' eyes depend on

(B) an insect eye depends on

(C) that of insects depend on the

(D) that of an insect's eye depends on

(E) that of an insect's is dependent on the

GO ON TO THE NEXT PAGE.

12. As envisioned by researchers, commercial farming of lobsters will enable fisheries to sell the shellfish year-round, taking advantage of off-season demand, standardize its sizes and colors, and to predict sales volume in advance.

(A) taking advantage of off-season demand, standardize

(B) taking advantage of off-season demand, to standardize

(C) taking advantage of off-season demand, standardizing

(D) take advantage of off-season demand, standardizing

(E) take advantage of off-season demand, to standardize

13. Frances Wright's book on America contrasted the republicanism of the United States with what she saw as the aristocratic and corrupt institutions of England.

(A) with what she saw as

(B) with that which she saw to be

(C) to that she saw being

(D) and that which she saw as

(E) and what she saw to be

14. The complex tax dispute between the Covered Bridge Mall and Harris Township is not likely to be adjudicated for several years, and, in the meantime, both sides are intent on creating difficulties for the other.

(A) both sides are intent on creating difficulties for the other

(B) both sides are intent on creating difficulties for each other

(C) each side is intent on creating difficulties for the other

(D) each side is intent on creating difficulties for one another

(E) the sides are both intent on creating difficulties for each other

15. The computer software being designed for a project studying Native American access to higher education will not only meet the needs of that study, but also has the versatility and power of facilitating similar research endeavors.

(A) but also has the versatility and power of facilitating

(B) but also have the versatility and power to facilitate

(C) but it also has the versatility and power to facilitate

(D) and also have the versatility and power of facilitating

(E) and it also has such versatility and power that it can facilitate

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16. Factory outlet stores, operated by manufacturers, are usually located miles from downtown and regional shopping centers so as not directly to be competitive against department stores in the same trading area.

(A) so as not directly to be competitive against

(B) in order for them not to have direct competition with

(C) so that they do not compete directly with

(D) in order that they are not directly competitive against

(E) for the purpose of not competing directly with

17. According to a study published by Dr. Myrna Weissman, only one percent of Americans born before 1905 had suffered major depression by the age of seventy-five; of those born since 1955, six percent had become depressed by age twenty-four.

(A) only one percent of Americans born before 1905 had suffered major depression by the age of seventy-five; of those born since 1955, six percent had become depressed by age twenty-four

(B) only one percent of Americans born before 1905 suffer major depression by the age of seventy-five; if they are born since 1955, six percent become depressed by age twenty-four

(C) of Americans born before 1905, only one percent of them have suffered major depression by age seventy-five, but six percent of those born since 1955 do by the age of twenty-four

(D) major depression is suffered by the age of seventy-five by only one percent of Americans born before 1905, and by age twenty-four by the six percent born since 1955

(E) Americans born before 1905 suffer major depression by the age of seventy-five only one percent of the time, but six percent of those born since 1955 did so by age twenty-four

18. The official languages are of India, Hindi, and of Pakistan, Urdu, but neither are spoken by a majority of the population.

(A) The official languages are of India, Hindi, and of Pakistan, Urdu, but neither are

(B) The official languages are of India, Hindi, and of Pakistan, Urdu, but neither is

(C) Officially, the languages are Hindi for India and for Pakistan, Urdu, but neither are

(D) The official language of India is Hindi, and that of Pakistan is Urdu, but neither is

(E) The official language of India is Hindi, and Urdu in Pakistan, but none is

19. In contrast to true hibernators such as woodchucks and hedgehogs, whose body temperatures drop close to the freezing point during the winter months, the body temperature of bears remains nearly normal throughout their prolonged sleep.

(A) the body temperature of bears remains nearly normal

(B) a nearly normal body temperature is maintained by bears

(C) a bear's body temperature remains nearly normal

(D) a bear maintains a body temperature that is nearly normal

(E) bears maintain a nearly normal body temperature

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20. According to the National Pasta Association, per-capita consumption of pasta in the United States, which has already been approaching 19 pounds a year, will achieve 30 pounds a year by the twenty-first century.

(A) According to the National Pasta Association, per-capita consumption of pasta in the United States, which has already been approaching 19 pounds a year, will achieve 30 pounds a year by the twenty-first century.

(B) Already approaching 19 pounds a year in the United States, the National Pasta Association predicts that per-capita consumption of pasta will reach 30 pounds a year by the twenty-first century.

(C) The National Pasta Association predicts by the twenty-first century that per-capita consumption of pasta in the United States, which is already approaching 19 pounds a year, will achieve 30 pounds a year.

(D) By the twenty-first century, the National Pasta Association predicts that per-capita consumption of pasta in the United States, having already approached 19 pounds a year, will reach 30 pounds a year.

(E) According to the National Pasta Association, per-capita consumption of pasta in the United States is already approaching 19 pounds a year and will reach 30 pounds a year by the twenty-first century.

21. Most teen-agers who work for pay hold jobs that require few skills, little responsibility, and also no hope for career advancement.

(A) little responsibility, and also

(B) little responsibility, and with

(C) little responsibility, and offer

(D) carry little responsibility, and

(E) carry little responsibility, and offer

22. Car owners who inflate their tires properly can substantially boost their vehicles' fuel efficiency, since the increase in car-road friction can waste up to five percent of car fuel by underinflation.

(A) Car owners who inflate their tires properly can substantially boost their vehicles' fuel efficiency, since the increase in car-road friction can waste up to five percent of car fuel by underinflation.

(B) Because the underinflation of tires can waste up to five percent of a car's fuel by increasing car-road friction, car owners can substantially boost their vehicles' fuel efficiency by properly inflating the tires.

(C) Their vehicles' fuel efficiency is substantially boosted by car owners through the proper inflation of tires that, when underinflated, can waste up to five percent of car fuel by an increase in car-road friction.

(D) The proper inflation of tires by car owners, due to the fact that underinflation can waste up to five percent of a car's fuel by the increase of car-road friction, can substantially boost their fuel efficiency.

(E) Because up to five percent of a car's fuel are wasted through the increases in car-road friction when the tires are underinflated, car owners properly inflating tires can substantially boost their fuel efficiency.

S T O P

IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK ON THIS SECTION ONLY.

DO NOT TURN TO ANY OTHER SECTION IN THE TEST.

Directions: In this section solve each problem, using any available space on the page for scratchwork. Then indicate the best of the answer choices given.

Numbers: All numbers used are real numbers.

Figures: Figures that accompany problems in this section are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that its figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.

1. If x is 11 percent greater than 80, then $x =$

(A) 70.9
(B) 71.2
(C) 88.0
(D) 88.8
(E) 91.0

2. A certain car uses 12 gallons of gasoline in traveling 240 miles. In order for the car to travel the same distance using 10 gallons of gasoline, by how many miles per gallon must the car's gas mileage be increased?

(A) 2
(B) 4
(C) 6
(D) 8
(E) 10

3. The figure above represents a window, with the shaded regions representing the openings for the glass. If all line segments in the figure are either horizontal or vertical and the openings are all the same size, what are the dimensions, in inches, of each opening? (1 foot = 12 inches)

(A) 12.0 by 18.0
(B) 10.5 by 16.5
(C) 9.0 by 15.0
(D) 8.0 by 10.0
(E) 7.5 by 13.5

4. A farmer used 1,034 acres of land for beans, wheat, and corn in the ratio of 5 : 2 : 4, respectively. How many acres were used for corn?

(A) 188
(B) 258
(C) 376
(D) 470
(E) 517

5. If $2x^2 + 4x - 5 = x^2 + 2x + x^2 + 5$, then $x^2 =$

(A) 0
(B) 4
(C) 10
(D) 25
(E) 100

6. $\sqrt{80} + \sqrt{125} =$

(A) $9\sqrt{5}$
(B) $20\sqrt{5}$
(C) $41\sqrt{5}$
(D) $\sqrt{205}$
(E) 100

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7. A circle graph shows how the budget of a certain company was spent: 63 percent for salaries, 12 percent for research and development, 6 percent for utilities, 5 percent for equipment, 4 percent for supplies, and the remainder for transportation. If the area of each sector of the graph is proportional to the percent of the budget it represents, how many degrees of the circle are used to represent transportation?

(A) 10°
(B) 18°
(C) 36°
(D) 90°
(E) 324°

8. What is the area of a square with perimeter P ?

(A) $16P^2$
(B) $4P$
(C) $\dfrac{P^2}{4}$
(D) $\dfrac{P}{16}$
(E) $\dfrac{P^2}{16}$

9. A certain ball was dropped from a window 8 meters above a sidewalk. On each bounce it rose straight up exactly one-half the distance of the previous fall. After the third bounce the ball was caught when it reached a height of exactly 1 meter above the sidewalk. How many meters did the ball travel in all?

(A) 21
(B) 19
(C) 17
(D) 15
(E) 13

10. A certain store sells all maps at one price and all books at another price. On Monday the store sold 12 maps and 10 books for a total of $38.00, and on Tuesday the store sold 20 maps and 15 books for a total of $60.00. At this store, how much less does a map sell for than a book?

(A) $0.25
(B) $0.50
(C) $0.75
(D) $1.00
(E) $1.25

11. Which of the following procedures is always equivalent to adding 5 given numbers and then dividing the sum by 5?
I. Multiplying the 5 numbers and then finding the 5th root of the product.
II. Adding the 5 numbers, doubling the sum, and then moving the decimal point one place to the left.
III. Ordering the 5 numbers numerically and then selecting the middle number.

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

12. A certain company has records stored with a record-storage firm in 15-inch by 12-inch by 10-inch boxes. The boxes occupy 1.08 million cubic inches of space. If the company pays $0.25 per box per month for record storage, what is the total amount that the company pays each month for record storage?

(A) $150
(B) $300
(C) $600
(D) $1,200
(E) $2,400

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13. If a 3-digit integer is selected at random from the integers 100 through 199, inclusive, what is the probability that the first digit and the last digit of the integer are each equal to one more than the middle digit?

(A) $\dfrac{2}{225}$

(B) $\dfrac{1}{111}$

(C) $\dfrac{1}{110}$

(D) $\dfrac{1}{100}$

(E) $\dfrac{1}{50}$

14. Mr. Kramer, the losing candidate in a two-candidate election, received 942,568 votes, which was exactly 40 percent of all the votes cast. Approximately what percent of the remaining votes would he need to have received in order to have won at least 50 percent of all the votes cast?

(A) 10%
(B) 12%
(C) 15%
(D) 17%
(E) 20%

$-2 < x < 4$?

(A) $|x-2| < 4$

(B) $|x-1| < 3$

(C) $|x+1| < 3$

(D) $|x+2| < 4$

(E) None of the above

16. If the average (arithmetic mean) of 5 positive temperatures is x degrees Fahrenheit, then the sum of the 3 greatest of these temperatures, in degrees Fahrenheit, could be

(A) $6x$

(B) $4x$

(C) $\dfrac{5x}{3}$

(D) $\dfrac{3x}{2}$

(E) $\dfrac{3x}{5}$

STOP

IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK ON THIS SECTION ONLY.

DO NOT TURN TO ANY OTHER SECTION IN THE TEST

15. Which of the following inequalities is equivalent to

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Directions: For each question in this section, select the best of the answer choices given.

1. The chanterelle, a type of wild mushroom, grows beneath host trees such as the Douglas fir, which provide it with necessary sugars. The underground filaments of chanterelles, which extract the sugars, in turn provide nutrients and water for their hosts. Because of this mutually beneficial relationship, harvesting the chanterelles growing beneath a Douglas fir seriously endangers the tree.

    Which of the following, if true, casts the most doubt on the conclusion drawn above?

    (A) The number of wild mushrooms harvested has increased in recent years.

    (B) Chanterelles grow not only beneath Douglas firs but also beneath other host trees.

    (C) Many types of wild mushrooms are found only in forests and cannot easily be grown elsewhere.

    (D) The harvesting of wild mushrooms stimulates future growth of those mushrooms.

    (E) Young Douglas fir seedlings die without the nutrients and water provided by chanterelle filaments.

2. The reason much refrigerated food spoils is that it ends up out of sight at the back of the shelf. So why not have round shelves that rotate? Because such rotating shelves would have just the same sort of drawback, since things would fall off the shelves' edges into the rear corners.

    Which of the following is presupposed in the argument against introducing rotating shelves?

    (A) Refrigerators would not be made so that their interior space is cylindrical.

    (B) Refrigerators would not be made to have a window in front for easy viewing of their contents without opening the door.

    (C) The problem of spoilage of refrigerated food is not amenable to any solution based on design changes.

    (D) Refrigerators are so well designed that there are bound to be drawbacks to any design change.

    (E) Rotating shelves would be designed to rotate only while the refrigerator door was open.

3. It would cost Rosetown one million dollars to repair all of its roads. In the year after completion of those repairs, however, Rosetown would thereby avoid incurring three million dollars worth of damages, since currently Rosetown pays that amount annually in compensation for damage done to cars each year by its unrepaired roads.

    Which of the following, if true, gives the strongest support to the argument above?

    (A) Communities bordering on Rosetown also pay compensation for damage done to cars by their unrepaired roads.

    (B) After any Rosetown road has been repaired several years will elapse before that road begins to damage cars.

    (C) Rosetown would need to raise additional taxes if it were to spend one million dollars in one year on road repairs.

    (D) The degree of damage caused to Rosetown's roads by harsh weather can vary widely from year to year.

    (E) Trucks cause much of the wear on Rosetown's roads, but owners of cars file almost all of the claims for compensation for damage caused by unrepaired roads.

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4. Two experimental garden plots were each planted with the same number of tomato plants. Magnesium salts were added to the first plot but not to the second. The first plot produced 20 pounds of tomatoes and the second plot produced 10 pounds. Since nothing else but water was added to either plot, the higher yields in the first plot must been due to the magnesium salts.

Which of the following, if true, most seriously weakens the argument above?

(A) A small amount of the magnesium salts from the first plot leached into the second plot.

(B) Tomato plants in a third experimental plot, to which a high-nitrogen fertilizer was added, but no magnesium salts, produced 15 pounds of tomatoes.

(C) Four different types of tomatoes were grown in equal proportions in each of the plots.

(D) Some weeds that compete with tomatoes cannot tolerate high amounts of magnesium salts in the soil.

(E) The two experimental plots differed from each other with respect to soil texture and exposure to sunlight.

5. Archaeologists have found wheeled ceramic toys made by the Toltec, twelfth-century inhabitants of what is now Veracruz. Although there is no archaeological evidence that the Toltec used wheels for anything but toys, some anthropologists hypothesize that wheeled utility vehicles were used to carry materials needed for the monumental structures the Toltec produced.

Which of the following, if true, would most help the anthropologists explain the lack of evidence noted above?

(A) The Toltec sometimes incorporated into their toys representations of utensils or other devices that served some practical purpose.

(B) Any wheeled utility vehicles used by the Toltec could have been made entirely of wood, and unlike ceramic, wood decays rapidly in the humid climate of Veracruz.

(C) Carvings in monument walls suggest that the Toltec's wheeled ceramic toys sometimes had ritual uses in addition to being used by both children and adults as decorations and playthings.

(D) Wheeled utility vehicles were used during the twelfth century in many areas of the world, but during this time wheeled toys were not very common in areas outside Veracruz.

(E) Some of the wheeled ceramic toys were found near the remains of monumental structures.

6. Demographers doing research for an international economics newsletter claim that the average per capita income in the country of Kuptala is substantially lower than that in the country of Bahlton. They also claim, however, that whereas poverty is relatively rare in Kuptala, over half the population of Bahlton lives in extreme poverty. At least one of the demographers' claims must, therefore, be wrong.

The argument above is most vulnerable to which of the following criticisms?

(A) It rejects an empirical claim about the average per capita incomes in the two countries without making any attempt to discredit that claim by offering additional economic evidence.

(B) It treats the vague term "poverty" as though it had a precise and universally accepted meaning.

(C) It overlooks the possibility that the number of people in the two countries who live in poverty could be the same even though the percentages of the two populations that live in poverty differ markedly.

(D) It fails to show that wealth and poverty have the same social significance in Kuptala as in Bahlton.

(E) It does not consider the possibility that incomes in Kuptala, unlike those in Bahlton, might all be very close to the country's average per capita income.

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7. Normally, increases in the price of a product decrease its sales except when the price increase accompanies an improvement in the product. Wine is unusual, however. Often increases in the price of a particular producer's wine will result in increased sales, even when the wine itself is unchanged.

Which of the following, if true, does most to explain the anomaly described above?

(A) The retail wine market is characterized by an extremely wide range of competing products.

(B) Many consumers make decisions about which wines to purchase on the basis of reviews of wine published in books and periodicals.

(C) Consumers selecting wine in a store often use the price charged as their main guide to the wine's quality.

(D) Wine retailers and producers can generally increase the sales of a particular wine temporarily by introducing a price discount.

(E) Consumers who purchase wine regularly generally have strong opinions about which wines they prefer.

8. The recent decline in land prices has hurt many institutions that had invested heavily in real estate. Last year, before the decline began, a local college added 2,000 acres to its holdings. The college, however, did not purchase the land but received it as a gift. Therefore the price decline will probably not affect the college.

Which of the following, if true, casts most doubt on the conclusion above?

(A) The 2,000 acres that the college was given last year are located within the same community as the college itself.

(B) The college usually receives more contributions of money than of real estate.

(C) Land prices in the region in which the college is located are currently higher than the national average.

(D) Last year, the amount that the college allocated to pay for renovations included money it expected to receive by selling some of its land this year.

(E) Last year, the college paid no property taxes on land occupied by college buildings but instead paid fees to compensate the local government for services provided.

9. Civil trials often involve great complexities that are beyond the capacities of jurors to understand. As a result, jurors' decisions in such trials are frequently incorrect. Justice would therefore be better served if the more complex trials were decided by judges rather than juries.

The argument above depends on which of the following assumptions?

(A) A majority of civil trials involve complexities that jurors are not capable of understanding.

(B) The judges who would decide complex civil trials would be better able to understand the complexities of those trials than jurors are.

(C) The judges who would preside over civil trials would disallow the most complex sorts of evidence from being introduced into those trials.

(D) Jurors' decisions are frequently incorrect even in those civil trials that do not involve great complexities.

(E) The sole reason in favor of having juries decide civil trials is the supposition that their decisions will almost always be correct.

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10. Some species of dolphins find their prey by echolocation; they emit clicking sounds and listen for echoes returning from distant objects in the water. Marine biologists have speculated that those same clicking sounds might have a second function: particularly loud clicks might be used by the dolphins to stun their prey at close range through sensory overload.

Which of the following, if discovered to be true, would cast the most serious doubt on the correctness of the speculation described above?

(A) Dolphins that use echolocation to locate distant prey also emit frequent clicks at intermediate distances as they close in on their prey.

(B) The usefulness of echolocation as a means of locating prey depends on the clicking sounds being of a type that the prey is incapable of perceiving, regardless of volume.

(C) If dolphins stun their prey, the effect is bound to be so temporary that stunning from far away, even if possible, would be ineffective.

(D) Echolocation appears to give dolphins that use it information about the richness of a source of food as well as about its direction.

(E) The more distant a dolphin's prey, the louder the echolocation clicks must be if they are to reveal the prey's presence to the hunting dolphin.

11. Advertisement:

The world's best coffee beans come from Colombia. The more Colombian beans in a blend of coffee, the better the blend, and no company purchases more Colombian beans than Kreemo Coffee, Inc. So it only stands to reason that if you buy a can of Kreemo's coffee, you're buying the best blended coffee available today.

The reasoning of the argument in the advertisement is flawed because it overlooks the possibility that

(A) the equipment used by Kreemo to blend and package its coffee is no different from that used by most other coffee producers

(B) not all of Kreemo's competitors use Colombian coffee beans in the blends of coffee they sell

(C) Kreemo sells more coffee than does any other company

(D) Kreemo's coffee is the most expensive blended coffee available today

(E) the best unblended coffee is better than the best blended coffee

12. The only purpose for which a particular type of tape is needed is to hold certain surgical wounds closed for ten days—the maximum time such wounds need tape. Newtape is a new brand of this type of tape. Newtape's salespeople claim that Newtape will improve healing because Newtape adheres twice as long as the currently used tape does.

Which of the following statements, if true, would most seriously call into question the claim made by Newtape's salespeople?

(A) Most surgical wounds take about ten days to heal.

(B) Most surgical tape is purchased by hospitals and clinics rather than by individual surgeons.

(C) The currently used tape's adhesiveness is more than sufficient to hold wounds closed for ten days.

(D) Neither Newtape nor the currently used tape adheres well to skin that has not been cleaned.

(E) Newtape's adhesion to skin that has been coated with a special chemical preparation is only half as good as the currently used tape's adhesion to such coated skin.

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13. A severe drought can actually lessen the total amount of government aid that United States farmers receive as a group. The government pays farmers the amount, if any, by which the market price at which crops are actually sold falls short of a preset target price per bushel for the crops. The drought of 1983, for example, caused farm-program payments to drop by $10 billion.

Given the information above, which of the following, if true, best explains why the drought of 1983 resulted in a reduction in farm-program payments?

(A) Prior to the drought of 1983, the government raised the target price for crops in order to aid farmers in reducing their debt loads.

(B) Due to the drought of 1983, United States farmers exported less food in 1983 than in the preceding year.

(C) Due to the drought of 1983, United States farmers had smaller harvests and thus received a higher market price for the 1983 crop than for the larger crop of the preceding year.

(D) Due to the drought of 1983, United States farmers planned to plant smaller crops in 1984 than they had in 1983.

(E) Despite the drought of 1983, retail prices for food did not increase significantly between 1982 and 1983.

14. In order to increase revenues, an airport plans to change the parking fees it charges at its hourly parking lots. Rather than charging $2.00 for the first two-hour period, or part thereof, and $1.00 for each hour thereafter, the airport will charge $4.00 for the first four-hour period, or part thereof, and $1.00 for each hour thereafter.

Which of the following is a consideration that, if true, suggest that the plan will be successful in increasing revenues?

(A) Very few people who park their cars at the hourly parking lot at the airport leave their cars for more than two hours at a time.

(B) Over the past several years, the cost to the airport of operating its hourly parking facilities has been greater than the revenues it has received from them.

(C) People who leave their cars at the airport while on a trip generally park their cars in lots that charge by the day rather than by the hour.

(D) A significant portion of the money spent to operate the airport parking lot is spent to maintain the facilities rather than to pay the salaries of the personnel who collect the parking fees.

(E) The hourly parking lots at the airport have recently been expanded and are therefore rarely filled to capacity.

15. In the course of her researches, a historian recently found two documents mentioning the same person, Erich Schnitzler. One, dated May 3, 1739, is a record of Schnitzler's arrest for peddling without a license. The second, undated, is a statement by Schnitzler asserting that he has been peddling off and on for 20 years.

The facts above best support which of the following conclusions?

(A) Schnitzler started peddling around 1719.

(B) Schnitzler was arrested repeatedly for peddling.

(C) The undated document was written before 1765.

(D) The arrest record was written after the undated document.

(E) The arrest record provides better evidence that Schnitzler peddled than does the undated document.

16. The recent upheaval in the office-equipment retail business, in which many small firms have gone out of business, has been attributed to the advent of office equipment "superstores" whose high sales volume keeps their prices low. This analysis is flawed, however, since even today the superstores control a very small share of the retail market.

Which of the following, if true, would most weaken the argument that the analysis is flawed?

(A) Most of the larger customers for office equipment purchase under contract directly from manufacturers and thus do not participate in the retail market.

(B) The superstores' heavy advertising of their low prices has forced prices down throughout the retail market for office supplies.

(C) Some of the superstores that only recently opened have themselves gone out of business.

(D) Most of the office equipment superstores are owned by large retailing chains that also own stores selling other types of goods.

(E) The growing importance of computers in most offices has changed the kind of office equipment retailers must stock.

S T O P

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Directions: In this section solve each problem, using any available space on the page for scratch work. Then indicate the best of the answer choices given.

Numbers: All numbers used are real numbers.

Figures: Figures that accompany problems in this section are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that its figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.

1. A certain taxi fare consists of an initial charge of $1.25 and an additional charge of $0.25 for each $\frac{1}{5}$ mile traveled. What is the total fare for a trip of 2.4 miles?

    (A) $4.25
    (B) $3.00
    (C) $2.25
    (D) $1.85
    (E) $1.75

2. If $\begin{vmatrix} a & b \\ c & d \end{vmatrix} = ad - bc$ for all numbers $a,\ b,\ c,$ and $d,$ then $\begin{vmatrix} 3 & 5 \\ -2 & 4 \end{vmatrix} =$

    (A) -22
    (B) -2
    (C) 2
    (D) 7
    (E) 22

3. If the area of a square region having sides of length 6 centimeters is equal to the area of a rectangular region having width 2.5 centimeters, then the length of the rectangle, in centimeters, is

    (A) 8.5
    (B) 9.5
    (C) 9.6
    (D) 10.5
    (E) 14.4

4. The total cost for Company X to produce a batch of tools is $10,000 plus $3 per tool. Each tool sells for $8. The gross profit earned from producing and selling these tools is the total income from sales minus the total production cost. If a batch of 20,000 tools is produced and sold, then Company X's gross profit per tool is

    (A) $3.00
    (B) $3.75
    (C) $4.50
    (D) $5.00
    (E) $5.50

5. Of the following, which is most nearly equal to $\sqrt{10}$?

    (A) 3.1
    (B) 3.2
    (C) 3.3
    (D) 3.4
    (E) 3.5

6. Exactly $\frac{1}{3}$ of the children in a certain class are girls. If there are 18 boys in the class, how many girls are in the class?

    (A) 6
    (B) 9
    (C) 12
    (D) 24
    (E) 27

GO ON TO THE NEXT PAGE.

Questions 7-8 refer to the following information.
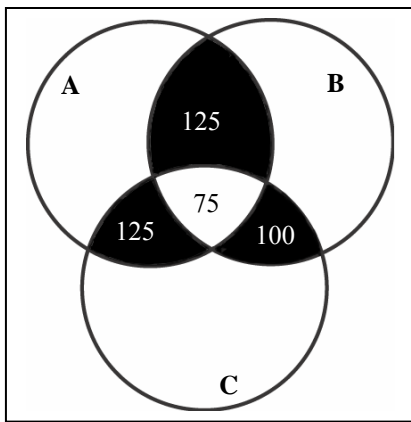
In a marketing survey for products A, B, and C, 1,000 people were asked which of the products, if any, they use. The three circular regions in the diagram above represent the numbers of people who use products A, B, and C, according to the survey results. Of the people surveyed, a total of 400 use A, a total of 400 use B, and a total of 450 use C.

7.   How many of the people surveyed use exactly one of the products?

   (A) 75
   (B) 100
   (C) 150
   (D) 250
   (E) 325

8.   What percent of the people surveyed use product A or product B or both, but not product C ?

   (A) 12.5%
   (B) 17.5%
   (C) 30%
   (D) 40%
   (E) 60%

9.   If $x = \dfrac{a}{2} + \dfrac{b}{2^3} + \dfrac{c}{2^4}$, where a, b, and c are each equal to 0 or 1, then x could be each of the following EXCEPT

   (A) $\dfrac{1}{16}$

   (B) $\dfrac{3}{16}$

   (C) $\dfrac{5}{16}$

   (D) $\dfrac{10}{16}$

   (E) $\dfrac{11}{16}$

10.   The equation $\dfrac{M+6}{36} = \dfrac{P-7}{21}$ relates two temperature scales. Where M is the number of degrees on one scale and P is the number of degrees on the other scale. Which of the following equations can be used to convert temperatures from the P scale to the M scale?

   (A) $M = \dfrac{7}{12}P + 13$

   (B) $M = \dfrac{7}{12}P + 21$

   (C) $M = \dfrac{12}{7}P - 12$

   (D) $M = \dfrac{12}{7}P - 13$

   (E) $M = \dfrac{12}{7}P - 18$

11.   If x is a positive number and $\dfrac{1}{2}$ the square root of x is equal to $2x$, then $x =$

   (A) $\dfrac{1}{16}$

   (B) $\dfrac{1}{4}$

   (C) $\dfrac{1}{2}$

   (D) 2

   (E) 8

Score	Number of Students
83	5
70	6
92	3
	5
64	1

12.   The incomplete table above shows a distribution of scores for a class of 20 students. If the average (arithmetic mean) score for the class is 78, what score is missing from the table?

   (A) 73
   (B) 75
   (C) 77
   (D) 79
   (E) 81

13. Carl drove from his home to the beach at an average speed of 80 kilometers per hour and returned home by the same route at an average speed of 70 kilometers per hour. If the trip home took $\frac{1}{2}$ hour longer than the trip to the beach, how many kilometers did Carl drive each way?

(A) 350
(B) 345
(C) 320
(D) 280
(E) 240

14. If $5x = 6y$ and $xy \neq 0$, what is the ratio of $\frac{1}{5}x$ to $\frac{1}{6}y$?

(A) $\dfrac{25}{6}$

(B) $\dfrac{36}{25}$

(C) $\dfrac{6}{5}$

(D) $\dfrac{5}{6}$

(E) $\dfrac{25}{36}$

80 cm 60 cm
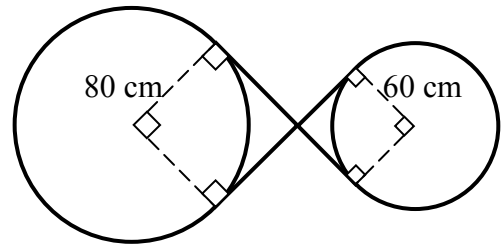
15. The figure above shows a cord around two circular disks. If the radii of the two disks are 80 centimeters and 60 centimeters, respectively, what is the total length, in centimeters, of the cord?

(A) 210π
(B) $210\pi + 280$
(C) 280π
(D) $280\pi + 80$
(E) $280\pi + 280$

16 If x, y, and z are positive integers and $3x = 4y = 7z$, then the least possible value of $x + y + z$ is

(A) 33
(B) 40
(C) 49
(D) 61
(E) 84

STOP

IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK ON THIS SECTION ONLY.

DO NOT TURN TO ANY OTHER SECTION IN THE TEST.

ANSWER KEY – Test Code 31

Section 1	Section 2	Section 4	Section 5	Section 6	Section 7
1. D	1. C	1. C	1. D	1. D	1. A
2. E	2. D	2. E	2. B	2. A	2. E
3. D	3. C	3. E	3. E	3. B	3. E
4. D	4. A	4. A	4. C	4. E	4. C
5. C	5. D	5. C	5. D	5. B	5. B
6. A	6. D	6. D	6. A	6. E	6. B
7. D	7. E	7. A	7. C	7. C	7. E
8. C	8. B	8. C	8. E	8. D	8. C
9. A	9. E	9. B	9. A	9. B	9. C
10. C	10. B	10. D	10. B	10. B	10. E
11. E	11. C	11. D	11. C	11. C	11. A
12. B	12. E	12. B	12. A	12. C	12. C
13. C	13. B	13. A	13. D	13. C	13. D
14. D	14. D	14. C	14. D	14. A	14. B
15. B	15.A	15. B	15. B	15. C	15. B
16. C	16. E	16. C	16. B	16. B	16. D
17. A	17. C	17. A			
18. B	18. D	18. D			
	19. C	19. E			
	20. E	20. E			
		21. E			
		22. B			

CONVERSION TABLE FOR VERBAL AND QUANTITATIVE SCORES

Graduate Management Admission Test, Code 31

	Scaled Score			Scaled Score			Scaled Score	
Corrected Raw Score	Verbal Score	Quantitative Score	Corrected Raw Score	Verbal Score	Quantitative Score	Corrected Raw Score	Verbal Score	Quantitative Score
56	50		31	30	37	6	12	18
55	49		30	29	36	5	11	17
54	48		29	28	36	4	10	16
53	47		28	28	35	3	9	15
52	46	51	27	27	34	2	9	14
51	45	50	26	26	33	1	8	13
50	44	50	25	25	33	0	7	12
49	43	49	24	25	32			
48	42	49	23	24	31			
47	41	48	22	23	31			
46	41	48	21	22	30			
45	40	47	20	22	29			
44	39	47	19	21	28			
43	38	46	18	20	28			
42	38	45	17	20	27			
41	37	44	16	19	26			
40	36	44	15	18	26			
39	36	43	14	17	25			
38	35	42	13	17	24			
37	34	41	12	16	23			
36	33	41	11	15	23			
35	33	40	10	14	22			
34	32	39	9	14	21			
33	31	39	8	13	20			
32	30	38	7	12	19			

CONVERSION TABLE FOR TOTAL SCORES

Graduate Management Admission Test, Code 31

Corrected Raw Score	Total Scaled Score	Corrected Raw Score	Total Scaled Score	Corrected Raw Score	Total Scaled Score	Corrected Raw Score	Total Scaled Score
108	800	78	640	48	490	18	330
107	800	77	640	47	480	17	330
106	800	76	630	46	480	16	320
105	790	75	630	45	470	15	320
104	790	74	620	44	470	14	310
103	780	73	620	43	460	13	300
102	780	72	610	42	460	12	300
101	770	71	610	41	450	11	290
100	760	70	600	40	440	10	290
99	750	69	600	39	440	9	280
98	750	68	590	38	430	8	280
97	740	67	580	37	430	7	270
96	730	66	580	36	420	6	260
95	730	65	570	35	420	5	250
94	720	64	570	34	410	4	240
93	720	63	560	33	410	3	230
92	710	62	560	32	400	2	220
91	710	61	550	31	400	1	210
90	700	60	550	30	390	0	200
89	700	59	540	29	390		
88	690	58	540	28	380		
87	690	57	530	27	380		
86	680	56	530	26	370		
85	680	55	520	25	370		
84	670	54	520	24	360		
83	670	53	510	23	360		
82	660	52	510	22	350		
81	660	51	500	21	350		
80	650	50	500	20	340		
79	650	49	490	19	340		

SCORING INFORMATION

Calculating and Verifying Your Multiple-Choice Scores

Proceed with the following steps.

1. As you match the responses on your answer sheet with the answer key on page 32, use marks to indicate whether each answer is correct or incorrect. Cross out any questions you omitted, or for which you marked more than one answer, because they are not counted in the scoring. The number of questions crossed out should equal the "raw score total omit" figure on your score report. The number of questions crossed out in the three sections that contributed to your verbal score and the similar number for the three sections that contributed to the quantitative score should match the "raw score verbal omit" and "raw score quantitative omit" figures on your score report.

2. Count the total number of questions you answered correctly in the three sections that contributed to the verbal score. This number should match the "raw score verbal right" figure on your score report.

3. Then count the total number of questions you answered incorrectly in these three sections. This number should match the "raw score verbal wrong" figure on your score report.

4. Divide the number answered incorrectly from Step 3 by four.

5. Subtract the result in Step 4 from the number answered correctly in Step 2. This is the correction for guessing.

6. Round the resulting number to the nearest whole number by adding .5 and then dropping all digits to the right of the decimal point. This number should equal the "verbal corrected raw score" figure on your score report.

The table below shows three examples of corrected raw score calculations based on 40 questions (total number of omitted or multiple-marked questions, number correct, and number wrong):

	Example 1	**Example 2**	**Example 3**
Step 1- Number omitted or multiple-marked……..	8	0	5
Step 2- Number correct…	20	25	30
Step 3- Number wrong….	12	15	5
Step 4- Number wrong in step 3 divided by 4……..	3	3.75	1.25
Step 5- Number in step 2 minus number in step 4	17	21.25	28.75
Step 6- Rounding- Add .5 to the number in step 5	17.5	21.75	29.25
Final raw score corrected for guessing: Drop all digits to the right of the decimal in step 6………..	17	21	29

Repeat these steps using the three sections contributing to the quantitative score to calculate your quantitative corrected raw score and all six sections contributing to the total score to obtain your total corrected raw score. The figures you calculate should match the respective figures on your score report. The sum of your verbal and quantitative corrected raw scores may be one point higher or lower than the total corrected raw score due to the rounding procedure for each score.

Conversion of Corrected Raw Scores to Scaled Scores

Use the score conversion tables on pages 33 and 34 to find the scaled score associated with each of your corrected raw scores. The equivalent scaled scores should match those on your score report.

Your Analytical Writing Scores

Analytical Writing Assessments are offered in this test preparation product for practice purposes only. When calculating the GMAT® equivalent score on GMAT Paper Tests, the essay portion should be ignored. When taking the GMAT®, the Analytical Writing Assessment results are reported on your official score report to schools.

Caveats Regarding Raw Score Interpretation

1.   The GMAT is designed to yield only the reported verbal, quantitative, and total scaled scores. One should not calculate raw scores or individual test sections and infer specific strengths or weaknesses from a comparison of the raw scores results by section. There are two reasons for this. First, different sections have different numbers of questions, and, even if the number were the same of if percentages were used to make the numbers comparable, the sections might not be equally difficult. For illustrative purposes only, suppose that one section had 20 items and another had 25. Furthermore, suppose you received corrected raw scores of 10 on the first and 10 on the second. It would be inappropriate to conclude that you had equal ability in the two sections because the corrected raw scores were equal, as you really obtained 50 percent for the first section and only 40 percent for the second. It would be equally inappropriate, however, to conclude from the percentages that you did better on the first section than on the second. Suppose the first section was relatively easy for most examinees (say, an average corrected raw score percentage across examines of 55 percent) and the second was relatively difficult (an average raw score percentage of 35 percent). Now you might conclude that you did less well than average on the first section and better than average on the second.

       Differences in difficulty level between editions are accounted for in the procedure for converting the verbal, quantitative, and total corrected raw scores to scaled scores. Since the corrected raw scores for individual sections are not converted to produce scales scores by section, performance on individual sections of the test cannot be compared.

       Second, corrected raw scores by section ate not converted to scaled scores by section because the GMAT is not designed to reliably measure specific strengths and weaknesses beyond the general verbal and quantitative abilities for which separate scaled scores are reported. Reliability is dependent, in part, on the number of questions in the test- the more questions, the higher the reliability. The relatively few questions in each section, taken alone, are not sufficient to produce a reliable result for each section (see "Accuracy of the Scores" in the *GMAT Examinee Score Interpretation Guide.*) Only the reported verbal, quantitative, and total scaled scores (which are based on questions from several sections) have sufficient reliability to permit their use in counseling and predicting graduate school performance.

2.   It is possible, if you repeat the test, that your second raw scores corrected for guessing could be high than on the first test, but your scaled scores could be lower and vice versa. This is a result of the slight differences in difficulty level between editions of the test, which are taken into account when corrected raw scores are converted to the GMAT scaled scores. That is, for a given scaled score, a more difficult edition requires a lower corrected raw score and an easier edition requires a high corrected raw score.

Additional Information

If you have questions about any of the information in this booklet, please contact:

> Graduate Management Admission Council
>
> 1600 Tysons Blvd.
>
> Suite 1400
>
> McLean, VA 22102
>
> Phone: 703-749-0131
>
> estore@gmac.com

If you have questions about specific test questions, please indicate that test code and the number(s) of the question(s) as well as your query or comment.