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**Graduate  
Management  
Admission  
Council®**



**Educational  
Testing Service**

# Graduate Management Admission Test (GMAT®)

Disclosed Edition

Test Code 52

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## **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 52. If the first two digits of the test code on your answer sheet (item 5 on Side 1) are not 52, 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 52.

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 2	Reading Comprehension
Section 5	Critical Reasoning
Section 7	Sentence Correction

### Quantitative Assessment

Section 1	Problem Solving
Section 4	Data Sufficiency
Section 6	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

Directions: In this section, you will be asked to write a critique of the argument presented below. *You are NOT being asked to present your own views on the subject.*

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 sheet. Make sure that you use the answer sheet that goes with this writing task.

The following appeared in a memorandum to the planning department of an investment firm.

“Costs have begun dropping for several types of equipment currently used to convert solar energy into electricity. Moreover, some exciting new technologies for converting solar energy are now being researched and developed. Hence we can expect that solar energy will soon become more cost efficient and attractive than coal or oil as a source of electrical power. We should, therefore, encourage investment in Solario, a new manufacturer of solar-powered products. After all, Solario’s chief executive was once on the financial planning team for Ready-to-Ware, a software engineering firm that has shown remarkable growth since its recent incorporation.”

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. For example, you may need to consider what questionable assumptions underlie the thinking and what alternative explanations or counterexamples might weaken the conclusion. You can also discuss what sort of evidence would strengthen or refute the argument, what changes in the argument would make it more logically sound, and what, if anything, would help you 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.

**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.

Analytical Writing 2  
ANALYSIS OF AN ISSUE

Time—30 minutes

Directions: In this section, you will need to analyze the issue presented below and explain your views on it. The question has no “correct” answer. Instead, you should consider various perspectives as you develop your own position on the issue.

Read the statement 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 sheet. Make sure that you use the answer sheet that goes with this writing task.

“The best strategy for managing a business, or any enterprise, is to find the most capable people and give them as much authority as possible.”

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

NOTES

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

**STOP**

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**ANSWER Sheet – Test Code 52**

<b>Section 1</b>	<b>Section 2</b>	<b>Section 4</b>	<b>Section 5</b>	<b>Section 6</b>	<b>Section 7</b>
1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	2.
3.	3.	3.	3.	3.	3.
4.	4.	4.	4.	4.	4.
5.	5.	5.	5.	5.	5.
6. Not Scored	6.	6.	6.	6.	6.
7.	7.	7.	7.	7.	7.
8.	8.	8.	8.	8.	8.
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

16 Questions

**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.

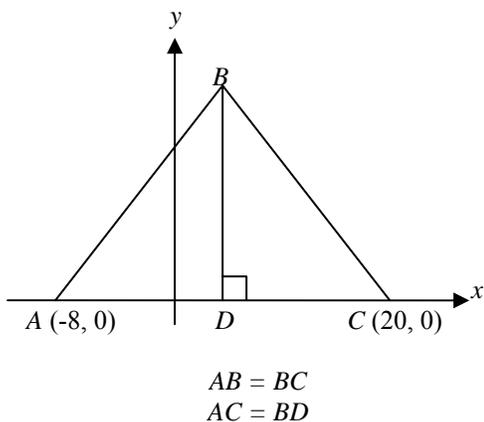
1. A study based on a random sample revealed that, on average, 2 out of 5 adults have high blood pressure. If these results hold true for the 580,000 adults in *City A*, approximately how many adults in *City A* have high blood pressure?
- (A) 116,000  
(B) 145,000  
(C) 232,000  
(D) 250,000  
(E) 290,000
2. The sum  $\frac{7}{8} + \frac{1}{9}$  is between
- (A)  $\frac{1}{2}$  and  $\frac{3}{4}$   
(B)  $\frac{3}{4}$  and 1  
(C) 1 and  $1\frac{1}{4}$   
(D)  $1\frac{1}{4}$  and  $1\frac{1}{2}$   
(E)  $1\frac{1}{2}$  and 2
3. A certain state legislature consists of 124 members, each of whom is either a Democrat or a Republican. If there are 18 more Republicans than Democrats, how many Republicans are in the legislature?
- (A) 44  
(B) 53  
(C) 71  
(D) 80  
(E) 106
4. A certain psychologist charges \$30 more for the first hour of therapy than for each additional hour. If the total charge to a patient who receives 6 hours of therapy is \$300, what is the total charge to a patient who receives only 3 hours of therapy?
- (A) \$120  
(B) \$135  
(C) \$150  
(D) \$165  
(E) \$192
5. If  $x + y = 1$  and  $x - y = -1$ , what is the value of  $xy$ ?
- (A) -2  
(B) -1  
(C) 0  
(D) 1  
(E) 2
6. NOT SCORED
7. If  $(x^2 + 6x + 9) + 6(x + 3) + 9 = 0$ , then  $x =$
- (A) -6  
(B) -3  
(C) 0  
(D) 3  
(E) 6
- GO ON TO THE NEXT PAGE

8. In 1982 and 1983, Company *B*'s operating expenses were \$12.0 million and \$14.0 million, respectively, and its revenues were \$15.6 million and \$18.8 million, respectively. What was the percent increase in Company *B*'s Profit (revenues minus operating expenses) from 1982 to 1983?

- (A) 3%
- (B)  $16\frac{2}{3}\%$
- (C) 25%
- (D)  $33\frac{1}{3}\%$
- (E) 60%

9. If  $a$  and  $b$  are integers and  $b \neq 0$ , which of the following CANNOT equal 0?

- (A)  $ab$
- (B)  $a - b$
- (C)  $a + b$
- (D)  $ab - b^2$
- (E)  $a^2 + b^2$



10. What are the coordinates of point  $B$  in the  $xy$ -plane above?

- (A) (6, 12)
- (B) (6, 28)
- (C) (8, 20)
- (D) (12, 20)
- (E) (14, 28)

11. Last year 31 percent of Ace Book Company's sales revenue came from the sale of novels. Of the remaining revenue,  $\frac{1}{3}$  was from the sale of biographies. The company's revenue from the sale of novels was approximately how many times its revenue from the sale of biographies?

- (A) 1.3
- (B) 1.5
- (C) 2.1
- (D) 2.5
- (E) 3.1

12. Three musical notes have frequencies  $x$ ,  $y$ , and  $z$ , respectively. If  $x$ ,  $y$ , and  $z$  are positive,  $\frac{x}{y} = \frac{y}{z}$ , and  $2x = z$ , what is  $y$  in terms of  $x$ ?

- (A)  $2x$
- (B)  $(\sqrt{2})x$
- (C)  $\frac{1}{\sqrt{2}}x$
- (D)  $\frac{1}{2}x$
- (E)  $\frac{\sqrt{2}}{3}x$

#### LEAGUE RESULTS

Team	Number of Games Won
<i>A</i>	4
<i>B</i>	7
<i>C</i>	9
<i>D</i>	2
<i>E</i>	2
<i>X</i>	

13. According to the incomplete table above, if each of the 6 teams in the league played each of the other teams exactly twice and there were no ties, how many games did team  $X$  win? (Only 2 teams play in a game.)

- (A) 4
- (B) 5
- (C) 6
- (D) 8
- (E) 10

GO ON TO THE NEXT PAGE.

14. When the integer  $k$  is divided by 12, the remainder is 3. Which of the following, when divided by 12, will have a remainder of 6?
- I.  $2k$   
II.  $6k$   
III.  $4k + 6$
- (A) I only  
(B) II only  
(C) III only  
(D) I and II only  
(E) I, II, and III

15. A rectangular tabletop consists of a piece of laminated wood bordered by a thin metal strip along its four edges. The surface area of the tabletop is  $x$  square feet, and the total length of the strip before it was attached was  $x$  feet. If the tabletop is 3 feet wide, what is its approximate length, in feet?
- (A) 12  
(B) 10  
(C) 9  
(D) 8  
(E) 6

16. For all real numbers  $v$ , the operation  $v^*$  is defined by the equation  $v^* = v - \frac{v}{3}$ . If  $(v^*)^* = 8$ , then  $v =$
- (A) 15  
(B) 18  
(C) 21  
(D) 24  
(E) 27

**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.



SECTION 2

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.

Coral reefs are one of the most fragile, biologically complex, and diverse marine ecosystems on Earth. This ecosystem is one of the fascinating paradoxes of the biosphere: how do clear, and thus nutrient-poor, waters support such prolific and productive communities? Part of the answer lies within the tissues of the corals themselves. Symbiotic cells of algae known as zooxanthellae carry out photosynthesis using the metabolic wastes of the corals, thereby producing food for themselves, for their coral hosts, and even for other members of the reef community. This symbiotic process allows organisms in the reef community to use sparse nutrient resources efficiently. Unfortunately for coral reefs, however, a variety of human activities are causing worldwide degradation of shallow marine habitats by adding nutrients to the water. Agriculture, slash-and-burn land clearing, sewage disposal, and manufacturing that creates waste by-products all increase nutrient loads in these waters. Typical symptoms of reef decline are destabilized herbivore populations and an increasing abundance of algae and filter-feeding animals. Declines in reef communities are consistent with observations that nutrient input is increasing in direct proportion to growing human populations, thereby threatening reef communities sensitive to subtle changes in nutrient input to their waters.

1. The passage is primarily concerned with
- (A) describing the effects of human activities on algae in coral reefs
  - (B) explaining how human activities are posing a threat to coral reef communities
  - (C) discussing the process by which coral reefs deteriorate in nutrient-poor waters
  - (D) explaining how coral reefs produce food for themselves
  - (E) describing the abundance of algae and filter-feeding animals in coral reef areas

2. The passage suggests which of the following about coral reef communities?
- (A) Coral reef communities may actually be more likely to thrive in waters that are relatively low in nutrients.
  - (B) The nutrients on which coral reef communities thrive are only found in shallow waters.
  - (C) Human population growth has led to changing ocean temperatures, which threatens coral reef communities.
  - (D) The growth of coral reef communities tends to destabilize underwater herbivore populations.
  - (E) Coral reef communities are more complex and diverse than most ecosystems located on dry land.
3. The author refers to “filter-feeding animals” (line 20) in order to
- (A) provide an example of a characteristic sign of reef deterioration
  - (B) explain how reef communities acquire sustenance for survival
  - (C) identify a factor that helps herbivore populations thrive
  - (D) indicate a cause of decreasing nutrient input in waters that reefs inhabit
  - (E) identify members of coral reef communities that rely on coral reefs for nutrients

GO ON TO THE NEXT PAGE.

4. According to the passage, which of the following is a factor that is threatening the survival of coral reef communities?
- (A) The waters they inhabit contain few nutrient resources.
  - (B) A decline in nutrient input is disrupting their symbiotic relationship with zooxanthellae.
  - (C) The degraded waters of their marine habitats have reduced their ability to carry out photosynthesis.
  - (D) They are too biologically complex to survive in habitats with minimal nutrient input.
  - (E) Waste by-products result in an increase in nutrient input to reef communities.
5. It can be inferred from the passage that the author describes coral reef communities as paradoxical most likely for which of the following reasons?
- (A) They are thriving even though human activities have depleted the nutrients in their environment.
  - (B) They are able to survive in spite of an overabundance of algae inhabiting their waters.
  - (C) They are able to survive in an environment with limited food resources.
  - (D) Their metabolic wastes contribute to the degradation of the waters that they inhabit.
  - (E) They are declining even when the water surrounding them remains clear.

GO ON TO THE NEXT PAGE.

Two divergent definitions have dominated sociologists' discussions of the nature of ethnicity. The first emphasizes the primordial and unchanging character of ethnicity. In this view, people have an essential need for belonging that is satisfied by membership in groups based on shared ancestry and culture. A different conception of ethnicity de-emphasizes the cultural component and defines ethnic groups as interest groups. In this view, ethnicity serves as a way of mobilizing a certain population behind issues relating to its economic position. While both of these definitions are useful, neither fully captures the dynamic and changing aspects of ethnicity in the United States. Rather, ethnicity is more satisfactorily conceived of as a process in which preexisting communal bonds and common cultural attributes are adapted for instrumental purposes according to changing real-life situations.

One example of this process is the rise of participation by Native American people in the broader United States political system since the Civil Rights movement of the 1960's. Besides leading Native Americans to participate more actively in politics (the number of Native American legislative officeholders more than doubled), this movement also evoked increased interest in tribal history and traditional culture. Cultural and instrumental components of ethnicity are not mutually exclusive, but rather reinforce one another.

The Civil Rights movement also brought changes in the uses to which ethnicity was put by Mexican American people. In the 1960's, Mexican Americans formed community-based political groups that emphasized ancestral heritage as a way of mobilizing constituents. Such emerging issues as immigration and voting rights gave Mexican American advocacy groups the means by which to promote ethnic solidarity. Like European ethnic groups in the nineteenth-century United States, late-twentieth-century Mexican American leaders combined ethnic with contemporary civic symbols. In 1968 Henry Cisneros, then mayor of San Antonio, Texas, cited Mexican leader Benito Juarez as a model for Mexican Americans in their fight for temporary civil rights. And every year, Mexican Americans celebrate *Cinco de Mayo* as fervently as many Irish American people embrace St. Patrick's Day (both are major holidays in the countries of origin), with both holidays having been reinvented in the context of the United States and linked to ideals, symbols, and heroes of the United States.

6. Which of the following best states the main idea of the passage?
- (A) In their definitions of the nature of ethnicity, sociologists have underestimated the power of the primordial human need to belong.
  - (B) Ethnicity is best defined as a dynamic process that combines cultural components with shared political and economic interests.
  - (C) In the United States in the twentieth century, ethnic groups have begun to organize in order to further their political and economic interests.
  - (D) Ethnicity in the United States has been significantly changed by the Civil Rights movement.
  - (E) The two definitions of ethnicity that have dominated sociologists' discussions are incompatible and should be replaced by an entirely new approach.
7. Which of the following statements about the first two definitions of ethnicity discussed in the first paragraph is supported by the passage?
- (A) One is supported primarily by sociologists, and the other is favored by members of ethnic groups.
  - (B) One emphasizes the political aspects of ethnicity, and the other focuses on the economic aspects.
  - (C) One is the result of analysis of United States populations, and the other is the result of analysis of European populations.
  - (D) One focuses more on the ancestral components of ethnicity than does the other.
  - (E) One focuses more on immigrant groups than does the other.
8. The author of the passage refers to Native American people in the second paragraph in order to provide an example of
- (A) the ability of membership in groups based on shared ancestry and culture to satisfy an essential human need
  - (B) how ethnic feelings have both motivated and been strengthened by political activity
  - (C) how the Civil Rights movement can help promote solidarity among United States ethnic groups
  - (D) how participation in the political system has helped to improve a group's economic situation
  - (E) the benefits gained from renewed study of ethnic history and culture

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9. The passage supports which of the following statements about the Mexican American community?
- (A) In the 1960's the Mexican American community began to incorporate the customs of another ethnic group in the United States into the observation of its own ethnic holidays.
  - (B) In the 1960's Mexican American community groups promoted ethnic solidarity primarily in order to effect economic change.
  - (C) In the 1960's leaders of the Mexican American community concentrated their efforts on promoting a renaissance of ethnic history and culture.
  - (D) In the 1960's members of the Mexican American community were becoming increasingly concerned about the issue of voting rights.
  - (E) In the 1960's the Mexican American community had greater success in mobilizing constituents than did other ethnic groups in the United States.
10. Which of the following types of ethnic cultural expression is discussed in the passage?
- (A) The retelling of traditional narratives
  - (B) The wearing of traditional clothing
  - (C) The playing of traditional music
  - (D) The celebration of traditional holidays
  - (E) The preparation of traditional cuisine
11. Information in the passage supports which of the following statements about many European ethnic groups in the nineteenth-century United States?
- (A) They emphasized economic interests as a way of mobilizing constituents behind certain issues.
  - (B) They conceived of their own ethnicity as being primordial in nature.
  - (C) They created cultural traditions that fused United States symbols with those of their countries of origin.
  - (D) They de-emphasized the cultural components of their communities in favor of political interests.
  - (E) They organized formal community groups designed to promote a renaissance of ethnic history and culture.
12. The passage suggests that in 1968 Henry Cisneros most likely believed that
- (A) many Mexican Americans would respond positively to the example of Benito Juárez
  - (B) many Mexican Americans were insufficiently educated in Mexican history
  - (C) the fight for civil rights in the United States had many strong parallels in both Mexican and Irish history
  - (D) the quickest way of organizing community-based groups was to emulate the tactics of Benito Juárez
  - (E) Mexican Americans should emulate the strategies of Native American political leaders

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The fact that superior service can generate a competitive advantage for a company does not mean that every attempt at improving service will create such an advantage. Investments in service, like those in production and distribution, must be balanced against other types of investments on the basis of direct, tangible benefits such as cost reduction and increased revenues. If a company is already effectively on a par with its competitors because it provides service that avoids a damaging reputation and keeps customers from leaving at an unacceptable rate, then investment in higher service levels may be wasted, since service is a deciding factor for customers only in extreme situations.

This truth was not apparent to managers of one regional bank, which failed to improve its competitive position despite its investment in reducing the time a customer had to wait for a teller. The bank managers did not recognize the level of customer inertia in the consumer banking industry that arises from the inconvenience of switching banks. Nor did they analyze their service improvement to determine whether it would attract new customers by producing a new standard of service that would excite customers or by proving difficult for competitors to copy. The only merit of the improvement was that it could easily be described to customers.

13. The primary purpose of the passage is to
- (A) contrast possible outcomes of a type of business investment
  - (B) suggest more careful evaluation of a type of business investment
  - (C) illustrate various ways in which a type of business investment could fail to enhance revenues
  - (D) trace the general problems of a company to a certain type of business investment
  - (E) criticize the way in which managers tend to analyze the costs and benefits of business investments
14. According to the passage, investments in service are comparable to investments in production and distribution in terms of the
- (A) tangibility of the benefits that they tend to confer
  - (B) increased revenues that they ultimately produce
  - (C) basis on which they need to be weighed
  - (D) insufficient analysis that managers devote to them
  - (E) degree of competitive advantage that they are likely to provide

15. The passage suggests which of the following about service provided by the regional bank prior to its investment in enhancing that service?
- (A) It enabled the bank to retain customers at an acceptable rate.
  - (B) It threatened to weaken the bank's competitive position with respect to other regional banks.
  - (C) It had already been improved after having caused damage to the bank's reputation in the past.
  - (D) It was slightly superior to that of the bank's regional competitors.
  - (E) It needed to be improved to attain parity with the service provided by competing banks.
16. The passage suggests that bank managers failed to consider whether or not the service improvement mentioned in line 19
- (A) was too complicated to be easily described to prospective customers
  - (B) made a measurable change in the experiences of customers in the bank's offices
  - (C) could be sustained if the number of customers increased significantly
  - (D) was an innovation that competing banks could have imitated
  - (E) was adequate to bring the bank's general level of service to a level that was comparable with that of its competitors.

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17. The discussion of the regional bank (lines 13-24) serves which of the following functions within the passage as a whole?
- (A) It describes an exceptional case in which investment in service actually failed to produce a competitive advantage.
  - (B) It illustrates the pitfalls of choosing to invest in service at a time when investment is needed more urgently in another area.
  - (C) It demonstrates the kind of analysis that managers apply when they choose one kind of service investment over another.
  - (D) It supports the argument that investments in certain aspects of service are more advantageous than investments in other aspects of service.
  - (E) It provides an example of the point about investment in service made in the first paragraph.
18. The author uses the word "only" in line 23 most likely in order to
- (A) highlight the oddity of the service improvement
  - (B) emphasize the relatively low value of the investment in service improvement
  - (C) distinguish the primary attribute of the service improvement from secondary attributes
  - (D) single out a certain merit of the service improvement from other merits
  - (E) point out the limited duration of the actual service improvement

## **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.

## SECTION 4

Time —25 minutes

20 Questions

**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 sufficient for answering the question. Using the data given in the statements plus your knowledge of mathematics and everyday facts (such as the number of days in July or the meaning of *counterclockwise*), select 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.

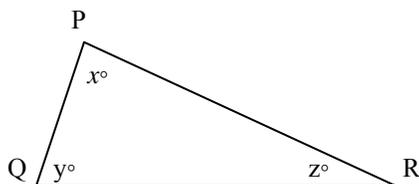
You may assume that the positions of points, angles, regions, etc., exist in the order shown.

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 (1) and (2) 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. What is the capacity, in liters, of a certain aquarium?
- (1) Three liters is  $\frac{1}{2}$  of the capacity of the aquarium.
- (2) One-half liter is  $\frac{1}{12}$  of the capacity of the aquarium.

2. What is the value of  $n$ ?

- (1)  $\sqrt{n} = 2$
- (2)  $\sqrt{4n} = 4$

3. In  $\triangle PQR$ , what is the measure of angle  $P$ ?

- (1) Angle  $Q$  is a right angle.
- (2) The measure of  $R$  is  $17^\circ$ .

4. What amount did Jean earn from the commission on her sales in the first half of 1988?

- (1) In 1988 Jean's commission was 5 percent of the total amount of her sales.
- (2) The amount of Jean's sales in the second half of 1988 averaged \$10,000 per month more than in the first half.

5. A certain car traveled from one town to another without stopping. What was the car's average speed for the trip?

- (1) The car traveled the 90-mile trip in 2 hours.
- (2) The car traveled the first 40 miles of the trip in 1 hour.

6. What is the value of  $x$ ?

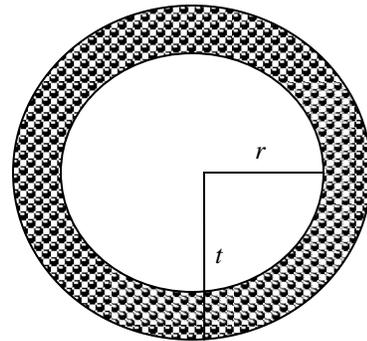
- (1)  $2x + 3y = 12$
- (2)  $5x + 7y = 29$

7. Does  $x = y$ ?

- (1)  $|x| = |y|$
- (2)  $x^2 = y^2$

8. Dan took a 20-question multiple-choice test in psychology. If Dan answered every question, did he answer at least 12 questions correctly?

- (1) Dan answered fewer than 40 percent of the questions incorrectly.
- (2) Dan answered at least 25 percent of the questions incorrectly.



9. The figure above shows the circular cross section of a concrete water pipe. If the inside radius of the pipe is  $r$  feet and the outside radius of the pipe is  $t$  feet, what is the value of  $r$ ?

- (1) The ratio of  $t - r$  to  $r$  is 0.15 and  $t - r$  is equal to 0.3 foot.
- (2) The area of the concrete in the cross section is  $1.29\pi$  square feet.

10. If  $a < x < b$  and  $c < y < d$ , is  $x < y$ ?

- (1)  $a < c$
- (2)  $b < c$

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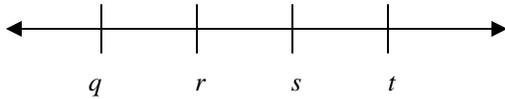
- A Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
- B Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
- C BOTH statements (1) and (2) TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
- D EACH statement ALONE is sufficient.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

11. Is  $\frac{3x+8}{x+2}$  an integer?

- (1)  $x$  is an integer.
- (2)  $x = 0$

12. How many people did Apex Company employ in 1990?

- (1) The company employed 538 more people in 1991 than in 1990.
- (2) The company employed 20 percent more people in 1991 than in 1990.



13. Of the four numbers represented on the number line above, is  $r$  closest to zero?

- (1)  $q = -s$
- (2)  $-t < q$

14. Is the integer  $n$  divisible by 20?

- (1)  $n$  is divisible by 5
- (2)  $n$  is divisible by 6

15. If Mark saved an average (arithmetic mean) of \$80 per week for 3 consecutive weeks, how much did he save the second week?

- (1) The average amount that Mark saved per week for the first 2 weeks was \$60.
- (2) The amount that Mark saved the first week was  $\frac{1}{2}$  the amount he saved the second week and  $\frac{1}{3}$  the amount he saved the third week.

16. If  $p$  and  $q$  are positive integers, what is the value of  $q$ ?

- (1)  $q^{p-1} = 1$
- (2)  $p = 1$

17. If  $x \neq -1$ , which is greater,  $\frac{1}{x+1}$  or  $\frac{x}{2}$ ?

- (1)  $x \geq 0$
- (2)  $x < 3$

18. In a certain two-digit integer, the ratio of the units digit to the tens digit is 2 to 3. What is the integer?

- (1) The tens digit is 3 more than the units digit.
- (2) The product of the two digits is 54.

19. If Carmen had 12 more tapes, she would have twice as many tapes as Rafael. Does Carmen have fewer tapes than Rafael?

- (1) Rafael has more than 5 tapes.
- (2) Carmen has fewer than 12 tapes.

20. What is the value of  $\frac{2t+t-x}{t-x}$ ?

- (1)  $\frac{2t}{t-x} = 3$
- (2)  $t - x = 5$

## 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.

SECTION 5

Time—25 minutes

16 Questions

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

1. In the first half of this year, from January to June, about three million videocassette recorders were sold. This number is only 35 percent of the total number of videocassette recorders sold last year. Therefore, total sales of videocassette recorders will almost certainly be lower for this year than they were for last year.

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

- (A) The total number of videocassette recorders sold last year was lower than the total number sold in the year before that.
- (B) Most people who are interested in owning a videocassette recorder have already purchased one.
- (C) Videocassette recorders are less expensive this year than they were last year.
- (D) Of the videocassette recorders sold last year, almost 60 percent were sold in January.
- (E) Typically, over 70 percent of the sales of videocassette recorders made in a year occur in the months of November and December.

2. Mud from a lake on an uninhabited wooded island in northern Lake Superior contains toxic chemicals, including toxaphene, a banned pesticide for cotton that previously was manufactured and used, not in nearby regions of Canada or the northern United States, but in the southern United States. No dumping has occurred on the island. The island lake is sufficiently elevated that water from Lake Superior does not reach it.

The statements above, if true, most strongly support which of the following hypothesis?

- (A) The waters of the island lake are more severely polluted than those of Lake Superior.
- (B) The toxaphene was carried to the island in the atmosphere by winds.
- (C) Banning chemicals such as toxaphene does not aid the natural environment.
- (D) Toxaphene has adverse effects on human beings but not on other organisms.
- (E) Concentrations of toxaphene in the soil of cotton-growing regions are not sufficient to be measurable.

3. Last year in the United States, women who ran for state and national offices were about as likely to win as men. However, only about fifteen percent of the candidates for these offices were women. Therefore, the reason there are so few women who win elections for these offices is not that women have difficulty winning elections but that so few women want to run.

Which of the following, if true, most seriously undermines the conclusion given?

- (A) Last year the proportion of women incumbents who won reelection was smaller than the proportion of men incumbents who won reelection.
- (B) Few women who run for state and national offices run against other women.
- (C) Most women who have no strong desire to be politicians never run for state and national offices.
- (D) The proportion of people holding local offices who are women is smaller than the proportion of people holding state and national offices who are women.
- (E) Many more women than men who want to run for state and national offices do not because they cannot get adequate funding for their campaigns.

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4. Samples from a ceramic vase found at a tomb in Sicily prove that the vase was manufactured in Greece. Since the occupant of the tomb died during the reign of a Sicilian ruler who lived 2,700 years ago, the location of the vase indicates that there was trade between Sicily and Greece 2,700 years ago.

Which of the following is an assumption on which the argument depends?

- (A) Sicilian potters who lived during the reign of the ruler did not produce work of the same level of quality as did Greek potters.
- (B) Sicilian clay that was used in the manufacture of pottery during the ruler's reign bore little resemblance to Greek clay used to manufacture pottery at that time.
- (C) At the time that the occupant of the tomb was alive, there were ships capable of transporting large quantities of manufactured goods between Sicily and Greece.
- (D) The vase that was found at the Sicilian tomb was not placed there many generations later by descendants of the occupant of the tomb.
- (E) The occupant of the tomb was not a member of the royal family to which the Sicilian ruler belonged.

5. In several cities, the government is going ahead with ambitious construction projects despite the high office-vacancy rates in those cities. The vacant offices, though available for leasing, unfortunately do not meet the requirements for the facilities needed, such as court houses and laboratories. The government, therefore, is not guilty of any fiscal wastefulness.

Which of the following is an assumption on which the argument above depends?

- (A) Adaptation of vacant office space to meet the government's requirements, if possible, would not make leasing such office space a more cost-effective alternative to new construction.
- (B) The government prefers leasing facilities to owning them in cases where the two alternatives are equally cost-effective.
- (C) If facilities available for leasing come very close to meeting the government's requirements for facilities the government needs, the government can relax its own requirements slightly and consider those facilities in compliance.
- (D) The government's construction projects would not, on being completed, add to the stock of facilities available for leasing in the cities concerned.
- (E) Before embarking on any major construction project, the government is required by law to establish beyond any reasonable doubt that there are no alternatives that are more cost-effective.

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6. Potato cyst nematodes are a pest of potato crops. The nematodes can lie dormant for several years in their cysts, which are protective capsules, and do not emerge except in the presence of chemicals emitted by potato roots. A company that has identified the relevant chemicals is planning to market them to potato farmers to spread on their fields when no potatoes are planted; any nematodes that emerge will soon starve to death.

Which of the following, if true, best supports the claim that the company's plan will be successful?

- (A) Nematodes that have emerged from their cysts can be killed by ordinary pesticides.
- (B) The only part of a potato plant that a nematode eats is the roots.
- (C) Some bacteria commonly present in the roots of potatoes digest the chemicals that cause the nematodes to emerge from their cysts.
- (D) Trials have shown that spreading even minute quantities of the chemicals on potato fields caused nine-tenths of the nematodes present to emerge from their cysts.
- (E) The chemicals that cause the nematodes to emerge from their cysts are not emitted all the time the potato plant is growing.

7. It is better for the environment if as much of all packaging as possible is made from materials that are biodegradable in landfills. Therefore, it is always a change for the worse to replace packaging made from paper or cardboard with packaging made from plastics that are not biodegradable in landfills.

Which of the following, if true, constitutes the strongest objection to the argument above?

- (A) The paper and cardboard used in packaging are usually not biodegradable in landfills.
- (B) Some plastic used in packaging is biodegradable in landfills.
- (C) In many landfills, a significant proportion of space is taken up by materials other than discarded packaging materials.
- (D) It is impossible to avoid entirely the use of packaging materials that are not biodegradable in landfills.
- (E) Sometimes, in packaging an item, plastics that are not biodegradable in landfills are combined with cardboard.

8. Any serious policy discussion about acceptable levels of risk in connection with explosions is not well served if the participants fail to use the word "explosion" and use the phrase "energetic disassembly" instead. In fact, the word "explosion" elicits desirable reactions, such as a heightened level of attention, whereas the substitute phrase does not. Therefore, of the two terms, "explosion" is the one that should be used throughout discussions of this sort.

Which of the following is an assumption on which the argument above depends?

- (A) In the kind of discussion at issue, the advantages of desirable reactions to the term "explosion" outweigh the drawbacks, if any, arising from undesirable reactions to that term.
- (B) The phrase "energetic disassembly" has not so far been used as a substitute for the word "explosion" in the kind of discussion at issue.
- (C) In any serious policy discussion, what is said by the participants is more important than how it is put into words.
- (D) The only reason that people would have for using "energetic disassembly" in place of "explosion" is to render impossible any serious policy discussion concerning explosions.
- (E) The phrase "energetic disassembly" is not necessarily out of place in describing a controlled rather than an accidental explosion.

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9. Mannis Corporation's archival records are stored in an obsolete format that is accessible only by its current computer system; thus they are inaccessible when that system is not functioning properly. In order to avoid the possibility of losing access to their archival records in the case of computer malfunction, Mannis plans to replace its current computer system with a new system that stores records in a format that is accessible to several different systems.

The answer to which of the following questions would be most helpful in evaluating the effectiveness of the plan as a means of retaining access to the archival records?

- (A) Will the new computer system require fewer operators than the current system requires?
- (B) Has Mannis Corporation always stored its archival records in a computerized format?
- (C) Will the new computer system that Mannis plans ensure greater security for the records stored than does Mannis' current system?
- (D) Will Mannis' current collection of archival records be readily transferable to the new computer system?
- (E) Will the new computer system be able to perform many more tasks than the current system is able to perform?

10. Last year the worldwide paper industry used over twice as much fresh pulp (pulp made directly from raw plant fibers) as recycled pulp (pulp made from wastepaper). A paper-industry analyst has projected that by 2010 the industry will use at least as much recycled pulp annually as it does fresh pulp, while using a greater quantity of fresh pulp than it did last year.

If the information above is correct and the analyst's projections prove to be accurate, which of the following projections must also be accurate?

- (A) In 2010 the paper industry will use at least twice as much recycled pulp as it did last year.
- (B) In 2010 the paper industry will use at least twice as much total pulp as it did last year.
- (C) In 2010 the paper industry will produce more paper from a given amount of pulp than it did last year.
- (D) As compared with last year, in 2010 the paper industry will make more paper that contains only recycled pulp.
- (E) As compared with last year, in 2010 the paper industry will make less paper that contains only fresh pulp.

11. In malaria-infested areas, many children tend to suffer several bouts of malaria before becoming immune to the disease. Clearly, what must be happening is that those children's immune systems are only weakly stimulated by any single exposure to the malaria parasite and need to be challenged several times to produce an effective immune response.

Which of the following, if true, most seriously undermines the explanatory hypothesis?

- (A) Immediately after a child has suffered a bout of malaria, the child's caregivers tend to go to great lengths in taking precautions to prevent another infection, but this level of attention is not sustained.
- (B) Malaria is spread from person to person by mosquitoes, and mosquitoes have become increasingly resistant to the pesticides used to control them.
- (C) A certain gene, if inherited by children from only one of their parents, can render those children largely immune to infection with malaria.
- (D) Antimalaria vaccines, of which several are in development, are all designed to work by stimulating the body's immune system.
- (E) There are several distinct strains of malaria, and the body's immune response to any one of them does not protect it against the others.

12. An advertisement designed to convince readers of the great durability of automobiles manufactured by the Deluxe Motor Car Company cites as evidence the fact that over half of all automobiles built by the company since 1970 are still on the road today, compared to no more than a third for any other manufacturer.

Which of the following, if true, most strongly supports the advertisement's argument?

- (A) After taking inflation into account, a new Deluxe automobile costs only slightly more than a new model did in 1970.
- (B) The number of automobiles built by Deluxe each year has not increased sharply since 1970.
- (C) Owners of Deluxe automobiles typically keep their cars well maintained.
- (D) Since 1970, Deluxe has made fewer changes in the automobiles it manufactures than other car companies have made in their automobiles.
- (E) Deluxe automobiles have been selling at relatively stable prices in recent years.

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13. Many state legislatures are considering proposals to the effect that certain policies should be determined not by the legislature itself but by public referenda in which every voter can take part. Critics of the proposals argue that the outcomes of public referenda would be biased, since wealthy special-interest groups are able to influence voters' views by means of television advertisements.

Which of the following, if true, most strengthens the critics' argument?

- (A) Many state legislators regard public referenda as a way of avoiding voting on issues on which their constituents are divided.
- (B) During elections for members of the legislature, the number of people who vote is unaffected by whether the candidates run television advertisements or not.
- (C) Proponents of policies that are opposed by wealthy special-interest groups are often unable to afford advertising time on local television stations.
- (D) Different special-interest groups often take opposing positions on questions of which policies the state should adopt.
- (E) Television stations are reluctant to become associated with any one political opinion, for fear of losing viewers who do not share that opinion.

14. Advertisement:

Of the many over-the-counter medications marketed for the relief of sinus headache. SineEase costs the least per dose. And SineEase is as effective per dose as the most effective of those other medications. So for relief from sinus headaches, SineEase is the best buy.

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

- (A) Most of the over-the-counter medications marketed for the relief of sinus headache are equally effective per dose in providing such relief.
- (B) Many of the over-the-counter medications marketed for the relief of sinus headache contain the same active ingredient as SineEase.
- (C) People who suffer from frequent sinus headaches are strongly advised to consult a doctor before taking any over-the-counter medication.
- (D) An over-the-counter medication that is marketed for the relief of symptoms of head cold is identical in composition to SineEase but costs less per dose.
- (E) The per dose price for any given over-the-counter medication marketed for the relief of sinus headache is higher for smaller packages than it is for larger packages.

15. In the United States, vacationers account for more than half of all visitors to what are technically called "pure aquariums" but for fewer than one quarter of all visitors to zoos, which usually include a "zoo aquarium" of relatively modest scope.

Which of the following, if true, most helps to account for the difference described above between visitors to zoos and visitors to pure aquariums?

- (A) In cities that have both a zoo and a pure aquarium, local residents are twice as likely to visit the aquarium as they are to visit the zoo.
- (B) Virtually all large metropolitan areas have zoos, whereas only a few large metropolitan areas have pure aquariums.
- (C) Over the last ten years, newly constructed pure aquariums have outnumbered newly established zoos by a factor of two to one.
- (D) People who visit a zoo in a given year are two times more likely to visit a pure aquarium that year than are people who do not visit a zoo.
- (E) The zoo aquariums of zoos that are in the same city as a pure aquarium tend to be smaller than the aquariums of zoos that have no pure aquarium nearby.

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16. Which of the following, if true, is the most logical completion of the argument below?

The tax system of the Republic of Grootland encourages borrowing by granting its taxpayers tax relief for interest paid on loans. The system also discourages saving by taxing any interest earned on savings. Nevertheless, it is clear that Grootland's tax system does not consistently favor borrowing over saving, for if it did, there would be no -----.

- (A) tax relief in Grootland for those portions of a taxpayer's income, if any, that are set aside to increase that taxpayer's total savings
- (B) tax relief in Grootland for the processing fees that taxpayers pay to lending institutions when obtaining certain kinds of loans
- (C) tax relief in Grootland for interest that taxpayers are charged on the unpaid balance in credit card accounts
- (D) taxes due in Grootland on the cash value of gifts received by taxpayers from banks trying to encourage people to open savings accounts
- (E) taxes due in Grootland on the amount that a taxpayer has invested in interest-bearing savings accounts

## **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.

SECTION 6  
Time—25 Minutes  
16 Questions

**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. Which of the following fractions is equal to 0.16?

(A)  $\frac{1}{4}$   
(B)  $\frac{4}{25}$   
(C)  $\frac{5}{8}$   
(D)  $\frac{8}{5}$   
(E)  $\frac{25}{4}$

2. There is a total of 120 marbles in a box, each of which is red, green, blue, or white. If one marble is drawn from the box at random, the probability that it will be white is  $\frac{1}{4}$  and the probability that it will be green is  $\frac{1}{3}$ . What is the probability that the marble will be either red or blue?

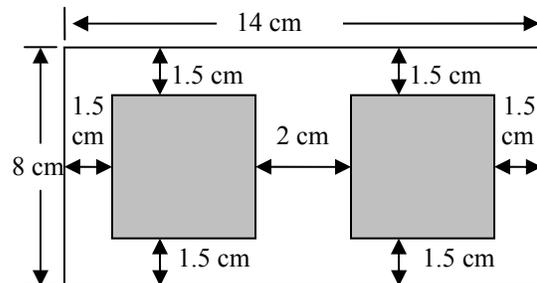
(A)  $\frac{1}{6}$   
(B)  $\frac{1}{4}$   
(C)  $\frac{2}{7}$   
(D)  $\frac{1}{3}$   
(E)  $\frac{5}{12}$

3. If  $x$  is a positive number less than 10, which of the following is least?

(A)  $x - 20$   
(B)  $x$   
(C) 0  
(D)  $-x$   
(E)  $20 - x$

4. A computer programmer needs to print 148 documents. The documents have an average (arithmetic mean) length of 10 pages and the printer takes 15 seconds to print each page. Approximately how many hours will it take to print all the documents if they are printed without interruptions?

(A)  $\frac{1}{2}$  hr  
(B) 2 hr  
(C)  $2\frac{1}{2}$  hr  
(D) 6 hr  
(E) 24 hr



5. The figure above represents a frame; the shaded regions represent the openings in the frame. If all line segments in the figure are either horizontal or vertical and the openings are the same size, what are the dimensions of each opening?

(A) 4.5 cm by 5 cm  
(B) 4.5 cm by 6.5 cm  
(C) 5 cm by 5.5 cm  
(D) 5 cm by 9 cm  
(E) 5 cm by 11 cm

GO ON TO THE NEXT PAGE.

6. In the first hour of a two-hour trip, a car traveled  $d$  kilometers, and in the second hour of the trip, the car traveled one-half that distance. What is the average rate at which the car traveled during the trip, in kilometers per hour?

- (A)  $d$   
 (B)  $\frac{1}{3}d$   
 (C)  $\frac{1}{2}d$   
 (D)  $\frac{3}{4}d$   
 (E)  $\frac{3}{2}d$

7. Jaime earned enough money by selling seashells at 25 cents each to buy several used paperback books at 55 cents each. If he spent all of the money he earned selling seashells to buy the books, what is the least number of seashells he could have sold?

- (A) 5  
 (B) 11  
 (C) 17  
 (D) 25  
 (E) 30

8. In a certain sequence, the first term is 1, and each successive term is 1 more than the reciprocal of the term that immediately precedes it. What is the fifth term of the sequence?

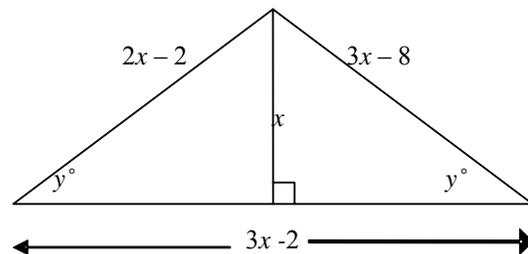
- (A)  $\frac{3}{5}$   
 (B)  $\frac{5}{8}$   
 (C)  $\frac{8}{5}$   
 (D)  $\frac{5}{3}$   
 (E)  $\frac{9}{2}$

9. A wildlife preserve is being planned for 3,000 rhinoceroses. The preserve is to contain a total of 10,000 acres of watering area, plus 100 acres of grazing area for each rhinoceros. If the number of rhinoceroses is expected to increase by 10 percent, how many thousand acres should the preserve have in order to provide for the increased population?

- (A) 340  
 (B) 330  
 (C) 320  
 (D) 310  
 (E) 300

10. For the positive numbers,  $n, n + 1, n + 2, n + 4,$  and  $n + 8,$  the mean is how much greater the median?

- (A) 0  
 (B) 1  
 (C)  $n + 1$   
 (D)  $n + 2$   
 (E)  $n + 3$

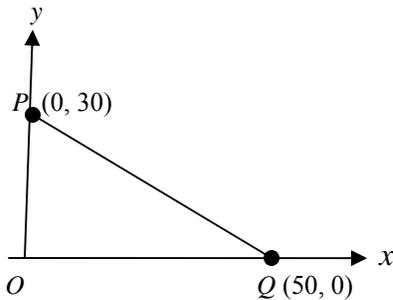


11. The figure above shows the dimensions of an isosceles triangle in terms of  $x$ . What is the area of the triangle?

- (A) 24  
 (B) 30  
 (C) 48  
 (D) 60  
 (E) 96

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12. In a certain animal population, for each of the first 3 months of life, the probability that an animal will die during that month is  $\frac{1}{10}$ . For a group of 200 newborn members of the population, approximately how many would be expected to survive the first 3 months of life?
- (A) 140  
 (B) 146  
 (C) 152  
 (D) 162  
 (E) 170



13. In the figure above, how many of the points on line segment  $PQ$  have coordinates that are both integers?
- (A) 5  
 (B) 8  
 (C) 10  
 (D) 11  
 (E) 20
14. What is the least number of digits (including repetitions) needed to express  $10^{100}$  in decimal notation?
- (A) 4  
 (B) 100  
 (C) 101  
 (D) 1,000  
 (E) 1,001

15. A group of 12 people plan to rent a van and agree to share equally the total cost of the rental, which is  $E$  dollars. If  $n$  of the people decide not to participate at the last minute, by how many dollars will each remaining person's share of the total cost increase?
- (A)  $\frac{E}{12-n}$   
 (B)  $\frac{12-n}{E}$   
 (C)  $\frac{E}{12(12-n)}$   
 (D)  $\frac{nE}{12(12-n)}$   
 (E)  $\frac{(12-n)E}{12n}$

16. The concentration of a certain chemical in a full water tank depends on the depth of the water. At a depth that is  $x$  feet below the top of the tank, the concentration is  $3 + \frac{4}{\sqrt{5-x}}$  parts per million, where  $0 < x < 4$ . To the nearest 0.1 foot, at what depth is the concentration equal to 6 parts per million?
- (A) 2.4 ft  
 (B) 2.5 ft  
 (C) 2.8 ft  
 (D) 3.0 ft  
 (E) 3.2 ft

**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.

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. Most energy analysts now agree that the costs of building and maintaining nuclear reactors are too high for nuclear power to likely prove cheaper than coal or oil in the long run.
- (A) too high for nuclear power to likely  
(B) high enough for nuclear power to be unlikely to  
(C) high enough that it is unlikely nuclear power will  
(D) so high that nuclear power is unlikely to  
(E) so high as to be unlikely that nuclear power will
2. New Jersey's is one of the five highest number of reported cases of Lyme disease in the United States.
- (A) New Jersey's is one of the five highest number of reported  
(B) New Jersey's is one of the five highest numbers in reporting  
(C) New Jersey has a report of one of the five highest numbers of  
(D) New Jersey has one of the five highest numbers of reported  
(E) New Jersey reports one of the five highest number of
3. According to a ruling by the state supreme court, the owner of polluted land is liable for the cleanup of the property even if the owner did not have the responsibility that pollution occurred before the title changed hands.
- (A) the owner did not have the responsibility that pollution  
(B) the owner is not responsible for pollution that  
(C) it was not the owner's responsibility that pollution would have  
(D) the responsibility of the owner is not that pollution  
(E) the responsibility was not the owner's that pollution would have
4. Scientists have suggested that once every 10 million years or so a truly colossal object from space cuts through the atmosphere and slams into Earth, sending up a global pall of dust that blots out the Sun, alters the climate, and changes the course of evolution by killing off many plant and animal species.
- (A) sending up a global pall of dust that blots  
(B) thus sending up a global pall of dust to blot  
(C) thereby sending up a global pall of dust to blot  
(D) and that sends up a global pall of dust, blotting  
(E) which sends up a global pall of dust, blots
5. By the mid-seventeenth century, Amsterdam had built a new town hall so large that only St. Peter's in Rome, the Escorial in Spain, and the Palazza Ducale in Venice could rival it for scale or magnificence.
- (A) could rival it for  
(B) were the rivals of it in their  
(C) were its rival as to  
(D) could be its rivals in their  
(E) were rivaling its

GO ON TO THE NEXT PAGE.

4. Scientists have suggested that once every 10 million years or so a truly colossal object from space cuts

6. The Audubon Society and other conservation groups, concerned over what they have perceived to be the serious threatening of the environment as posed by the policies of the government, are preparing for a major political effort.
- (A) have perceived to be the serious threatening of the environment as
- (B) perceived as the serious threat to the environment as
- (C) perceive being the serious threat to the environment
- (D) are perceiving as the serious threatening of the environment
- (E) perceive as the serious threat to the environment
7. At a time when it was unusual to do it, Dorothy Sterling wrote about such major figures of Black history as Harriet Tubman and W.E.B. Du Bois.
- (A) it was unusual to do it
- (B) it was unusual to do so
- (C) doing that was unusual
- (D) that was an unusual thing to be doing
- (E) it was not usual to do
8. Houseflies that hatch in summer live only about three weeks, but those that emerge in the cooler days of fall often live longer than six months.
- (A) weeks, but those that emerge in the cooler days of fall often live
- (B) weeks, but those that emerge in the cooler days of fall often live as long or
- (C) weeks, which is different from those that emerge in the cooler days of fall and often live
- (D) weeks; then those that emerge in the cooler days of fall often live as long as or
- (E) weeks; this is different from those that emerge in the cooler days of fall, who often live
9. The auto industry has experienced one of its most significant trends in the last 50 years, which is the migration of motorists from passenger cars to minivans, sport utility vehicles, and pickups.
- (A) The auto industry has experienced one of its most significant trends in the last 50 years, which is
- (B) Of the trends the auto industry experienced in the last 50 years has been one of the most significant,
- (C) In the last 50 years, one of the most significant trends that the auto industry has been experiencing has been
- (D) One of the most significant trends that the auto industry has experienced in the last 50 years is
- (E) In the last 50 years, the auto industry experienced one of the most significant trends that it has had, that of
10. The animosity between those who regulate and those who are regulated, never more pronounced than in recent debates over environmentalism and pollution control.
- (A) The animosity between those who regulate and those who are regulated, never
- (B) The animosity between those who regulate and those who are regulated, never being
- (C) The animosity between those who regulate and those who are regulated has never been
- (D) Between those who regulate and those who are regulated, such animosity was never
- (E) Between those who regulate and between those regulated, such animosity has never been
11. Some psychiatric studies indicate that among distinguished artists the rates of manic depression and major depression are ten to thirteen times as prevalent as in the population at large.
- (A) the rates of manic depression and major depression are ten to thirteen times as prevalent as in
- (B) the rates of manic depression and major depression are ten to thirteen times more prevalent than in
- (C) the rates of manic depression and major depression are ten to thirteen times more prevalent when compared to
- (D) manic depression and major depression are ten to thirteen times as prevalent when compared to
- (E) manic depression and major depression are ten to thirteen times more prevalent than in

GO ON TO THE NEXT PAGE.

12. Until quite recently, American presidents lived in a world in which the public and private realms of their lives were largely separate, and the press cooperated in maintaining the distinction, and Americans judged national leaders without receiving, or expecting, intimate information about them.
- (A) and the press cooperated in maintaining the distinction, and
- (B) where the press cooperated in maintaining the distinction, and where
- (C) for the press cooperated to maintain the distinction and
- (D) the press cooperated to maintain the distinction, for
- (E) in which the press cooperated in maintaining the distinction, and in which
13. On the Great Plains, nineteenth-century settlers used mud and grass to build their homes, doing it without timber and nails.
- (A) settlers used mud and grass to build their homes, doing it without
- (B) settlers, using mud and grass to build their homes, did it without
- (C) settlers used mud and grass to build their homes, making them while not having
- (D) settlers used mud and grass to build their homes, making do without
- (E) settlers' homes were built of mud and grass, making do without
14. Intended primarily to stimulate family summer travel, the new airfare, which allows both an adult and a child to fly for the price of one ticket, and also shortens the advance-purchase requirement for family travel to a minimum of seven days rather than fourteen.
- (A) and also shortens the advance-purchase requirement for family travel to a minimum of seven days rather than
- (B) and also lessens the advance-purchase requirement for family travel to a seven-day minimum from
- (C) also shortens the advance-purchase requirement for family travel to a minimum of seven days rather than that of
- (D) also lessens the advance-purchase requirement for family travel to a seven-day minimum from
- (E) also shortens the advance-purchase requirement for family travel to a minimum of seven days rather than
15. People have discovered the principles of solar energy whenever fuel becomes scarce and expensive but will forget them every time a new source of cheap energy is developed.
- (A) have discovered the principles of solar energy whenever fuel becomes scarce and expensive but will forget
- (B) have discovered the principles of solar energy whenever fuel has become scarce and expensive but they forget
- (C) discovered the principles of solar energy every time fuel becomes scarce and expensive, forgetting
- (D) discover the principles of solar energy every time fuel became scarce and expensive, but they forget
- (E) discover the principles of solar energy whenever fuel becomes scarce and expensive but forget
16. New techniques in thermal-scanning photography, a process that records radiation from surface areas, makes it possible to study the effects of calefaction, or warming, of a river in greater detail than ever before.
- (A) makes it possible to study the effects of calefaction, or warming, of a river in greater detail than ever before
- (B) make it possible to study, in greater detail, the effects of calefaction, or warming, of a river than ever before
- (C) have made it possible to study in greater detail than ever before the effects of calefaction, or warming, of a river
- (D) make possible the study of the effects of calefaction, or warming, of a river in greater detail than it ever was before
- (E) has made it more possible than ever before to study in greater detail the effects of calefaction, or warming, of a river
17. Bob Wilber became Sidney Bechet's student and protégé when he was nineteen and, for a few years in the 1940's, came as close to being a carbon copy of the jazz virtuoso in performance as anyone has ever come.
- (A) as anyone has ever come
- (B) as anyone ever had been
- (C) as anyone ever had done
- (D) that anyone ever did
- (E) that anyone ever came

GO ON TO THE NEXT PAGE.

18. Despite its attractiveness, investing abroad can still pose big risks, ranging from the potential for political instability in some countries to the shortage of regulations to protect investors and a serious lack of information about investments in others.
- (A) to the shortage of regulations to protect investors and a serious lack of information about investments in others
- (B) to the shortage of regulations to protect investors and in others a serious lack of information about investments
- (C) and the shortage of regulations to protect investors and a serious lack of information about investments in others
- (D) and the shortage of regulations to protect investors to a serious lack of information about investments in others
- (E) to the shortage of regulations to protect investors in others and a serious lack of information about investments
19. That the new managing editor rose from the publication's "soft" new sections to a leadership position is more of a landmark in the industry than her being a woman.
- (A) her being a woman
- (B) being a woman is
- (C) her womanhood
- (D) that she was a woman
- (E) that she is a woman
20. In the initial planning stages, the condominium corporation took into account only the concerns of its prospective clients, not those of surrounding homeowners.
- (A) the condominium corporation took into account only the concerns of its prospective clients
- (B) the condominium corporation has only taken into account the concerns of their prospective clients
- (C) the condominium corporation only took their prospective clients' concerns into account
- (D) the concerns of its prospective clients only were taken into account by the condominium corporation
- (E) prospective clients had their concerns only taken into account by the condominium corporation
21. Of all the wild animals in their area, none was more useful to the Delaware tribes than the Virginia white-tailed deer: it was a source of meat, and its hide was used for clothing, its antlers and bones for tools, and its sinews and gut for bindings and glue.
- (A) deer: it was a source of meat, and its hide was used for clothing, its antlers and bones for tools, and its sinews and gut
- (B) deer: it was a source of meat, and its hide used for clothing, with its antlers and bones for tools, and its sinews and gut used
- (C) deer, which was a source of meat, with its hide used for clothing, antlers and bones for tools, as well as its sinews and gut used
- (D) deer, which, as well as being a source of meat, its hide was used for clothing, its antlers and bones for tools, and its sinews and gut were
- (E) deer, with, as well as being a source of meat, its hide used for clothing, its antlers and bones for tools, and its sinews and gut
22. Unlike most warbler species, the male and female blue-winged warbler are very difficult to tell apart.
- (A) Unlike most warbler species, the male and female blue-winged warbler are very difficult to tell apart.
- (B) Unlike most warbler species, the gender of the blue-winged warbler is very difficult to distinguish.
- (C) Unlike those in most warbler species, the male and female blue-winged warblers are very difficult to distinguish.
- (D) It is very difficult, unlike in most warbler species, to tell the male and female blue-winged warbler apart.
- (E) Blue-winged warblers are unlike most species of warbler in that it is very difficult to tell the male and female apart.

## 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 52

Section 1	Section 2	Section 4	Section 5	Section 6	Section 7
1. C	1. B	1. D	1. E	1. B	1. D
2. B	2. A	2. D	2. B	2. E	2. D
3. C	3. A	3. C	3. E	3. A	3. B
4. D	4. E	4. E	4. D	4. D	4. A
5. C	5. C	5. A	5. A	5. A	5. A
6. Not Scored	6. B	6. C	6. D	6. D	6. E
7. A	7. D	7. E	7. A	7. B	7. B
8. D	8. B	8. A	8. A	8. C	8. A
9. E	9. D	9. A	9. D	9. A	9. D
10. B	10. D	10. B	10. A	10. B	10. C
11. A	11. C	11. B	11. E	11. C	11. E
12. B	12. A	12. C	12. B	12. B	12. E
13. C	13. B	13. A	13. C	13. D	13. D
14. E	14. C	14. E	14. D	14. C	14. E
15. E	15. A	15. B	15. B	15. D	15. E
16. B	16. D	16. E	16. A	16. E	16. C
	17. E	17. E			17. A
	18. B	18. D			18. A
		19. B			19. E
		20. A			20. A
					21. A
					22. E

## CONVERSION TABLE FOR VERBAL AND QUANTITATIVE SCORES

### Graduate Management Admission Test, Code 52

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

**CONVERSION TABLE FOR TOTAL SCORES**

**Graduate Management Admission Test, Code 52**

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

## 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 30, 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):

	<b>Example 1</b>	<b>Example 2</b>	<b>Example 3</b>
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 31 and 32 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 or 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 examinees 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 scaled scores by section, performance on individual sections of the test cannot be compared.

Second, corrected raw scores by section are 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

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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.