

YOUR NAME (PRINT) \_\_\_\_\_ LAST FIRST MI

TEST CENTER \_\_\_\_\_ NUMBER NAME OF TEST CENTER ROOM NUMBER

# SAT Reasoning Test — General Directions

## Timing

- You will have 3 hours and 45 minutes to work on this test.
- There are ten separately timed sections:
  - ▶ One 25-minute essay
  - ▶ Six other 25-minute sections
  - ▶ Two 20-minute sections
  - ▶ One 10-minute section
- You may work on only one section at a time.
- The supervisor will tell you when to begin and end each section.
- If you finish a section before time is called, check your work on that section. You may NOT turn to any other section.
- Work as rapidly as you can without losing accuracy. Don't waste time on questions that seem too difficult for you.

## Marking Answers

- Be sure to mark your answer sheet properly.



- You must use a No. 2 pencil.
- Carefully mark only one answer for each question.
- Make sure you fill the entire circle darkly and completely.
- Do not make any stray marks on your answer sheet.
- If you erase, do so completely. Incomplete erasures may be scored as intended answers.
- Use only the answer spaces that correspond to the question numbers.

## Using Your Test Book

- You may use the test book for scratchwork, but you will not receive credit for anything written there.
- After time has been called, you may not transfer answers to your answer sheet or fill in circles.
- You may not fold or remove pages or portions of a page from this book, or take the book or answer sheet from the testing room.

## Scoring

- For each correct answer, you receive one point.
- For questions you omit, you receive no points.
- For a wrong answer to a multiple-choice question, you lose one-fourth of a point.
  - ▶ If you can eliminate one or more of the answer choices as wrong, you increase your chances of choosing the correct answer and earning one point.
  - ▶ If you can't eliminate any choice, move on. You can return to the question later if there is time.
- For a wrong answer to a student-produced response ("grid-in") math question, you don't lose any points.
- Multiple-choice and student-produced response questions are machine scored.
- The essay is scored on a 1 to 6 scale by two different readers. The total essay score is the sum of the two readers' scores.
- Off-topic essays, blank essays, and essays written in ink will receive a score of zero.

**IMPORTANT:** The codes below are unique to your test book. Copy them on your answer sheet in boxes 8 and 9 and fill in the corresponding circles exactly as shown.

<b>9</b>	<b>TEST FORM</b>					
	(Copy from back of test book.)					

<b>8</b>	<b>FORM CODE</b>					
	(Copy and grid as on back of test book.)					
A	A	A	A	0	0	0
B	B	B	B	1	1	1
C	C	C	C	2	2	2
D	D	D	D	3	3	3
E	E	E	E	4	4	4
F	F	F	F	5	5	5
G	G	G	G	6	6	6
H	H	H	H	7	7	7
I	I	I	I	8	8	8
J	J	J	J	9	9	9
K	K	K	K			
L	L	L	L			
M	M	M	M			
N	N	N	N			
O	O	O	O			
P	P	P	P			
Q	Q	Q	Q			
R	R	R	R			
S	S	S	S			
T	T	T	T			
U	U	U	U			
V	V	V	V			
W	W	W	W			
X	X	X	X			
Y	Y	Y	Y			
Z	Z	Z	Z			

The passages for this test have been adapted from published material. The ideas contained in them do not necessarily represent the opinions of the College Board.

**DO NOT OPEN THIS BOOK UNTIL THE SUPERVISOR TELLS YOU TO DO SO.**

**You may use this space to make notes for your essay. Remember, however, that you will receive credit ONLY for what is written on your answer sheet.**

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NOTES ONLY

Write essay on answer  
sheet!



# ESSAY

Unauthorized copying or reuse of  
any part of this page is illegal.

# ESSAY



## ESSAY

Time — 25 minutes

**Turn to page 2 of your answer sheet to write your ESSAY.**

The essay gives you an opportunity to show how effectively you can develop and express ideas. You should, therefore, take care to develop your point of view, present your ideas logically and clearly, and use language precisely.

Your essay must be written on the lines provided on your answer sheet—you will receive no other paper on which to write. You will have enough space if you write on every line, avoid wide margins, and keep your handwriting to a reasonable size. Remember that people who are not familiar with your handwriting will read what you write. Try to write or print so that what you are writing is legible to those readers.

### Important Reminders:

- **A pencil is required for the essay.** An essay written in ink will receive a score of zero.
- **Do not write your essay in your test book.** You will receive credit only for what you write on your answer sheet.
- **An off-topic essay will receive a score of zero.**

You have twenty-five minutes to write an essay on the topic assigned below.

Think carefully about the issue presented in the following excerpt and the assignment below.

Many people believe that “closed doors make us creative.” These people argue that obstacles and restrictions are necessary, for without them we would never be forced to come up with new solutions. But “closed doors,” either in the form of specific obstacles or a lack of opportunities, often prevent people from reaching their full creative potential.

**Assignment:** Do closed doors make us creative? Plan and write an essay in which you develop your point of view on this issue. Support your position with reasoning and examples taken from your reading, studies, experience, or observations.

BEGIN WRITING YOUR ESSAY ON PAGE 2 OF THE ANSWER SHEET.

**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

24 Questions

**Turn to Section 2 (page 4) of your answer sheet to answer the questions in this section.****Directions:** For each question in this section, select the best answer from among the choices given and fill in the corresponding circle on the answer sheet.

Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five words or sets of words labeled A through E. Choose the word or set of words that, when inserted in the sentence, best fits the meaning of the sentence as a whole.

**Example:**

Hoping to ----- the dispute, negotiators proposed a compromise that they felt would be ----- to both labor and management.

- (A) enforce . . useful  
(B) end . . divisive  
(C) overcome . . unattractive  
(D) extend . . satisfactory  
(E) resolve . . acceptable

(A) (B) (C) (D) ●

- The garden that had remained ----- for months was now pleasantly enlivened by the budding shoots of its perennial flowers.  
(A) redolent (B) dormant (C) exuberant  
(D) compliant (E) trenchant
- After several months of training, the ----- young spaniel was finally ----- enough to be walked safely without a leash.  
(A) eager . . unruly  
(B) placid . . defiant  
(C) clever . . helpful  
(D) boisterous . . docile  
(E) vigilant . . convinced
- as Mario's misdeed was, his grandmother, always blind to his faults, pretended to be unaware of it.  
(A) Accidental (B) Apt  
(C) Random (D) Flagrant  
(E) Covert
- Despite his ----- desire to show off, he remained at heart a very ----- person.  
(A) uncharacteristic . . demonstrative  
(B) inexplicable . . hedonistic  
(C) occasional . . reticent  
(D) continual . . transparent  
(E) blatant . . exhibitionistic
- The employer blamed the staff member's lack of productivity on ----- rather than incompetence, claiming that the man knew how to do his job but was too lazy to apply himself.  
(A) infatuation (B) tension  
(C) indigence (D) indolence  
(E) ineptitude
- The audience recognized the officer's characteristic ----- when he attributed his achievements to ----- rather than bravery.  
(A) pedantry . . chance  
(B) gallantry . . whimsy  
(C) humility . . fortune  
(D) bravado . . accident  
(E) effrontery . . discretion
- The strong ----- the professor was able to establish with his students made him ----- confidant for those on campus seeking advice beyond the purely academic.  
(A) program . . an occasional  
(B) rapport . . a respected  
(C) confidence . . an unappreciated  
(D) community . . an unusual  
(E) ambition . . a valued
- After David left him waiting for the third consecutive time, Kirk realized that the same behavior he had initially valued as spontaneous and carefree was, in fact, simply -----.  
(A) capricious (B) incontrovertible  
(C) extraneous (D) captivating  
(E) inscrutable

**GO ON TO THE NEXT PAGE**



The passages below are followed by questions based on their content; questions following a pair of related passages may also be based on the relationship between the paired passages. Answer the questions on the basis of what is stated or implied in the passages and in any introductory material that may be provided.

**Questions 9-10 are based on the following passage.**

Line  
5  
10  
15

What was most likely the original purpose of the human appendix? Experts can only theorize on its use. It may have had the same purpose it has in present-day herbivores, where it harbors colonies of bacteria that help in the digestion of cellulose. Another theory suggests that tonsils and the appendix might manufacture the antibody-producing white blood cells called B lymphocytes; however, B lymphocytes could also be produced by bone marrow. The third theory is that the appendix may “attract” body infections in order to localize the infection in one spot that is not critical to body functioning.

9. The author of the passage uses quotation marks in line 13 in order to indicate that
- (A) this theory is the one with which the author most nearly agrees
  - (B) this theory is less scientifically valid than the other theories in the passage
  - (C) a common word is being used to describe a unique biological process
  - (D) a word is being used in a humorous way
  - (E) a direct quotation from another source is being used
10. How does the theory described in lines 3-7 primarily differ from the other two theories described in the passage?
- (A) It pertains only to plants.
  - (B) It concerns a physical process that occurs in more than one area of the human body.
  - (C) It is a theory supported by more experts in the field than are the other two theories.
  - (D) It is concerned with the prevention of disease.
  - (E) It makes reference to a process presently occurring in other animals.

**Questions 11-12 are based on the following passage.**

Line  
5  
10  
15

One hazard in historical study is the necessity of dividing the whole into segments, since not everything can be examined simultaneously. Common ways of dividing history are by period, country, topic, artistic or political movement, or theme. Each of these can be justified, but all have their shortcomings. When divisions are made according to country, the interconnections among events occurring in two or more countries may go unnoticed or remain unexplored. Division into time periods may interrupt or obscure ongoing developments, or may give undue emphasis to some event or type of activity (especially war or politics) as crucial in marking the end or beginning of a period or movement.

11. Which of the following is most analogous to the “hazard” the author sees in the “division” of historical study?
- (A) A lawyer accepts cases in too many different areas of legal practice.
  - (B) A teacher must cope with large class sizes and is unable to give students sufficient individual instruction.
  - (C) A biologist studies large areas of forest but fails to examine in depth the nesting site of a specific bird species.
  - (D) An artist produces works in many different media, but does not excel in any one medium.
  - (E) A doctor diagnoses one ailment but overlooks elements of the patient’s overall health.
12. The author implies which of the following about “war” and “politics” in historical studies (line 16)?
- (A) They make the study of international movements difficult.
  - (B) They serve primarily as a convenience to the reader.
  - (C) They are more helpful to use in defining periods than in defining movements.
  - (D) They are equally important to historians and to readers.
  - (E) They are commonly used to define historical periods.



Questions 14-25 are based on the following passages.

The following passages discuss a type of film called **film noir**, which, according to most film historians, had its high point around the time of the Second World War (1939-1945).

**Passage 1**

Line  
5 Even though films now called film noir by critics have been made in Hollywood since 1939, film noir as a genre did not exist until 1946. In that year an exhibition of American movies was held in Paris, and French film critics got their first look at what had been going on in Hollywood since the advent of World War II. Among the films shown were *Laura*;  
10 *The Maltese Falcon*; *Murder, My Sweet*; *Double Indemnity*; and *The Woman in the Window*. Those five films shared enough traits that critic Nino Frank gave them a new classification: film noir, or literally,  
15 “black film.” The traits they shared were both stylistic and thematic. They were dark in both look and mood. Their primary action took place at night on rain-swept city streets, in narrow ash-can  
20 alleys, in claustrophobic diners, and in dingy, shadowy hotel rooms with neon signs flashing outside the windows, rooms in which, as hard-boiled author Nelson Algren once put it, “every bed you rent makes you an accessory to somebody else’s shady past.” The characters in  
25 these films were bookies, con men, killers, cigarette girls, crooked cops, down-and-out boxers, and calculating, scheming,  
30 and very deadly women. The well-lit, singing and tap-dancing, happy-ending world of the 1930’s had in ten short years become a hostile, orderless place in which alienation, obsession, and paranoia ruled.  
35 The universe seemed to conspire to defeat and entrap the inhabitants who wandered blindly through it. They were victims of fate, their own worst enemies who, looking for a score, ended by defeating  
40 themselves.

The five films mentioned earlier that were shown at the 1946 exhibition were the ones the French critiqued. These high-budget studio productions most  
45 commonly come to the public’s mind when

the word noir is mentioned because they are cited most often in the spate of contemporary books that have recently been published on the subject. But the  
50 noir cycle, although kick-started by the success of those high-budget productions, actually had its roots in the B movie, in particular, in the B crime movie. Film noir was made to order for the B, or low-  
55 budget, part of the movie double bill.<sup>1</sup> It was cheaper to produce because it required less lighting and smaller casts and usually entailed story lines that required limited-scale sets—an attractive  
60 quality to film studios operating on reduced wartime budgets. Film noir was character-driven, and its story lines, which were unusual and compact, could often be told in the 60 to 80 minutes required of B  
65 pictures.

**Passage 2**

It may be that noir began in a way of photographing that was as economical as it was moody (less light meant less money on decor—an important wartime  
70 consideration when studios faced limits on construction material).

Where did noir come from? It’s an intriguing question and one still not adequately answered, despite the quantity  
75 of writing that wallows in that noir mood. Don’t rule out the influence of German film from the twenties, if only because there were, by the early forties, so many European refugees (writers, directors,  
80 camera operators, designers, actors) working in Hollywood. Don’t forget the impact of French films of the late thirties, especially those of Marcel Carne. His *Le Jour Se Leve* (1939, called *Daybreak* in  
85 the United States) was such a success that it was remade in Hollywood in 1947 as *The Long Night*. Finally, don’t underestimate the influence *Citizen Kane* had on anyone whose art and craft was  
90 cinematography. The film was a box office flop, but filmmakers were absorbed by it. A landmark in so much, *Kane* is a turning point in the opening up of a noir sensibility.

95 Equally, don’t forget that from the forties onward, Los Angeles was much beset by psychoanalysis, and the growing



intellectual interest in guilt, depression,  
and nightmare. Don't eliminate the  
100 impact, the memory, or the mere thought  
of a war's damage.

I want to stress how deeply noir  
impulses lay in the common imagination—  
that of the audience as well as the  
105 filmmakers. *Mildred Pierce*, for instance—  
which appeared in 1945 when many  
American women were running businesses  
of their own just to survive while the men  
were away at war—sighs and seems to  
110 say, "It doesn't make any difference, why  
bother, for there is something malign in  
human nature or luck that will undermine  
enterprise and hope." Of course, not  
every film was so bleak. Look instead at  
115 David Selznick's very beautiful and  
touching *Since You Went Away*, which is  
all about Claudette Colbert, Jennifer  
Jones, and Shirley Temple<sup>2</sup> coping in the  
absence of men. That, too, looks like a  
120 film noir. But the mood is entirely that of  
innocent, ardent, flawless hope, and  
assurance that when the war ends  
everything will revert to calm and order.

<sup>1</sup>In the 1940's, a film showing would typically include  
a longer, more expensively-produced film (an "A  
film") and a shorter, less-expensively produced film  
(a "B film")—in other words, a "double bill."

<sup>2</sup>Film actresses who were popular during the 1940's.

13. In lines 1 through 4 of Passage 1, the author suggests  
that "films now called film noir by critics"
- (A) were not classified as film noir when first made
  - (B) were reminiscent of earlier European films
  - (C) were uplifting in mood and theme
  - (D) were intended to contrast with films of the 1930's
  - (E) were disliked by many French film critics
14. It can be inferred that the films listed in lines 9 through  
12 were similar in each of the following ways  
EXCEPT:
- (A) visual appearance
  - (B) emotional effect
  - (C) characters
  - (D) theme
  - (E) music

15. In paragraph 2, the author says that the films discussed  
in paragraph 1 are NOT typical of their genre in regard  
to
- (A) setting
  - (B) budget
  - (C) country of origin
  - (D) plot
  - (E) lighting
16. The author of Passage 1 uses the quotation in lines 24-  
26 primarily in order to
- (A) critique a writer
  - (B) recount an incident
  - (C) evoke a place
  - (D) describe a character
  - (E) summarize a plot
17. The author of Passage 1 suggests that the "spate of  
contemporary books" (lines 47-48) on film noir
- (A) discusses only five films
  - (B) focuses on non-crime films
  - (C) focuses on relatively costly noir films
  - (D) is inaccurate in their historical data
  - (E) is from big-budget publishing companies
18. The authors of both passages imply that contemporary  
writing about film noir
- (A) comes mainly from French film critics
  - (B) has failed to describe the origins of film noir  
accurately
  - (C) mischaracterizes the film noir mood
  - (D) is inferior to earlier writing on film noir
  - (E) has dramatically improved the understanding of  
film noir
19. Both passages imply that the development of film noir  
can be attributed in part to
- (A) the presence of European filmmakers in  
Hollywood
  - (B) the influential writing of French film critics
  - (C) economic restraints resulting from World War II
  - (D) United States filmmakers' dissatisfaction with  
high-paid actors
  - (E) the popularity of *Citizen Kane*



20. The phrase “wallows in” in line 75 is closest in meaning to
- (A) indulges in
  - (B) conforms to
  - (C) criticizes
  - (D) explores
  - (E) reveals
21. The author of Passage 2 mentions *Since You Went Away* in line 116 primarily to
- (A) indicate that not all films in the 1940’s expressed the same attitude
  - (B) illustrate the popularity of film noir actors
  - (C) demonstrate that most film noir dealt with WWII
  - (D) show that the “absence of men” was a major film noir theme
  - (E) point out David Selznick’s influence in defining film noir
22. The second paragraph of Passage 2 is best described as
- (A) a catalog of possible sources of the film noir mood
  - (B) a description of the mood that characterizes film noir
  - (C) a refutation of several misconceptions about film noir
  - (D) an argument for redefining the term “film noir”
  - (E) a list of the major film noir films
23. The quote “It doesn’t make...enterprise and hope” in lines 110-113 is primarily meant to
- (A) give an example of dialogue from *Mildred Pierce*
  - (B) summarize what critics thought about *Mildred Pierce*
  - (C) show how *Mildred Pierce* differs from other films made in 1945
  - (D) characterize the sentiments expressed in *Mildred Pierce*
  - (E) demonstrate the influence of *Mildred Pierce* on *Since You Went Away*
24. The word “impulses” in line 103 is closest in meaning to
- (A) incentives
  - (B) stimulants
  - (C) fantasies
  - (D) transformations
  - (E) feelings

**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.



**NO TEST MATERIAL ON THIS PAGE**

## SECTION 3

Time — 25 minutes

20 Questions

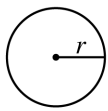
Turn to Section 3 (page 4) of your answer sheet to answer the questions in this section.

**Directions:** For this section, solve each problem and decide which is the best of the choices given. Fill in the corresponding circle on the answer sheet. You may use any available space for scratchwork.

Notes

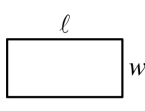
- The use of a calculator is permitted.
- All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.
- Unless otherwise specified, the domain of any function  $f$  is assumed to be the set of all real numbers  $x$  for which  $f(x)$  is a real number.

Reference Information

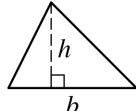


$$A = \pi r^2$$

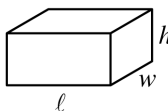
$$C = 2\pi r$$



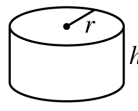
$$A = \ell w$$



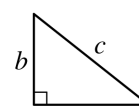
$$A = \frac{1}{2}bh$$



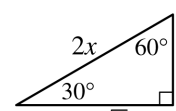
$$V = \ell wh$$



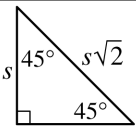
$$V = \pi r^2 h$$



$$c^2 = a^2 + b^2$$



Special Right Triangles



The number of degrees of arc in a circle is 360.

The sum of the measures in degrees of the angles of a triangle is 180.

1. Which of the following triples  $(x, y, z)$  does NOT satisfy  $x \cdot y + z = 21$ ?
- (A) (4, 5, 1)  
 (B) (5, 4, 1)  
 (C) (2, 10, 2)  
 (D) (7, 3, 0)  
 (E) (3, 3, 12)

2. Susan had 60 trading cards. After giving away  $g$  cards and receiving  $r$  cards, she had 70 cards. What is the value of  $r - g$ ?
- (A) 10  
 (B) 20  
 (C) 30  
 (D) 40  
 (E) 50

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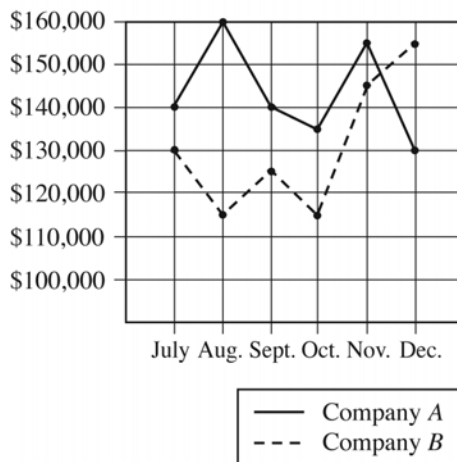
3. If  $k$  is a positive integer divisible by 7, and if  $k < 90$ , what is the greatest possible value of  $k$ ?

(A) 83  
(B) 84  
(C) 87  
(D) 88  
(E) 89

5. For parties, the number of cases of juice a caterer orders is directly proportional to the number of people attending. If the caterer orders 3 cases for a party with 40 people attending, how many cases would she order for a party with 280 people attending?

(A) 7  
(B) 10  
(C) 14  
(D) 18  
(E) 21

SALES IN SECOND HALF OF 2004



4. The graph above shows the monthly sales for Company A and Company B for the second half of 2004. What was the largest one-month decrease in sales for Company B during this period of time?

(A) \$45,000  
(B) \$30,000  
(C) \$25,000  
(D) \$20,000  
(E) \$15,000

6. Which of the following is an element of both the set of positive odd integers and the set of prime numbers?

(A) 2  
(B) 5  
(C) 9  
(D) 12  
(E) 21

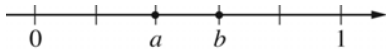
GO ON TO THE NEXT PAGE 

7. The length of a rectangular garden is 3 feet more than its width. If the length of the garden is 9 feet, what is the area of the garden in square feet?

(A) 27  
 (B) 36  
 (C) 54  
 (D) 81  
 (E) 108

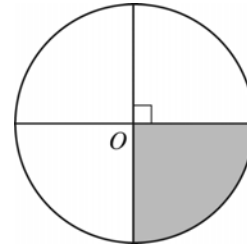
9. Jamal has some coins in his pocket. Some of these coins are quarters, and none of the quarters in his pocket are dated earlier than 2000. Which of the following must be true?

(A) None of the coins in Jamal's pocket are dated earlier than 2000.  
 (B) Some of the coins in Jamal's pocket are dated earlier than 2000.  
 (C) Some of the coins in Jamal's pocket are dated 2000 or later.  
 (D) Most of the coins in Jamal's pocket are either quarters or dated earlier than 2000.  
 (E) Most of the coins in Jamal's pocket are not quarters.



8. On the number line above, the tick marks are equally spaced. What is the value of  $b - a$ ?

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



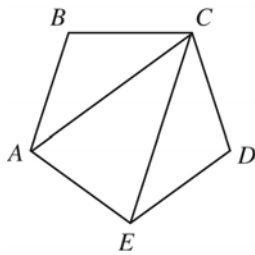
10. The circumference of the circle with center  $O$  shown above is  $2\pi$ . What is the area of the shaded region?

(A)  $\frac{\pi}{2}$   
 (B)  $\frac{\pi}{4}$   
 (C) 1  
 (D)  $\frac{1}{2}$   
 (E)  $\frac{1}{4}$

GO ON TO THE NEXT PAGE

11. If  $a$ ,  $b$ , and  $c$  are positive integers, and if  $(a - c)b = 0$ , which of the following must be true?

(A)  $a < b$   
 (B)  $b < c$   
 (C)  $a = b$   
 (D)  $a = c$   
 (E)  $b = c$



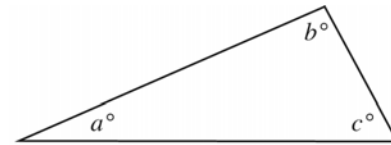
12. In the figure above, regular pentagon  $ABCDE$  is divided into three nonoverlapping triangles. Which of the following is true about the three triangles?

(A) They have equal areas.  
 (B) They have equal perimeters.  
 (C) They are similar.  
 (D) They are isosceles.  
 (E) They each have at least one angle of measure  $60^\circ$ .

13. If  $p < -5$  or  $p > 5$ , which of the following must be true?

I.  $p^2 > 5$   
 II.  $|p| > 5$   
 III.  $p^3 > 5$

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



Note: Figure not drawn to scale.

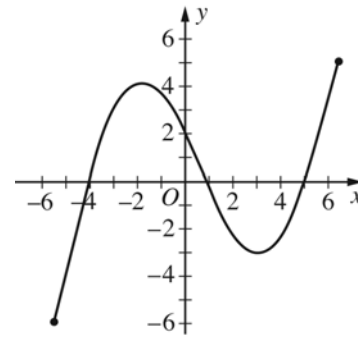
14. In the figure above,  $a < 40$  and  $b = c + 1$ . If  $c$  is an integer, what is the least possible value of  $b$ ?

(A) 30  
 (B) 39  
 (C) 50  
 (D) 61  
 (E) 71

GO ON TO THE NEXT PAGE

15. For all positive integers  $a$  and  $b$ , let  $\blacktriangle$  be defined by  $a\blacktriangle b = a^2 + b^2 - 2$ . If  $c$  and  $d$  are positive integers, which of the following CANNOT be the value of  $c\blacktriangle d$ ?

- (A) 0  
(B) 2  
(C) 3  
(D) 6  
(E) 8



17. The function  $y = f(x)$ , defined for  $-5 \leq x \leq 6$ , is graphed above. Which of the following gives all values of  $x$  for which  $f(x)$  is positive?

- (A)  $0 < x \leq 6$   
(B)  $5 < x \leq 6$   
(C)  $-5 \leq x < 2$   
(D)  $-4 < x < 1$  and  $5 < x \leq 6$   
(E)  $-5 \leq x < -4$  and  $1 < x < 5$

$$r(x) = x^2$$

$$t(x) = x - 2$$

16. The functions  $r$  and  $t$  are defined above. For how many values of  $a$  is it true that  $r(a) = t(a)$ ?

- (A) None  
(B) One  
(C) Two  
(D) Three  
(E) More than three

18. In the  $xy$ -plane, an equation of line  $\ell$  is  $y = 3x - 1$ . If line  $m$  is the reflection of line  $\ell$  in the  $y$ -axis, what is an equation of line  $m$ ?

- (A)  $y = -3x - 1$   
(B)  $y = -3x + 1$   
(C)  $y = 3x + 1$   
(D)  $y = -\frac{x}{3} - 1$   
(E)  $y = -\frac{x}{3} + 1$

GO ON TO THE NEXT PAGE

$$3x + 7y = 12$$

$$6x - ky = 6$$

19. For which of the following values for  $k$  will the system of equations above have no solution?

- (A) -14  
 (B) -7  
 (C) 0  
 (D) 7  
 (E) 14

ITEMS PURCHASED  
BY CUSTOMERS

Numbers of Customers	Number of Items
5	7
11	6
14	5
60	4
10	Fewer than 4

20. The table above shows the number of items 100 customers purchased from a hardware store over a 4-hour period. Which of the following can be determined from the information in the table?
- I. The average (arithmetic mean) number of items purchased per customer
  - II. The median number of items purchased per customer
  - III. The mode of the number of items purchased per customer
- (A) None  
 (B) I and II only  
 (C) I and III only  
 (D) II and III only  
 (E) I, II, and III

**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

24 Questions

**Turn to Section 4 (page 5) of your answer sheet to answer the questions in this section.****Directions:** For each question in this section, select the best answer from among the choices given and fill in the corresponding circle on the answer sheet.

Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five words or sets of words labeled A through E. Choose the word or set of words that, when inserted in the sentence, best fits the meaning of the sentence as a whole.

**Example:**

Hoping to ----- the dispute, negotiators proposed a compromise that they felt would be ----- to both labor and management.

- (A) enforce . . useful  
 (B) end . . divisive  
 (C) overcome . . unattractive  
 (D) extend . . satisfactory  
 (E) resolve . . acceptable

(A) (B) (C) (D) ●

- The border between the two properties, never ----- by legal means, had long been the subject of ----- between the antagonistic neighbors.
 

(A) determined . . concord  
 (B) undermined . . hostility  
 (C) verified . . consonance  
 (D) quantified . . diversion  
 (E) established . . disputation
- Even though Charlie was in apparently good health, the doctor prescribed for him some ----- medication due to his familial history of high blood pressure.
 

(A) presumptive  
 (B) predictive  
 (C) preliminary  
 (D) premeditated  
 (E) preventative
- Though earlier anatomists had touched on the idea, Paul Broca was the first to ----- fully the modern notion that specific behaviors are controlled by particular areas of the human brain.
 

(A) articulate (B) derogate (C) represent  
 (D) refute (E) iterate
- Designed as a gathering place, the new student lounge was appropriately ----- with tables, chairs, and even sofas where groups could assemble comfortably.
 

(A) indicated (B) appointed  
 (C) denuded (D) conflated  
 (E) venerated
- Named in honor of the school's founder, the Richard Brownstone Community Service Fellowship is one of the highest awards ----- Brownstone School graduates.
 

(A) conscripted to (B) redeemed for  
 (C) conferred on (D) relegated to  
 (E) deprived of





The passages below are followed by questions based on their content; questions following a pair of related passages may also be based on the relationship between the paired passages. Answer the questions on the basis of what is stated or implied in the passages and in any introductory material that may be provided.

**Questions 6-9 are based on the following passage.**

The migration and the winter gathering of monarch butterflies are among the most spectacular of all natural phenomena, unique in the insect world. *Line*  
5 Lincoln Brower wrote of his feeling on a warm March morning as he watched tens of thousands of these butterflies explode from their resting places on the trees at an overwintering site in Mexico: “Flying  
10 against the azure sky and past the green boughs of the oyamel, this myriad of dancing embers reinforced my earlier conclusion that this spectacle is a treasure comparable to the finest works of art that  
15 our world culture has produced over the past 4000 years.” But even as I write this paragraph, the winter gathering places of the monarch are being destroyed by illegal logging—indeed, all of the oyamel  
20 forests in Mexico are threatened by legal and illegal logging. If the logging continues at its present rate, all of the overwintering sites in Mexico will be gone by the first decades of the twenty-first  
25 century. So desperate is the situation that the Union for the Conservation of Nature and Natural Resources has recognized the monarch migration as an endangered biological phenomenon and has designated it the first priority in their  
30 effort to conserve the butterflies of the world.

All efforts to preserve the overwintering sites in Mexico have failed. *Line*  
35 In August of 1986, the Mexican government issued a proclamation designating these sites as ecological preserves. Five of the 12 known sites were to receive complete protection.  
40 Logging and agricultural development were to be prohibited in their core areas, a total area of only 17 square miles, and only limited logging was to be permitted in buffer zones surrounding the cores, a total  
45 of another 43 miles. The proclamation was largely ignored. One of the 5 “protected” sites has been clear-cut, some buffer zones have been more or less completely destroyed, and trees are being  
50 cut in all of the core areas. As Brower

told me, guards that were appointed to protect the monarch colonies have not prevented illegal logging but have barred tourists, film crews, and scientists from  
55 witnessing logging activities. It is incomprehensible to me that a way cannot be found to protect a mere 60 square miles of land that are home to one of the world’s most spectacular biological  
60 phenomena.

If the monarchs are to survive, the oyamel forests in which they spend the winter must remain intact. Even minor thinning of the core areas causes high  
65 mortality among the butterflies, because the canopy of the intact forest serves as a protective blanket and umbrella for them. Within a dense stand of trees, the temperature does not drop as low as it  
70 does elsewhere, enabling the monarchs to survive freezing weather under the blanket of trees. Thinning the trees puts holes in the “umbrella” that protects the monarchs, letting them get wet during  
75 winter storms. A wet butterfly loses its resistance to freezing and dies. Even a dry butterfly loses precious calories as its body heat radiates out to the cold night sky through holes in the canopy.

6. The quotation in lines 9-16 serves primarily as a
- (A) detailed explanation of the cultural significance of a place
  - (B) personal observation about artistic awareness
  - (C) dramatic portrayal of an impressive event
  - (D) scientific account of a rare phenomenon
  - (E) conclusive argument for the artistic importance of spectacle



7. The author views the “efforts” cited in line 33 as

- (A) understandably futile
- (B) necessarily limited
- (C) scientifically misguided
- (D) largely undesirable
- (E) unjustifiably ineffective

8. The third paragraph is best described as

- (A) an account of a natural struggle for survival
- (B) a comparison between two types of environments
- (C) a description of a disruption in an ecological system
- (D) a demonstration of successful efforts to preserve an environment
- (E) a guideline for opposing the destruction of a crucial habitat

9. The tone of the passage could best be characterized as

- (A) indifferent
- (B) hostile
- (C) concerned
- (D) bewildered
- (E) complimentary



Questions 10-17 are based on the following passage.

*In this excerpt from a British novel published in 1938, a woman describes staying with her employer at a fashionable hotel in the resort city of Monte Carlo.*

I wonder what my life would be today, if Mrs. Van Hopper had not been a snob.

Line  
5 Funny to think that the course of my existence hung like a thread upon that quality of hers. Her curiosity was a disease, almost a mania. At first I had been shocked, wretchedly embarrassed when I watched people laugh behind her  
10 back, leave a room hurriedly upon her entrance, or even vanish behind a Service door on the corridor upstairs. For many years now she had come to the hotel Cote d'Azur, and, apart from bridge, her one  
15 pastime, which was notorious by now in Monte Carlo, was to claim visitors of distinction as her friends had she but seen them once at the other end of the post-office. Somehow she would manage to  
20 introduce herself, and before her victim had scented danger she had proffered an invitation to her suite. Her method of attack was so downright and sudden that there was seldom opportunity to escape.  
25 At the Cote d'Azur she staked a claim upon a certain sofa in the lounge, midway between the reception hall and the passage to the restaurant, and she would have her coffee there after luncheon and  
30 dinner, and all who came and went must pass her by. Sometimes she would employ me as a bait to draw her prey, and, hating my errand, I would be sent across the lounge with a verbal message,  
35 the loan of a book or paper, the address of some shop or other, the sudden discovery of a mutual friend. It seemed as though notables must be fed to her, and though titles<sup>1</sup> were preferred by her,  
40 any face once seen in a social paper served as well. Names scattered in a gossip column, authors, artists, actors and their kind, even the mediocre ones, as long as she had learnt of them in print.

45 I can see her as though it were but yesterday, on that unforgettable afternoon—never mind how many years ago—when she sat on her favourite sofa in the lounge, debating her method of  
50 attack. I could tell by her abrupt manner,

and the way she tapped her lorgnette<sup>2</sup> against her teeth, that she was questing possibilities. I knew, too, when she had missed the sweet and rushed through  
55 dessert, and she had wished to finish luncheon before the new arrival and so install herself where he must pass. Suddenly she turned to me, her small eyes alight.

60 “Go upstairs quickly and find that letter from my nephew. You remember, the one written on his honeymoon, with the snapshot. Bring it down right away.”

I saw then that her plans were  
65 formed, and the nephew was to be the means of introduction. Not for the first time I resented the part that I must play in her schemes. Like a juggler's assistant I produced the props, then silent and  
70 attentive I waited on my cue. This newcomer would not welcome intrusion, I felt certain of that. In the little I had learnt of him at luncheon, a smattering of hearsay garnered by her ten months ago from the  
75 daily papers and stored in her memory for future use, I could imagine, in spite of my youth and inexperience of the world, that he would resent this sudden bursting in upon his solitude. Why he should have  
80 chosen to come to the Cote d'Azur at Monte Carlo was not our concern, his problems were his own, and anyone but Mrs. Van Hopper would have understood. Tact was a quality unknown to her,  
85 discretion too, and because gossip was the breath of life to her this stranger must be served for her dissection.

<sup>1</sup> “Titles” here refers to members of the European nobility.

<sup>2</sup> Eyeglasses on the end of a short handle.

10. The passage is narrated from the point of view of

- (A) an employee of the Cote d'Azur hotel
- (B) an observer who is uninvolved in the action
- (C) Mrs. Van Hopper
- (D) a participant who is remembering the scene at a later time
- (E) a tourist who has just met Mrs. Van Hopper



11. The “disease” mentioned in line 7 is best described as
- (A) total embarrassment at another person’s behavior
  - (B) a refusal to speak to anyone who is not wealthy
  - (C) an intense need to avoid public notice
  - (D) a violent tendency to assault strangers
  - (E) a relentless drive to meet well-known people
12. In context, “employ” (line 32) most nearly means
- (A) service
  - (B) use
  - (C) attract
  - (D) devote
  - (E) hire
13. It is clear from context that by “debating” (line 49), the narrator means
- (A) asking advice about
  - (B) considering strategies for
  - (C) talking aloud to herself about
  - (D) taking notes on
  - (E) arguing about
14. It can be inferred that Mrs. Van Hopper sends her companion to retrieve something from upstairs primarily with the goal of
- (A) communicating with a relative
  - (B) having some time alone
  - (C) keeping information from the companion
  - (D) arranging a meeting for the companion
  - (E) establishing a connection with a stranger
15. In lines 64-70 (“I saw...cue”), the narrator imagines herself as a
- (A) playwright
  - (B) actor
  - (C) stagehand
  - (D) criminal
  - (E) magician
16. On the whole, the passage is developed in which of the following ways?
- (A) a single extended episode is narrated
  - (B) a dialogue is recounted
  - (C) a physical description is followed by a summary
  - (D) a general description is followed by a specific example
  - (E) a character description is followed by a monologue
17. In context, “garnered” (line 74) is closest in meaning to
- (A) gathered
  - (B) earned
  - (C) assumed
  - (D) inferred
  - (E) harvested

**Questions 18-24 are based on the following passages.**

New York in the wake of World War II was a city on the verge of momentous changes—economic, social, and political.

*Line* For almost a century it had been a  
5 preeminent manufacturing and port city, absorbing the unskilled millions who flocked there from Europe, and had yielded great fortunes for the astute and daring. The Depression of the 1930's had  
10 exacted a terrible toll, and leaders conferred anxiously on how to avoid a repetition of those doleful days as the war economy wound down.

Even before the war, experts had  
15 been cautioning New York that it was losing industry and business to other locales. A 1939 study showed the City's percentage of wage earners down in fifty-eight industries.

20 At the close of World War II, the great port of New York remained the largest general cargo port in the country and the second largest in the world, deferring only to Rotterdam. Week in and  
25 week out forty thousand longshoremen worked the ninety-six piers encircling Manhattan and the eighty lining the Brooklyn waterfront, manually loading and unloading sixteen million tons a year.\*  
30 Hundreds of tugs and barges plied the harbor and nearby rivers, guiding the big ships to their berths and ferrying cargo. Looking ahead, the new Port Authority of New York cleared forty old piers in  
35 Brooklyn and replaced them with fourteen spacious, modern piers, the best in the world.

In the mid-1950's Malcolm McLean of Winston-Salem invented a method of  
40 shipping that was to revolutionize cargo ports and make the new piers obsolete. His brainchild was the truck-sized sealed containers that slashed loading and unloading time to almost nothing. A small  
45 crew of men could use cranes to load the gargantuan containers, filling a ship twenty times faster than the old gangs grappling with crates, boxes, and bales. The impregnable containers guaranteed  
50 against waterfront theft or breakage, eliminating altogether the dockside pilferage that previously had consumed up to 15 percent of some cargoes. Ships that had traditionally spent a week in port  
55 could now finish their loading in a day.

The new containers required huge storing areas, far larger than were available in either Manhattan or Brooklyn. When the City of New York proposed  
60 modernizing its East River piers to handle the containers, the Port Authority said it would have to clear all the land from the river west to Third Avenue to do so. Each berth for a ship carrying containers of  
65 cargo needed fifty acres of surrounding land, compared to an old-fashioned berth of 195,000 square feet. The Port Authority erected container ports at Port Newark and Port Elizabeth, New Jersey,  
70 with their vast stretches of empty land. The old piers of Manhattan and Brooklyn languished—rotting, deserted white elephants. The ranks of the longshoremen, once forty thousand  
75 strong, dwindled to nine thousand. In the new technical, mechanized world of container shipping, man-hours fell from 40 million man-hours right after the war to 13.5 million in 1983.

\*The island of Manhattan is bounded by the Hudson River and the state of New Jersey to the west and by the East River and the New York City borough of Brooklyn on the east.

**18.** In line 5, “preeminent” is closest in meaning to

- (A) knowledgeable
- (B) outstanding
- (C) growing
- (D) abnormal
- (E) notorious

**19.** In context, the “unskilled millions” (line 6) apparently refers to people who

- (A) made great fortunes
- (B) were unprepared for the Depression of the 1930's
- (C) took jobs in shipping and manufacturing
- (D) were uneasy about the U.S. economy
- (E) left New York to find work

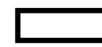
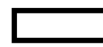
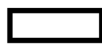
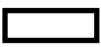


20. The third paragraph is best described as a description of
- (A) a process that would soon be obsolete
  - (B) a blueprint for changing an area
  - (C) a plan that drew much criticism
  - (D) a decline in the importance of an industry
  - (E) an event that foreshadowed future happenings
21. The author considers Malcolm McLean to be
- (A) a dreamer
  - (B) an opportunist
  - (C) an eccentric
  - (D) an obstructionist
  - (E) an innovator
22. The passage mentions each of the following as an advantage of container shipping EXCEPT:
- (A) large storing areas
  - (B) reduced loading time
  - (C) theft deterrence
  - (D) personnel reduction
  - (E) breakage prevention
23. According to the passage, the City of New York was unable to carry out its pier modernization plan because which of the following was lacking?
- (A) Money
  - (B) Space
  - (C) Time
  - (D) Materials
  - (E) Motivation
24. In the final paragraph of the passage, the author presents an example of
- (A) one man's vision for the future
  - (B) the contrasts between two large industries
  - (C) the rapid growth of a city
  - (D) a negative aspect of modernization
  - (E) the results of political corruption

**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.

**NO TEST MATERIAL ON THIS PAGE**



## SECTION 5

Time — 25 minutes

18 Questions

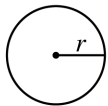
Turn to Section 5 (page 5) of your answer sheet to answer the questions in this section.

**Directions:** This section contains two types of questions. You have 25 minutes to complete both types. For questions 1-8, solve each problem and decide which is the best of the choices given. Fill in the corresponding circle on the answer sheet. You may use any available space for scratchwork.

Notes

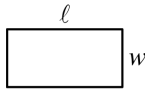
- The use of a calculator is permitted.
- All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.
- Unless otherwise specified, the domain of any function  $f$  is assumed to be the set of all real numbers  $x$  for which  $f(x)$  is a real number.

Reference Information

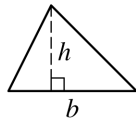


$$A = \pi r^2$$

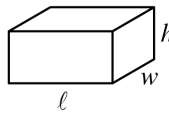
$$C = 2\pi r$$



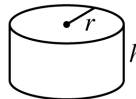
$$A = \ell w$$



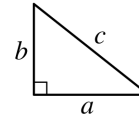
$$A = \frac{1}{2}bh$$



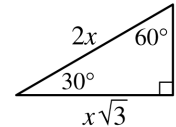
$$V = \ell wh$$



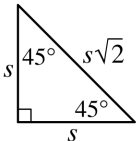
$$V = \pi r^2 h$$



$$c^2 = a^2 + b^2$$



Special Right Triangles

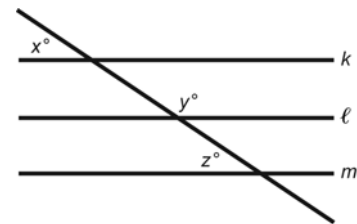


The number of degrees of arc in a circle is 360.

The sum of the measures in degrees of the angles of a triangle is 180.

1. There are 6 bookcases in a house. Each bookcase contains at least 125 books but not more than 160 books. Which of the following could be the total number of books in all 6 bookcases?

- (A) 500  
(B) 625  
(C) 725  
(D) 925  
(E) 1,000



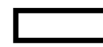
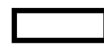
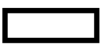
Note: Figure not drawn to scale.

2. In the figure above, lines  $k$ ,  $l$ , and  $m$  are parallel. If  $y = 125$ , what is the value of  $x + z$ ?

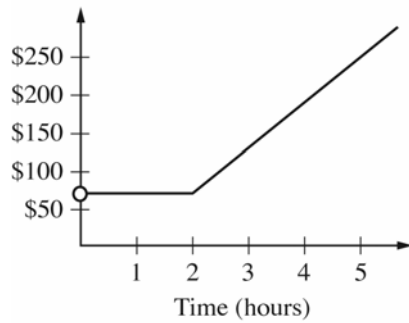
- (A) 90  
(B) 95  
(C) 100  
(D) 105  
(E) 110

GO ON TO THE NEXT PAGE





COMPUTER REPAIR CHARGES



3. Graphed above is the amount that a computer shop charges for a repair job as a function of the number of hours required to do the job. Which of the following is most consistent with the information in the graph?
- (A) The shop charges the same amount for any job of any length.
- (B) The shop charges at an hourly rate for work with no fixed initial amount.
- (C) The shop charges a fixed initial amount plus an hourly rate for work, starting at the beginning of the first hour.
- (D) The shop charges a fixed amount for the first 2 hours or less of work. The shop charges at an hourly rate for work beyond 2 hours.
- (E) The shop charges at an hourly rate for work beginning at the start of the first hour. This rate decreases after 2 hours of work.

PRIZE TICKETS AWARDED

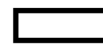
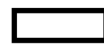
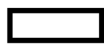
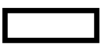
Score	Number of Tickets
100	3
110	$3\frac{1}{4}$
120	$3\frac{1}{2}$
160	$4\frac{1}{2}$
200	$5\frac{1}{2}$

5. An amusement park awards tickets that can be exchanged for prizes to reward high scores at an arcade game. Some scores and the corresponding number of prize tickets awarded are shown in the table above. For scores from 100 up to 200, the number of tickets awarded increases by a constant amount for each 10 -point score increase. How many tickets would be awarded for a score of 180 ?
- (A)  $4\frac{1}{2}$
- (B)  $4\frac{3}{4}$
- (C)  $4\frac{7}{8}$
- (D) 5
- (E)  $5\frac{1}{4}$

$$|t - 9| = 4$$

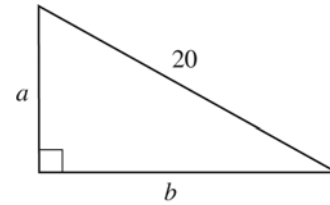
4. For how many values of  $t$  is the equation above true?
- (A) None
- (B) One
- (C) Two
- (D) Four
- (E) More than four

GO ON TO THE NEXT PAGE



6. There are  $k$  students in a class, only one of whom is a junior. If 5 seniors are added to the class, how many students in the class will NOT be juniors?

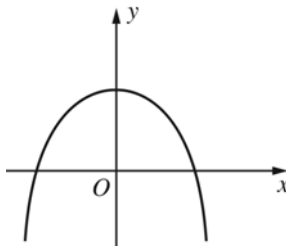
- (A)  $k + 1$   
 (B)  $k + 2$   
 (C)  $k + 3$   
 (D)  $k + 4$   
 (E)  $k + 5$



Note: Figure not drawn to scale.

8. Which of the following inequalities is true about the lengths  $a$  and  $b$  of the sides of the triangle above?

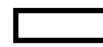
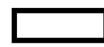
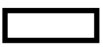
- (A)  $0 \leq (a + b)^2 < 20$   
 (B)  $20 \leq (a + b)^2 < 40$   
 (C)  $40 \leq (a + b)^2 < 100$   
 (D)  $100 \leq (a + b)^2 < 400$   
 (E)  $400 \leq (a + b)^2$



7. The quadratic function graphed above has equation  $f(x) = a - x^2$ . Which of the following must be true?

- (A)  $a > 0$   
 (B)  $a < 0$   
 (C)  $a$  is even.  
 (D)  $a$  is odd.  
 (E)  $a$  is the square of an integer.

GO ON TO THE NEXT PAGE



**Directions: For Student-Produced Response questions 9-18, use the grids at the bottom of the answer sheet page on which you have answered questions 1-8.**

Each of the remaining 10 questions requires you to solve the problem and enter your answer by marking the circles in the special grid, as shown in the examples below. You may use any available space for scratchwork.

Write answer in boxes.

Answer:  $\frac{7}{12}$

Grid in result.

Fraction line

Answer: 2.5

Decimal point

Answer: 201  
Either position is correct.

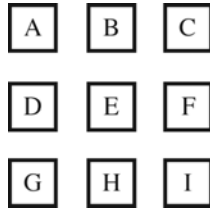
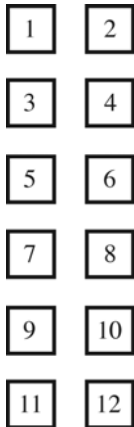
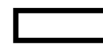
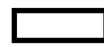
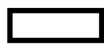
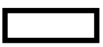
**Note:** You may start your answers in any column, space permitting. Columns not needed should be left blank.

- Mark no more than one circle in any column.
  - Because the answer sheet will be machine-scored, **you will receive credit only if the circles are filled in correctly.**
  - Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately.
  - Some problems may have more than one correct answer. In such cases, grid only one answer.
  - No question has a negative answer.
  - **Mixed numbers** such as  $3\frac{1}{2}$  must be gridded as 3.5 or  $7/2$ . (If  $\frac{31}{2}$  is gridded, it will be interpreted as  $\frac{31}{2}$ , not  $3\frac{1}{2}$ .)
  - **Decimal Answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid. For example, if you obtain an answer such as 0.6666..., you should record your result as .666 or .667. **A less accurate value such as .66 or .67 will be scored as incorrect.** Acceptable ways to grid  $\frac{2}{3}$  are:
- 

9. If a circle has circumference  $7\pi$ , what is the radius of the circle?

10. If  $2r + 5t = 50$ , and  $r$  and  $t$  are positive integers, what is one possible value of  $r$ ?

GO ON TO THE NEXT PAGE



11. The figure above shows, on the left, the call buttons for the 12 floors of an apartment building, and on the right, the 9 buttons labeled A through I for the 9 apartments on each floor of the building. How many different apartments can be called by pressing one button on the left and one button on the right?

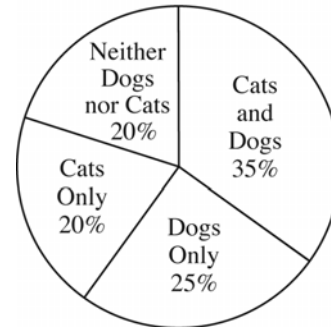


Figure 1

STUDENTS AT  
NORTHERN HIGH SCHOOL

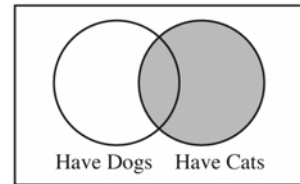


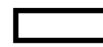
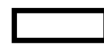
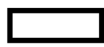
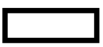
Figure 2

Note: Figure 2 not drawn to scale.

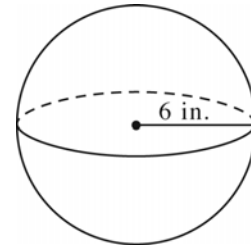
13. Students at Northern High School are represented in Figure 1 above. Figure 2 above is another way to show which pets these students have. If the same 500 students are represented in both figures, what is the total number of students represented by the shaded circle in Figure 2?

12. If the function  $f$  is defined by  $f(x) = \frac{x-6}{3}$ , for what value of  $x$  does  $f(x) = 20$ ?

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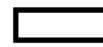
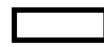
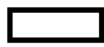
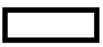
14. If  $y$  is a positive integer, and  $3\sqrt{y} - 7 = 8$ , what is the value of  $y$ ?



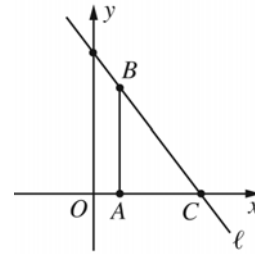
16. The sphere above has radius 6 inches. What is the volume, in cubic inches, of the smallest cube that can contain the entire sphere?

- 
15. If  $(1 \times 10^n) + (7 \times 10^5) = 7.001 \times 10^5$ , what is the value of  $n$ ?

GO ON TO THE NEXT PAGE 



17. If the value of  $\frac{1}{t-1}$  is twice the value of  $\frac{1}{t+2}$ , what is the value of  $t$ ?



18. In the  $xy$ -coordinate plane above,  $AC = 3$ ,  $BC = 5$ , and  $\overline{AB}$  is perpendicular to  $\overline{AC}$ . If the coordinates of point  $A$  are  $(1, 0)$ , what is the  $y$ -intercept of line  $\ell$ ?

**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.

**NO TEST MATERIAL ON THIS PAGE**

**SECTION 6****Time — 25 minutes****35 Questions****Turn to Section 6 (page 6) of your answer sheet to answer the questions in this section.****Directions:** For each question in this section, select the best answer from among the choices given and fill in the corresponding circle on the answer sheet.

The following sentences test correctness and effectiveness of expression. Part of each sentence or the entire sentence is underlined; beneath each sentence are five ways of phrasing the underlined material. Choice A repeats the original phrasing; the other four choices are different. If you think the original phrasing produces a better sentence than any of the alternatives, select choice A; if not, select one of the other choices.

In making your selection, follow the requirements of standard written English; that is, pay attention to grammar, choice of words, sentence construction, and punctuation. Your selection should result in the most effective sentence—clear and precise, without awkwardness or ambiguity.

**EXAMPLE:**

Laura Ingalls Wilder published her first book and she was sixty-five years old then.

- (A) and she was sixty-five years old then
- (B) when she was sixty-five
- (C) at age sixty-five years old
- (D) upon the reaching of sixty-five years
- (E) at the time when she was sixty-five

(A)  (B)  (C)  (D)  (E)

1. Numismatics, or coin collecting, and becoming popular in the United States around 1857, when the replacement of the large cent by the new flying-eagle cent led enthusiasts to start collecting the earlier coin.
  - (A) and becoming
  - (B) becoming
  - (C) will become
  - (D) became
  - (E) it became
2. Just as his predecessor Mozart, for whom composing music seemed to come easily, Beethoven always struggled to perfect his work.
  - (A) Just as
  - (B) Even though
  - (C) Whereas
  - (D) Unlike with
  - (E) Unlike
3. The Incas kept records with knotted cords called quipus, historians believe they were used to document crop production and to aid in tax collection.
  - (A) historians believe they were used
  - (B) historians believing in its use
  - (C) which historians believe they use
  - (D) which historians believe were used
  - (E) and historians believe it was used
4. While females were not allowed to compete in the Olympic games of ancient Greece; they were not even allowed to watch them.
  - (A) While females were not allowed
  - (B) Even though females were not allowed
  - (C) Females were not allowed
  - (D) They did not allow females
  - (E) With females, they were not allowed
5. In psychological theory, the term social learning is used to describe learning that is influenced by one's environment and not the influence of innate or internal forces.
  - (A) and not the influence of
  - (B) and not, instead,
  - (C) rather than by
  - (D) rather than when it is
  - (E) rather than being influenced due to





6. Giant stars, or those that weigh 100 times what the Sun weighs, are important to galaxies and the universe because with furious combustion, it produces many important elements that form planets and other bodies, including carbon, oxygen, sodium, and neon.
- (A) because with furious combustion, it produces  
 (B) because their furious combustion produces  
 (C) due to their furious combustion, producing  
 (D) as their furious combustion produced  
 (E) in that with furious combustion, they produced
7. American photographer Annie Leibovitz is renowned for her revealing, eye-catching portraits of celebrities, and characterized by carefully staged settings and the use of vivid primary colors.
- (A) and  
 (B) and she is  
 (C) each of them are  
 (D) each of which are  
 (E) which are
8. Decorative arts, art forms that have a mainly practical or ornamental purpose, and include ceramics, basketry, furniture making, and glassblowing.
- (A) and include  
 (B) including  
 (C) includes  
 (D) include  
 (E) which include
9. About 35 percent of the world's orange juice is produced by Florida, compared with Brazil, the world's largest orange producer, which has nearly 50 percent.
- (A) Brazil, the world's largest orange producer, which has nearly 50 percent  
 (B) Brazil, with nearly 50 percent, it is the world's largest orange producer  
 (C) nearly 50 percent that are produced by Brazil as the world's largest orange producer  
 (D) the production of Brazil, the world's largest orange producer, with nearly 50 percent  
 (E) nearly 50 percent produced by Brazil, the world's largest orange producer
10. Many of blues great Bessie Smith's songs describe the experiences of southern Black migrants, especially the struggles of Black women to adjust to urban life in the northern United States.
- (A) the struggles of Black women to adjust  
 (B) how Black women struggled at adjusting  
 (C) when it was Black women struggling to adjust  
 (D) Black women, they struggled with adjusting  
 (E) for Black women and struggling to adjust
11. The Bretons who began emigrating to the United States from the Brittany region of France in the early twentieth century were distinguished from other French citizens by their Celtic origin, but about 40 percent of those who emigrated spoke a Celtic language closely related to Welsh.
- (A) but about 40 percent of those who emigrated spoke  
 (B) about 40 percent of whom spoke  
 (C) about 40 percent of which were speaking  
 (D) with about 40 percent of those who emigrated speaking  
 (E) where 40 percent of them were speaking



The following sentences test your ability to recognize grammar and usage errors. Each sentence contains either a single error or no error at all. No sentence contains more than one error. The error, if there is one, is underlined and lettered. If the sentence contains an error, select the one underlined part that must be changed to make the sentence correct. If the sentence is correct, select choice E. In choosing answers, follow the requirements of standard written English.

EXAMPLE:

The other delegates and him immediately  
A B C  
accepted the resolution drafted by the  
D  
neutral states. No error  
E

(A) (B) (C) (D) (E)

12. Although they are not fast runners, wolves  
A  
could have maintained a loping run for many miles,  
B C  
running throughout the night if necessary. No error  
D E
13. The credit for making Franz Kafka internationally  
A  
famous as a writer belong to his friend, novelist Max  
B  
Brod, who edited Kafka's unpublished manuscripts  
C  
and then had them published, despite Kafka's dying  
D  
wishes to the contrary. No error  
E
14. Unlike country-and-western bands, which often  
A B  
feature the harmonica, banjo, or fiddle, rock bands  
tended to use electronic equipment, including  
C D  
amplifiers, guitars, and organs. No error  
E
15. Like her nonfiction, Jean Craighead George's fiction  
A  
draws extensively not only from published material  
B  
but also she had firsthand observations of animals  
C  
and ecological systems. No error  
D E
16. Most ships move through the Suez Canal under their  
A B  
own power, so extremely large ships must be  
C  
assisted by a tugboat. No error  
D E
17. Ralph Ellison's *Invisible Man* is the story of a  
A  
nameless young Black man who ultimately decides to  
B  
forge his own identity rather than accept the one  
C D  
assigned to him. No error  
E
18. The Sun was shining for nearly five billion years and  
A  
is thought to have sufficient thermonuclear fuel  
B C  
in its core to shine for about another five billion.  
D  
No error  
E



19. The study showed that children who consumed  
A B  
small amounts of added sugars eating on average  
C  
one serving more of grains per day than did  
D  
children who ate larger amounts of these same  
sugars. No error  
E
20. In many parts of the world where grasses cover vast  
A  
expanses of land, periodic, controlled burning  
is practiced in order to keep woody brush  
B  
from gaining a foothold and it stimulates continuing  
C D  
grass growth. No error  
E
21. The newspaper reported that having the increase in  
A B  
the minimum wage, many people are still having  
C  
trouble making ends meet. No error  
D E
22. Used primarily in the United States and Canada,  
A  
American Sign Language, which comprises hand  
B  
signs, facial expressions, and fingerspelling, including  
C  
many regional differences and slang. No error  
D E
23. The United States is the world's largest producer of  
A  
cranberries and cranberry products, most of which  
B  
is consumed there and in Canada. No error  
C D E
24. Almost all animals that hibernate prepare for it  
A B  
during summer by eating large amounts of food,  
C  
which they convert to thick layers of fat. No error  
D E
25. Among birds that forage in tree trunks, nuthatches are  
A  
the only ones that regularly feed with their heads facing  
B  
downward, when they often find food in bark crevices  
C  
overlooked in their upward search. No error  
D E
26. If you can acquire the necessary calories by drinking  
A B  
gasoline instead of by eating food, you would be able  
C  
to run 26 miles on about one-twelfth of a gallon of  
D  
gas. No error  
E



27. In many large cities in the United States, the presence of a culturally diverse population has led to repeated calls that curricula taught wholly or partly in languages other than English. No error

A B  
C D  
E

28. Of ancient origin, the game of checkers was played in Egypt during the time of the pharaohs and is mentioned in the writings of Homer and Plato. No error

A B  
C D  
E

29. By the early 1920's, Louis Armstrong recorded his first solos as a member of King Oliver's Creole Jazz Band in such pieces as "Chimes Blues" and "Tears," which he composed with pianist Lil Hardin. No error

A B  
C D  
E



**Directions:** The following passage is an early draft of an essay. Some parts of the passage need to be rewritten.

Read the passage and select the best answers for the questions that follow. Some questions are about particular sentences or parts of sentences and ask you to improve sentence structure or word choice. Other questions ask you to consider organization and development. In choosing answers, follow the requirements of standard written English.

**Questions 30-35 are based on the following passage.**

(1) The early history of astronomy was full of misunderstandings. (2) Some of them were funny, it's like the controversy of the "canali" on Mars. (3) In the late 1800's an Italian astronomer named Giovanni Schiaparelli studied Mars. (4) He had a high-powered telescope that he used to look at Mars. (5) Schiaparelli thought he saw channels criss-crossing the planet's surface. (6) He was intrigued: perhaps these channels were evidence that Mars had great flowing rivers like the Earth. (7) Schiaparelli made charts of the surface of Mars and labeled it with the Italian word "canali."

(8) Unfortunately, "canali" can be translated into English as either "channels" or "canals." (9) Channels and canals are two different things because channels are formed naturally by water, while canals are constructed by people. (10) Some people translated "canali" as "canals," word began to spread that the lines Schiaparelli saw through his telescope were actually canals that had been built by intelligent beings. (11) One of them was an amateur astronomer named Percival Lowell. (12) He wrote a series of best-selling books. (13) In these books Lowell publicized the notion that these "canals" were built by Martian farmers who understood irrigation.

(14) In 1965 a U.S. spacecraft flying close to the surface of Mars sent back conclusive pictures. (15) There are no prominent channels anywhere on the planet. (16) Lowell and Schiaparelli saw what they wanted to see. (17) Lowell was wrong, of course, but so was Schiaparelli.

30. Which is the best version of the underlined portion of sentence 2 (reproduced below)?

*Some of them were funny, it's like the controversy of the "canali" on Mars.*

- (A) (as it is now)
- (B) funny; it's like
- (C) funny, like
- (D) funny, even
- (E) as funny as

31. Which is the best way to combine sentences 3 and 4 (reproduced below)?

*In the late 1800's an Italian astronomer named Giovanni Schiaparelli studied Mars. He had a high-powered telescope that he used to look at Mars.*

- (A) In the late 1800's an Italian astronomer named Giovanni Schiaparelli studied Mars by a high-powered telescope.
- (B) In the late 1800's an Italian astronomer named Giovanni Schiaparelli studied Mars with a high-powered telescope that he used to look at Mars.
- (C) In the late 1800's an Italian astronomer named Giovanni Schiaparelli studied Mars, he had a high-powered telescope that he used.
- (D) In the late 1800's an Italian astronomer named Giovanni Schiaparelli used a high-powered telescope to study Mars.
- (E) In the late 1800's an Italian astronomer named Giovanni Schiaparelli, using a high-powered telescope to look, studied Mars.

32. Which word would be best to insert at the beginning of sentence 10 (reproduced below)?

*Some people translated "canali" as "canals," word began to spread that the lines Schiaparelli saw through his telescope were actually canals that had been built by intelligent beings.*

- (A) Whereas
- (B) However
- (C) If
- (D) Although
- (E) Because

33. What is the best version of the underlined portion of sentence 11 (reproduced below)?

*One of them was an amateur astronomer named Percival Lowell.*

- (A) (As it is now)
- (B) One of the most intelligent was
- (C) This idea was popularized by
- (D) It was spread even more by someone else,
- (E) The person who solved the problem was



34. What is the best way to combine sentences 12 and 13 (reproduced below)?

*He wrote a series of bestselling books. In these books Lowell publicized the notion that these "canals" were built by Martian farmers who understood irrigation.*

- (A) In a series of bestselling books, Lowell publicized the notion that these "canals" were built by Martian farmers who understood irrigation.
- (B) He wrote a series of books that was a bestseller and publicized the notion that these "canals" were built by Martian farmers who understood irrigation.
- (C) His books that were bestsellers publicized the notion that these "canals" were built by Martian farmers who understood irrigation.
- (D) He wrote a series of bestselling books; Lowell publicized the notion that these "canals" were built by Martian farmers who understood irrigation.
- (E) In these books, which were bestsellers, Lowell publicized the notion that these "canals" were built by Martian farmers who understood irrigation.

35. What would best replace "it" in sentence 15 (reproduced below)?

*According to these images, there are no prominent channels anywhere on it.*

- (A) the planet  
(B) the spacecraft  
(C) the pictures  
(D) these  
(E) them

**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.

**NO TEST MATERIAL ON THIS PAGE**

**SECTION 8**

Time — 20 minutes

19 Questions

**Turn to Section 8 (page 7) of your answer sheet to answer the questions in this section.****Directions:** For each question in this section, select the best answer from among the choices given and fill in the corresponding circle on the answer sheet.

Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five words or sets of words labeled A through E. Choose the word or set of words that, when inserted in the sentence, best fits the meaning of the sentence as a whole.

**Example:**

Hoping to ----- the dispute, negotiators proposed a compromise that they felt would be ----- to both labor and management.

- (A) enforce . . useful  
 (B) end . . divisive  
 (C) overcome . . unattractive  
 (D) extend . . satisfactory  
 (E) resolve . . acceptable

(A) (B) (C) (D) ●

- The anthropology professor hoped that his latest book would appeal to popular as well as to ----- readers, thereby earning him ----- in both realms.
 

(A) general . . disdain  
 (B) lay . . attention  
 (C) academic . . anonymity  
 (D) avid . . remuneration  
 (E) scholarly . . acclaim
- As if intended to squelch rumors of cutbacks, the company's annual celebration was as ----- as ever.
 

(A) sparing (B) tawdry (C) belated  
 (D) lavish (E) sated
- The professor's ----- lecture on American history served more to confuse the students than to clarify the difficult material.
 

(A) perspicacious (B) exhaustive (C) cogent  
 (D) scintillating (E) disjointed
- Since the foreign correspondent was accustomed to completing his assignments under ----- conditions, the commotion of the subway at rush hour presented no ----- his creativity.
 

(A) squalid . . boon for  
 (B) tranquil . . obstruction to  
 (C) tumultuous . . impediment to  
 (D) destructive . . demonstration of  
 (E) flagrant . . benefit to
- Unlike the ----- presentations of the other students in class, Mary Catherine's presentation demonstrated a thorough and mature grasp of the material.
 

(A) astute (B) sophomoric (C) incredulous  
 (D) cloying (E) scintillating
- Sadly, the author never ----- the rewards of literary success during her lifetime; public recognition and appreciation of her talent were completely ----- .
 

(A) predicted . . conclusive  
 (B) reaped . . posthumous  
 (C) acknowledged . . fulsome  
 (D) appreciated . . gratuitous  
 (E) pursued . . discredited





The passage below is followed by questions based on its content. Answer the questions on the basis of what is stated or implied in the passage and in any introductory material that may be provided.

**Questions 7-19 are based on the following passages.**

*These two passages discuss the same scholarly book, Strangers from a Different Shore by Asian American historian Ronald Takaki. The first passage is a critique of the book written by another Asian American historian, Li Ling-chi Wang; the second is a defense of the book by its author.*

**Passage 1**

In terms of its approach, Takaki's book is similar to Victor and Bret Nee's *Longtime Californ' (1972)* because both are media through which diverse Asian American voices surface. The major difference is in how they collected and use the voices. The Nees identified and selected representative personalities from different segments of the Chinese American community in San Francisco, whom they laboriously interviewed themselves over a two-year period, and placed these lengthy, in-depth interviews largely verbatim in their book with minimal narrative and analysis. From the analytical standpoint, the book broke no new ground. But it succeeded in giving us the sights, sounds, flavors, perspectives, and feelings of the community that had never before been permitted to surface. For their labor, the book received lavish reviews by the mainstream press.

Takaki's approach is virtually identical with that of the Nees except the voices used tend to be fragmentary and mostly collected from indirect sources. To begin with, no attempt was made to distinguish voices and quotes from literary works from voices of oral histories, documents, and newspapers. Unlike in the Nees' book, only a very tiny percentage of the voices, probably less than 15 percent, are based on personal interviews by Takaki and of these, most are interviews of the author's relatives and colleagues. In this respect, the author depends almost entirely on available primary and secondary sources, leaving readers wondering how

representative they are.

Also, unlike the Nees, Takaki's book offers no analytical breakthrough for our understanding of either Asian American history or the newly emerging communities. Particularly disappointing is Takaki's silence on the historic emergence of "Asian America" in the late 1960s and early 1970s and his ahistorical approach to the ensuing decades in Asian American history. The rise of ethnic and political consciousness, the emergence of new community organizations, and the rise of Asian American studies are among the most important developments in the history of Asians in the United States, in my view.

Unfortunately both Takaki and Roger Daniels [in the latter's *Asian America: Chinese and Japanese in the U.S. since 1850*] failed to adequately treat this period of "Asian America" that gave them the titles for their books, a term that captures the richness of the newly emerged Asian American political and cultural expressions.

In this respect, book reviewers are wrong in characterizing Takaki's book as a "comprehensive history of 150 years of Asian experience in the U.S." It is more accurate to describe the book as a history of Asians in the U.S. up to World War II, with the final two chapters of anecdotal events since then tacked on as an epilogue.

**Passage 2**

Comparing *Strangers from a Different Shore* to Victor and Brett Nee's *Longtime Californ'*, Wang points out that I did not collect the voices myself. However my study is a very different one from the Nees'. Theirs studied only one ethnic group and only one geographical community—San Francisco Chinatown. Mine is comparative and also far more comprehensive: it studies the Chinese, Japanese, Koreans, Filipinos, Asian Indians, Vietnamese... Thus, given the tremendous scope of my study, I had to



collect most of the voices from indirect  
sources such as the Ethnic Studies Oral  
History Project, and I acknowledged them  
through the study....

But I also directly interviewed  
people. One of them, Touly Xiong, a  
Hmong refugee now living in Wisconsin,  
told me: "We hope you will include our  
stories in your book. Americans need to  
understand us and what we have gone  
through." He said that he had fought for  
the US in Laos and that his brother had  
been killed by North Vietnamese soldiers.  
I also interviewed many of my relatives.  
One of the meaningful things I discovered  
and I hope other Asian American scholars  
will learn is that our family histories are  
tied to the histories of our communities.  
We, as scholars, are members of  
communities, and our aunts, uncles, and  
cousins have stories and voices that  
belong to Asian American history....

But what about Wang's claim  
that I "failed" to "adequately" treat the  
post-World War II period? I wish I had  
given more attention to the 1950s, but I  
felt that the book was already an  
enormously long one and also that I  
wanted to focus more on the post-1965  
period. And here it is not accurate to  
describe my book as "a history of Asians  
in the US up to World War II." The last  
two chapters (out of a total of twelve  
chapters) are devoted to exactly this time  
period. As any reader will see, they are  
not "chapters of anecdotal events. . .  
tacked on as an epilogue," as Wang  
claims. Rather they are designed to relate  
the early period to the more recent history  
in a substantive way. They present an  
analysis of post-World War II  
developments.... These certainly are not  
"anecdotal events."

7. As used in line 1, "approach" most nearly means

- (A) beginning
- (B) technique
- (C) hypothesis
- (D) advance
- (E) style

8. In context, "surface" (line 20) is closest in meaning to

- (A) arrange
- (B) level
- (C) float
- (D) emerge
- (E) smooth

9. In paragraph 2, the author of Passage 1 implies that a major difference between the Nees' book and Takaki's book is that

- (A) the Nees' book draws extensively on interviews conducted by the authors
- (B) Takaki's study focuses on U.S. citizens with roots in only one Asian nation
- (C) the Nees make no significant analytical advances
- (D) Takaki places great emphasis on the rise of Asian American studies
- (E) the Nees' book uses quotations from literary works and oral histories

10. In context, "distinguish" (line 28) most nearly means

- (A) mark
- (B) differentiate
- (C) analyze
- (D) judge
- (E) discover

11. The author of Passage 1 mentions Roger Daniels primarily as an example of

- (A) an historian who wrote an essay critical of Takaki's study
- (B) a scholar who was frequently consulted by Takaki
- (C) a writer whose research methods the author admires
- (D) an author whose book shares a weakness with Takaki's
- (E) someone who assisted Takaki in writing his book



12. In context, “respect” (line 66) is closest in meaning to
- (A) regard
  - (B) appreciation
  - (C) reference
  - (D) esteem
  - (E) recognition
13. Which of the following best describes the attitude of the author of Passage 1 toward Takaki’s book?
- (A) disbelieving
  - (B) confrontational
  - (C) exasperated
  - (D) outraged
  - (E) dissatisfied
14. The author of Passage 2 asserts that the Nees’ book is inferior to *Strangers from a Different Shore* in terms of its
- (A) purpose
  - (B) readability
  - (C) documentation
  - (D) accuracy
  - (E) range
15. The author of Passage 2 mentions the Ethnic Studies Oral History Project (lines 89-90) primarily in order to
- (A) cite an organization that praised his study
  - (B) highlight a valuable resource overlooked by the Nees
  - (C) defend the validity of his use of secondary sources
  - (D) acknowledge the assistance he received from earlier scholars
  - (E) refer to a study he conducted earlier in his career
16. The author of Passage 2 uses the direct quotation in lines 95-98 most probably in order to
- (A) discredit an assertion made in the Nees’ book
  - (B) demonstrate that his book has gained a wide readership
  - (C) provide evidence that indirect sources are as valid as direct sources
  - (D) introduce claims about an ethnic group not discussed in his book
  - (E) counter a criticism made by the author of Passage 1
17. With the parenthetical information in lines 120-121 Takaki intends primarily to
- (A) imply that his book is a relatively lengthy one
  - (B) illustrate the significance the post-World War II era has in his book
  - (C) tell readers where his treatment of the post-World War II era can be found
  - (D) compare his book to a previous book about the post-World War II era
  - (E) describe the arrangement of chapters in his book
18. The author of Passage 2 uses quotation marks in line 130 most likely in order to
- (A) indicate that he is using a common expression
  - (B) highlight an important concept
  - (C) cite a judgment with which he disagrees
  - (D) emphasize a humorous statement
  - (E) call attention to an unusual phrase
19. The authors of Passage 1 and Passage 2 would most probably agree with one another about which of the following statements concerning scholarly studies of Asian American communities?
- (A) Asian American scholars should focus on earlier immigrant groups rather than on those who immigrated later.
  - (B) Oral histories are less credible than is written documentation of Asian American history.
  - (C) Interviewing one’s own family members is an effective way to represent the voices of one’s community.
  - (D) Post-World War II Asian American history is just as important as the history of earlier periods of Asian American history.
  - (E) A study that focuses solely on San Francisco can treat the history of Asian American immigrants in a sufficiently thorough way.

**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.



## SECTION 9

Time — 20 minutes

16 Questions

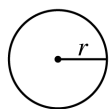
Turn to Section 9 (page 7) of your answer sheet to answer the questions in this section.

**Directions:** For this section, solve each problem and decide which is the best of the choices given. Fill in the corresponding circle on the answer sheet. You may use any available space for scratchwork.

Notes

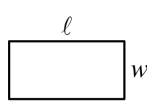
- The use of a calculator is permitted.
- All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.
- Unless otherwise specified, the domain of any function  $f$  is assumed to be the set of all real numbers  $x$  for which  $f(x)$  is a real number.

Reference Information

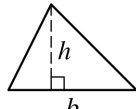


$$A = \pi r^2$$

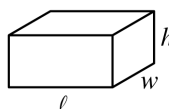
$$C = 2\pi r$$



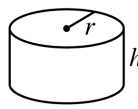
$$A = \ell w$$



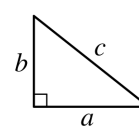
$$A = \frac{1}{2}bh$$



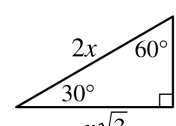
$$V = \ell wh$$



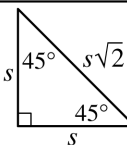
$$V = \pi r^2 h$$



$$c^2 = a^2 + b^2$$

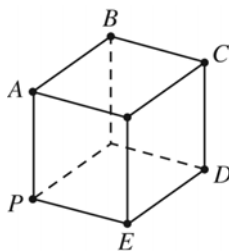


Special Right Triangles



The number of degrees of arc in a circle is 360.

The sum of the measures in degrees of the angles of a triangle is 180.



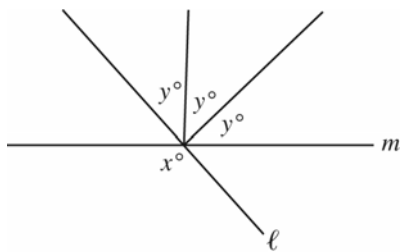
1. Of the labeled points on the cube shown above, which is farthest from point  $P$ ?

- (A)  $A$   
 (B)  $B$   
 (C)  $C$   
 (D)  $D$   
 (E)  $E$

2. In a scale model of a statue,  $\frac{1}{2}$  inch represents 25 inches. If the statue is 175 inches tall, what is the height of the scale model?

- (A)  $3\frac{1}{2}$  inches  
 (B) 7 inches  
 (C)  $8\frac{3}{4}$  inches  
 (D)  $12\frac{1}{2}$  inches  
 (E) 14 inches

GO ON TO THE NEXT PAGE



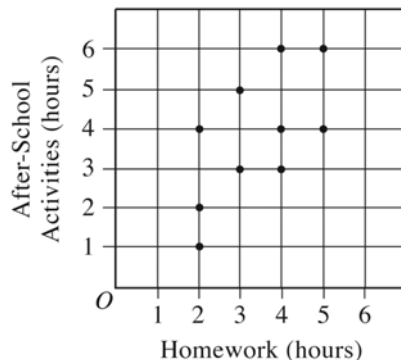
3. In the figure above, lines  $\ell$  and  $m$  intersect. If  $y = 44$ , what is the value of  $x$ ?

- (A) 127  
(B) 128  
(C) 130  
(D) 132  
(E) 134

4. If  $x$  is 6 more than twice  $y$ , what is  $y$  in terms of  $x$ ?

- (A)  $x - 3$   
(B)  $x + 3$   
(C)  $\frac{x}{2} - 6$   
(D)  $\frac{x}{2} + 6$   
(E)  $\frac{x}{2} - 3$

HOURS FOR 10 STUDENTS

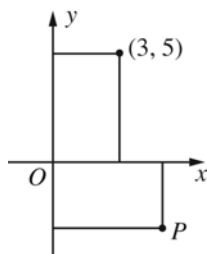


5. The scatterplot above shows, for each of 10 students, the amount of time the student spent on homework plotted against the amount of time the student spent on after-school activities last week. According to the scatterplot, which of the following statements is true?
- (A) Each of the students spent the same amount of time on homework as on after-school activities.  
(B) Each of the students spent more time on homework than on after-school activities.  
(C) Each of the students spent less time on homework than on after-school activities.  
(D) Exactly 3 students spent 4 hours on homework.  
(E) Exactly 4 students spent 3 hours on after-school activities.



6. If the function  $g$  is defined by  $g(x) = x^3 - 3x$ , what is the value of  $g(-3)$ ?

(A)  $-36$   
 (B)  $-18$   
 (C)  $-3$   
 (D)  $18$   
 (E)  $36$



7. If the areas of the two rectangles in the figure above are equal, which of the following could be the coordinates of point  $P$ ?

(A)  $(-5, -3)$   
 (B)  $(-5, 3)$   
 (C)  $(5, -5)$   
 (D)  $(5, -3)$   
 (E)  $(5, 3)$

- The first person ordered a salad.
- The second person did not order a salad.
- The third person ordered a hamburger.
- The fourth person ordered the same thing as the first person.
- The fifth person ordered the same thing as the second person.

8. A lunch stand has three choices: hamburger, hot dog, or salad. Five people from an office ordered one choice each from the lunch stand. The statements above are about what these five people ordered. If  $n$  is the number of people who ordered a hamburger, which of the following statements is true?

(A)  $n$  must be 1.  
 (B)  $n$  must be 2.  
 (C)  $n$  must be 3.  
 (D)  $n$  must be 1 or 2.  
 (E)  $n$  must be 1 or 3.

9. If  $a^{-2} = 4$ , which of the following could be the value of  $a$ ?

(A)  $-2$   
 (B)  $-\frac{1}{4}$   
 (C)  $0$   
 (D)  $\frac{1}{4}$   
 (E)  $\frac{1}{2}$

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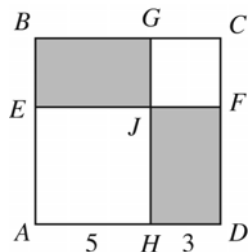


10. The first term of a sequence is 3, and each term after the first is 2 more than the previous term. Which of the following is an expression for the  $n$ th term of the sequence for any positive integer  $n$ ?

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

12. If  $(a - 1)k = ak - 4$ , which of the following must be true?

(A)  $k = 3$   
 (B)  $k = 4$   
 (C)  $a = 3$   
 (D)  $a = 4$   
 (E)  $ak = 4$



11. In the figure above,  $ABCD$ ,  $AEJH$ , and  $JGCF$  are all squares. If a point is chosen at random from  $ABCD$ , what is the probability that the point will be from one of the shaded regions?

(A)  $\frac{15}{64}$   
 (B)  $\frac{9}{25}$   
 (C)  $\frac{3}{8}$   
 (D)  $\frac{15}{32}$   
 (E)  $\frac{17}{32}$

GO ON TO THE NEXT PAGE



13. If  $(w - 2)^2 = 0$ , what is the value of  $(w + 3)(w + 4)$  ?

- (A) 30
- (B) 12
- (C) 7
- (D) -1
- (E) It cannot be determined from the information given.

14. What is the ratio of the diameter  $d$  of a circle to half the circumference of the circle?

- (A)  $1 : 2\pi$
- (B)  $1 : \pi$
- (C)  $2 : \pi$
- (D)  $\pi : 1$
- (E)  $2\pi : 1$

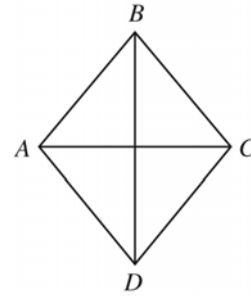
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15. A carton contains  $b$  boxes of paper plates, and each box contains  $n$  plates. If the carton costs  $c$  dollars, what is the cost per paper plate, in dollars, when the plates are bought by the carton?

- (A)  $cbn$   
 (B)  $\frac{c}{bn}$   
 (C)  $\frac{bn}{c}$   
 (D)  $\frac{cn}{b}$   
 (E)  $\frac{n}{cb}$



Note: Figure not drawn to scale.

16. Triangles  $ABC$  and  $ACD$  in the figure above are equilateral. What is the ratio of  $BD$  to  $AC$  ?
- (A)  $\sqrt{2}$  to 1  
 (B)  $\sqrt{3}$  to 1  
 (C)  $\sqrt{2}$  to 2  
 (D)  $\sqrt{3}$  to 2  
 (E)  $\sqrt{3}$  to  $\sqrt{2}$

**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 10

Time — 10 minutes

14 Questions

Turn to Section 10 (page 7) of your answer sheet to answer the questions in this section.

**Directions:** For each question in this section, select the best answer from among the choices given and fill in the corresponding circle on the answer sheet.

The following sentences test correctness and effectiveness of expression. Part of each sentence or the entire sentence is underlined; beneath each sentence are five ways of phrasing the underlined material. Choice A repeats the original phrasing; the other four choices are different. If you think the original phrasing produces a better sentence than any of the alternatives, select choice A; if not, select one of the other choices.

In making your selection, follow the requirements of standard written English; that is, pay attention to grammar, choice of words, sentence construction, and punctuation. Your selection should result in the most effective sentence—clear and precise, without awkwardness or ambiguity.

EXAMPLE:

Laura Ingalls Wilder published her first book and she was sixty-five years old then.

- (A) and she was sixty-five years old then
- (B) when she was sixty-five
- (C) at age sixty-five years old
- (D) upon the reaching of sixty-five years
- (E) at the time when she was sixty-five

(A)  (B)  (C)  (D)  (E)

1. The first 10,000 United States patents, they were known as the X-patents, were burned in a fire in 1836.
  - (A) they were known
  - (B) which they knew
  - (C) which they know
  - (D) to be known
  - (E) known
2. Winston knew that if he practiced often enough he would one day be able to play the piano as well as his brother's playing.
  - (A) his brother's playing
  - (B) that of his brother
  - (C) his brother's
  - (D) his brother could
  - (E) what his brother did
3. In both his longer and his shorter works of fiction, Gabriel García Márquez achieves the rare feat to be accessible to the common reader while satisfying the most demanding of sophisticated critics.
  - (A) to be
  - (B) for being
  - (C) of being
  - (D) that he is
  - (E) that they are
4. In 1977, Jann Wenner, the founder of *Rolling Stone*, moved the magazine's offices from San Francisco to New York City, there he began developing a slicker, more commercial style of magazine and began cultivating relationships with major advertisers.
  - (A) there
  - (B) then
  - (C) where
  - (D) so
  - (E) which is when
5. Covering about 120 square miles, the New York City borough of Queens is almost as large as if you combine Manhattan, the Bronx, and Staten Island.
  - (A) if you combine Manhattan, the Bronx, and Staten Island
  - (B) when Manhattan, the Bronx, and Staten Island are combined
  - (C) Manhattan, the Bronx, and Staten Island combined
  - (D) if Manhattan were to combine with the Bronx and Staten Island
  - (E) combining Manhattan, the Bronx, and Staten Island



6. While cotton is still one of Georgia's chief cash crops, the number of acres devoted to its cultivation grows smaller every year.
- (A) devoted to its cultivation grows  
(B) it devotes to the cultivation of it grow  
(C) they devoted to its cultivation can grow  
(D) devoted to its cultivation growing  
(E) they devoted to the cultivation of it are growing
7. Unlike flying squirrels, which may leave their young in a tree cavity while foraging, the babies of flying lemurs are usually carried with them.
- (A) the babies of flying lemurs are usually carried  
(B) the flying lemur's babies are usually carried  
(C) the flying lemur is usually carrying its babies  
(D) flying lemurs usually carry their babies  
(E) flying lemurs' babies are usually carried
8. Born Charles Hardin Holley, Buddy Holly recorded some of the most distinctive and influential songs in rock-and-roll music, which includes such classics as "That'll Be the Day," "Rave On," and "Peggy Sue."
- (A) which includes  
(B) they include  
(C) also including  
(D) including  
(E) these include
9. Chipmunks do not technically hibernate, but they do remain in their dens or burrows during cold periods.
- (A) hibernate, but they do remain  
(B) hibernate, but remaining  
(C) hibernate, but they remained  
(D) hibernate, they remain  
(E) hibernate, remaining
10. Cryonics — the technique used to store human bodies at extremely low temperatures with the hope of one day reviving them — are being performed today, but their technology is still in its infancy.
- (A) are being performed today, but their technology  
(B) are being performed today, while the technology  
(C) which is being performed today, using technology that  
(D) is being performed today, but their technology  
(E) is being performed today, but the technology
11. In science fiction stories, robots are generally depicted as working in the service of humanity, often escaping the control of their human masters and doing them harm.
- (A) often escaping the control of their human masters and doing  
(B) often escaping being controlled by their human masters, which does  
(C) but they often escape the control of their human masters and do  
(D) but they often escaped their controlling human masters, and it does  
(E) but often escaping their controlling human masters, which does
12. The first Indian woman to win the Booker Prize, Arundhati Roy's debut novel, *The God of Small Things*, received the honor in 1997.
- (A) The first Indian woman to win the Booker Prize, Arundhati Roy's debut novel, *The God of Small Things*, received the honor in 1997.  
(B) Arundhati Roy, the first Indian woman to win the Booker Prize for her debut novel *The God of Small Things*, receiving the honor in 1997.  
(C) The first Indian woman to receive the Booker Prize, Arundhati Roy won the honor in 1997 for her debut novel, *The God of Small Things*.  
(D) The Booker Prize was given to Arundhati Roy's debut novel *The God of Small Things*, winning her the first such honor for an Indian woman in 1997.  
(E) Arundhati Roy, winning the Booker Prize in 1997 for her debut novel *The God of Small Things*, made her the first Indian woman to do so.



13. Pilots at the airline, angered at the prospect of seeing their pension plans replaced with less generous versions, vowed to use legal means to fight it.
- (A) it  
(B) them  
(C) this  
(D) such a move  
(E) that from happening
14. This basic document is stating the liberties guaranteed to the English people, the Magna Carta, signed in 1215 by England's King John, proclaims rights that have formed the foundation of the constitutions of every English-speaking nation.
- (A) This basic document is stating  
(B) This basic document states  
(C) A basic document, it states  
(D) A basic document that states  
(E) A basic document, it stated

**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.

**NO TEST MATERIAL ON THIS PAGE**



**SECTION**

**1**

- I prefer NOT to grant the College Board the right to use, reproduce, or publish my essay for any purpose beyond the assessment of my writing skills, even though my name will not be used in any way in conjunction with my essay. I understand that I am free to mark this circle with no effect on my score.

**IMPORTANT: USE A NO. 2 PENCIL. DO NOT WRITE OUTSIDE THE BORDER!**

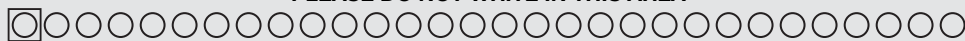
Words written outside the essay box or written in ink **WILL NOT APPEAR** in the copy sent to be scored, and your score will be affected.

Begin your essay on this page. If you need more space, continue on the next page.

Essay writing area with horizontal lines and a central box containing the text "Example Not for Use".

Handwriting practice area with horizontal lines. A central box contains the text "Example Not for Use".

PLEASE DO NOT WRITE IN THIS AREA



SERIAL #



COMPLETE MARK ●

EXAMPLES OF INCOMPLETE MARKS

You must use a No. 2 pencil and marks must be complete. Do not use a mechanical pencil. It is very important that you fill in the entire circle darkly and completely. If you change your response, erase as completely as possible. Incomplete marks or erasures may affect your score.

SECTION 2

- |    |                     |    |                     |    |                     |    |                     |
|----|---------------------|----|---------------------|----|---------------------|----|---------------------|
| 1  | (A) (B) (C) (D) (E) | 11 | (A) (B) (C) (D) (E) | 21 | (A) (B) (C) (D) (E) | 31 | (A) (B) (C) (D) (E) |
| 2  | (A) (B) (C) (D) (E) | 12 | (A) (B) (C) (D) (E) | 22 | (A) (B) (C) (D) (E) | 32 | (A) (B) (C) (D) (E) |
| 3  | (A) (B) (C) (D) (E) | 13 | (A) (B) (C) (D) (E) | 23 | (A) (B) (C) (D) (E) | 33 | (A) (B) (C) (D) (E) |
| 4  | (A) (B) (C) (D) (E) | 14 | (A) (B) (C) (D) (E) | 24 | (A) (B) (C) (D) (E) | 34 | (A) (B) (C) (D) (E) |
| 5  | (A) (B) (C) (D) (E) | 15 | (A) (B) (C) (D) (E) | 25 | (A) (B) (C) (D) (E) | 35 | (A) (B) (C) (D) (E) |
| 6  | (A) (B) (C) (D) (E) | 16 | (A) (B) (C) (D) (E) | 26 | (A) (B) (C) (D) (E) | 36 | (A) (B) (C) (D) (E) |
| 7  | (A) (B) (C) (D) (E) | 17 | (A) (B) (C) (D) (E) | 27 | (A) (B) (C) (D) (E) | 37 | (A) (B) (C) (D) (E) |
| 8  | (A) (B) (C) (D) (E) | 18 | (A) (B) (C) (D) (E) | 28 | (A) (B) (C) (D) (E) | 38 | (A) (B) (C) (D) (E) |
| 9  | (A) (B) (C) (D) (E) | 19 | (A) (B) (C) (D) (E) | 29 | (A) (B) (C) (D) (E) | 39 | (A) (B) (C) (D) (E) |
| 10 | (A) (B) (C) (D) (E) | 20 | (A) (B) (C) (D) (E) | 30 | (A) (B) (C) (D) (E) | 40 | (A) (B) (C) (D) (E) |

SECTION 3

- |    |                     |    |                     |    |                     |    |                     |
|----|---------------------|----|---------------------|----|---------------------|----|---------------------|
| 1  | (A) (B) (C) (D) (E) | 11 | (A) (B) (C) (D) (E) | 21 | (A) (B) (C) (D) (E) | 31 | (A) (B) (C) (D) (E) |
| 2  | (A) (B) (C) (D) (E) | 12 | (A) (B) (C) (D) (E) | 22 | (A) (B) (C) (D) (E) | 32 | (A) (B) (C) (D) (E) |
| 3  | (A) (B) (C) (D) (E) | 13 | (A) (B) (C) (D) (E) | 23 | (A) (B) (C) (D) (E) | 33 | (A) (B) (C) (D) (E) |
| 4  | (A) (B) (C) (D) (E) | 14 | (A) (B) (C) (D) (E) | 24 | (A) (B) (C) (D) (E) | 34 | (A) (B) (C) (D) (E) |
| 5  | (A) (B) (C) (D) (E) | 15 | (A) (B) (C) (D) (E) | 25 | (A) (B) (C) (D) (E) | 35 | (A) (B) (C) (D) (E) |
| 6  | (A) (B) (C) (D) (E) | 16 | (A) (B) (C) (D) (E) | 26 | (A) (B) (C) (D) (E) | 36 | (A) (B) (C) (D) (E) |
| 7  | (A) (B) (C) (D) (E) | 17 | (A) (B) (C) (D) (E) | 27 | (A) (B) (C) (D) (E) | 37 | (A) (B) (C) (D) (E) |
| 8  | (A) (B) (C) (D) (E) | 18 | (A) (B) (C) (D) (E) | 28 | (A) (B) (C) (D) (E) | 38 | (A) (B) (C) (D) (E) |
| 9  | (A) (B) (C) (D) (E) | 19 | (A) (B) (C) (D) (E) | 29 | (A) (B) (C) (D) (E) | 39 | (A) (B) (C) (D) (E) |
| 10 | (A) (B) (C) (D) (E) |    |                     |    |                     | 40 | (A) (B) (C) (D) (E) |

CAUTION

Grid answers only if directed to do so in your test book.

only if directed to do so in your

Student-Produced Responses

ED. YOU WILL NOT RECEIVE

Quality Assurance Mark

Example Not for Use

9

○	○	○	○
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

13

○	○	○	○
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

14

○	○	○	○
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

15

○	○	○	○
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

16

○	○	○	○
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

17

○	○	○	○
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

18

○	○	○	○
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

COMPLETE MARK ●

EXAMPLES OF INCOMPLETE MARKS

You must use a No. 2 pencil and marks must be complete. Do not use a mechanical pencil. It is very important that you fill in the entire circle darkly and completely. If you change your response, erase as completely as possible. Incomplete marks or erasures may affect your score.

SECTION 4

- 1 (A B C D E)
2 (A B C D E)
3 (A B C D E)
4 (A B C D E)
5 (A B C D E)
6 (A B C D E)
7 (A B C D E)
8 (A B C D E)
9 (A B C D E)
10 (A B C D E)

- 11 (A B C D E)
12 (A B C D E)
13 (A B C D E)
14 (A B C D E)
15 (A B C D E)
16 (A B C D E)
17 (A B C D E)
18 (A B C D E)
19 (A B C D E)
20 (A B C D E)

- 21 (A B C D E)
22 (A B C D E)
23 (A B C D E)
24 (A B C D E)
25 (A B C D E)
26 (A B C D E)
27 (A B C D E)
28 (A B C D E)
29 (A B C D E)
30 (A B C D E)

- 31 (A B C D E)
32 (A B C D E)
33 (A B C D E)
34 (A B C D E)
35 (A B C D E)
36 (A B C D E)
37 (A B C D E)
38 (A B C D E)
39 (A B C D E)
40 (A B C D E)

SECTION 5

- 1 (A B C D E)
2 (A B C D E)
3 (A B C D E)
4 (A B C D E)
5 (A B C D E)
6 (A B C D E)
7 (A B C D E)
8 (A B C D E)
9 (A B C D E)
10 (A B C D E)

- 11 (A B C D E)
12 (A B C D E)
13 (A B C D E)
14 (A B C D E)
15 (A B C D E)
16 (A B C D E)
17 (A B C D E)
18 (A B C D E)
19 (A B C D E)

- 21 (A B C D E)
22 (A B C D E)
23 (A B C D E)
24 (A B C D E)
25 (A B C D E)
26 (A B C D E)
27 (A B C D E)
28 (A B C D E)
29 (A B C D E)

- 31 (A B C D E)
32 (A B C D E)
33 (A B C D E)
34 (A B C D E)
35 (A B C D E)
36 (A B C D E)
37 (A B C D E)
38 (A B C D E)
39 (A B C D E)
40 (A B C D E)

CAUTION

Grid answer test book.

only if directed to do so in your

Student-Produced Response

YOU WILL NOT RECEIVE

Quality Assurance Mark

Grid for question 9 with some marks filled in.

Grid for question 10.

Grid for question 11.

Grid for question 12 with some marks filled in.

Grid for question 13 with some marks filled in.

Grid for question 14 with some marks filled in.

Grid for question 15 with some marks filled in.

Grid for question 16 with some marks filled in.

Grid for question 17 with some marks filled in.

Grid for question 18 with some marks filled in.

Example Not for Use

COMPLETE MARK ●

EXAMPLES OF INCOMPLETE MARKS



You must use a No. 2 pencil and marks must be complete. Do not use a mechanical pencil. It is very important that you fill in the entire circle darkly and completely. If you change your response, erase as completely as possible. Incomplete marks or erasures may affect your score.

# SECTION 6

- |    |                     |    |                     |    |                     |    |                     |
|----|---------------------|----|---------------------|----|---------------------|----|---------------------|
| 1  | (A) (B) (C) (D) (E) | 11 | (A) (B) (C) (D) (E) | 21 | (A) (B) (C) (D) (E) | 31 | (A) (B) (C) (D) (E) |
| 2  | (A) (B) (C) (D) (E) | 12 | (A) (B) (C) (D) (E) | 22 | (A) (B) (C) (D) (E) | 32 | (A) (B) (C) (D) (E) |
| 3  | (A) (B) (C) (D) (E) | 13 | (A) (B) (C) (D) (E) | 23 | (A) (B) (C) (D) (E) | 33 | (A) (B) (C) (D) (E) |
| 4  | (A) (B) (C) (D) (E) | 14 | (A) (B) (C) (D) (E) | 24 | (A) (B) (C) (D) (E) | 34 | (A) (B) (C) (D) (E) |
| 5  | (A) (B) (C) (D) (E) | 15 | (A) (B) (C) (D) (E) | 25 | (A) (B) (C) (D) (E) | 35 | (A) (B) (C) (D) (E) |
| 6  | (A) (B) (C) (D) (E) | 16 | (A) (B) (C) (D) (E) | 26 | (A) (B) (C) (D) (E) | 36 | (A) (B) (C) (D) (E) |
| 7  | (A) (B) (C) (D) (E) | 17 | (A) (B) (C) (D) (E) | 27 | (A) (B) (C) (D) (E) | 37 | (A) (B) (C) (D) (E) |
| 8  | (A) (B) (C) (D) (E) | 18 | (A) (B) (C) (D) (E) | 28 | (A) (B) (C) (D) (E) | 38 | (A) (B) (C) (D) (E) |
| 9  | (A) (B) (C) (D) (E) | 19 | (A) (B) (C) (D) (E) | 29 | (A) (B) (C) (D) (E) | 39 | (A) (B) (C) (D) (E) |
| 10 | (A) (B) (C) (D) (E) | 20 | (A) (B) (C) (D) (E) | 30 | (A) (B) (C) (D) (E) | 40 | (A) (B) (C) (D) (E) |

# SECTION 7

- |    |                     |    |                     |    |                     |    |                     |
|----|---------------------|----|---------------------|----|---------------------|----|---------------------|
| 1  | (A) (B) (C) (D) (E) | 11 | (A) (B) (C) (D) (E) | 21 | (A) (B) (C) (D) (E) | 31 | (A) (B) (C) (D) (E) |
| 2  | (A) (B) (C) (D) (E) | 12 | (A) (B) (C) (D) (E) | 22 | (A) (B) (C) (D) (E) | 32 | (A) (B) (C) (D) (E) |
| 3  | (A) (B) (C) (D) (E) | 13 | (A) (B) (C) (D) (E) | 23 | (A) (B) (C) (D) (E) | 33 | (A) (B) (C) (D) (E) |
| 4  | (A) (B) (C) (D) (E) | 14 | (A) (B) (C) (D) (E) | 24 | (A) (B) (C) (D) (E) | 34 | (A) (B) (C) (D) (E) |
| 5  | (A) (B) (C) (D) (E) | 15 | (A) (B) (C) (D) (E) | 25 | (A) (B) (C) (D) (E) | 35 | (A) (B) (C) (D) (E) |
| 6  | (A) (B) (C) (D) (E) | 16 | (A) (B) (C) (D) (E) | 26 | (A) (B) (C) (D) (E) | 36 | (A) (B) (C) (D) (E) |
| 7  | (A) (B) (C) (D) (E) | 17 | (A) (B) (C) (D) (E) | 27 | (A) (B) (C) (D) (E) | 37 | (A) (B) (C) (D) (E) |
| 8  | (A) (B) (C) (D) (E) | 18 | (A) (B) (C) (D) (E) | 28 | (A) (B) (C) (D) (E) | 38 | (A) (B) (C) (D) (E) |
| 9  | (A) (B) (C) (D) (E) | 19 | (A) (B) (C) (D) (E) | 29 | (A) (B) (C) (D) (E) | 39 | (A) (B) (C) (D) (E) |
| 10 | (A) (B) (C) (D) (E) |    |                     |    |                     | 40 | (A) (B) (C) (D) (E) |

**CAUTION**

Grid answer test book.

only if directed to do so in your

Student-Produced Response

ED. YOU WILL NOT RECEIVE

9

○	○	○	○
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Example Not for Use

13

○	○	○	○
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Quality Assurance Mark

14

○	○	○	○
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

15

○	○	○	○
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

16

○	○	○	○
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

17

○	○	○	○
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

18

○	○	○	○
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1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

PLEASE DO NOT WRITE IN THIS AREA



SERIAL #

COMPLETE MARK ●

EXAMPLES OF  
INCOMPLETE MARKS



You must use a No. 2 pencil and marks must be complete. Do not use a mechanical pencil. It is very important that you fill in the entire circle darkly and completely. If you change your response, erase as completely as possible. Incomplete marks or erasures may affect your score.

SECTION  
8

- 1 (A) (B) (C) (D) (E)
- 2 (A) (B) (C) (D) (E)
- 3 (A) (B) (C) (D) (E)
- 4 (A) (B) (C) (D) (E)
- 5 (A) (B) (C) (D) (E)
- 6 (A) (B) (C) (D) (E)
- 7 (A) (B) (C) (D) (E)
- 8 (A) (B) (C) (D) (E)
- 9 (A) (B) (C) (D) (E)
- 10 (A) (B) (C) (D) (E)

- 11 (A) (B) (C) (D) (E)
- 12 (A) (B) (C) (D) (E)
- 13 (A) (B) (C) (D) (E)
- 14 (A) (B) (C) (D) (E)
- 15 (A) (B) (C) (D) (E)
- 16 (A) (B) (C) (D) (E)
- 17 (A) (B) (C) (D) (E)
- 18 (A) (B) (C) (D) (E)
- 19 (A) (B) (C) (D) (E)
- 20 (A) (B) (C) (D) (E)

- 21 (A) (B) (C) (D) (E)
- 22 (A) (B) (C) (D) (E)
- 23 (A) (B) (C) (D) (E)
- 24 (A) (B) (C) (D) (E)
- 25 (A) (B) (C) (D) (E)
- 26 (A) (B) (C) (D) (E)
- 27 (A) (B) (C) (D) (E)
- 28 (A) (B) (C) (D) (E)
- 29 (A) (B) (C) (D) (E)
- 30 (A) (B) (C) (D) (E)

- 31 (A) (B) (C) (D) (E)
- 32 (A) (B) (C) (D) (E)
- 33 (A) (B) (C) (D) (E)
- 34 (A) (B) (C) (D) (E)
- 35 (A) (B) (C) (D) (E)
- 36 (A) (B) (C) (D) (E)
- 37 (A) (B) (C) (D) (E)
- 38 (A) (B) (C) (D) (E)
- 39 (A) (B) (C) (D) (E)
- 40 (A) (B) (C) (D) (E)

SECTION  
9

- 1 (A) (B) (C) (D) (E)
- 2 (A) (B) (C) (D) (E)
- 3 (A) (B) (C) (D) (E)
- 4 (A) (B) (C) (D) (E)
- 5 (A) (B) (C) (D) (E)
- 6 (A) (B) (C) (D) (E)
- 7 (A) (B) (C) (D) (E)
- 8 (A) (B) (C) (D) (E)
- 9 (A) (B) (C) (D) (E)
- 10 (A) (B) (C) (D) (E)

- 11 (A) (B) (C) (D) (E)
- 12 (A) (B) (C) (D) (E)
- 13 (A) (B) (C) (D) (E)
- 14 (A) (B) (C) (D) (E)
- 15 (A) (B) (C) (D) (E)

- 21 (A) (B) (C) (D) (E)
- 22 (A) (B) (C) (D) (E)
- 23 (A) (B) (C) (D) (E)
- 24 (A) (B) (C) (D) (E)
- 25 (A) (B) (C) (D) (E)

- 31 (A) (B) (C) (D) (E)
- 32 (A) (B) (C) (D) (E)
- 33 (A) (B) (C) (D) (E)
- 34 (A) (B) (C) (D) (E)
- 35 (A) (B) (C) (D) (E)
- 36 (A) (B) (C) (D) (E)
- 37 (A) (B) (C) (D) (E)
- 38 (A) (B) (C) (D) (E)
- 39 (A) (B) (C) (D) (E)
- 40 (A) (B) (C) (D) (E)

Quality  
Assurance  
Mark

Example Not for Use

SECTION  
10

- 1 (A) (B) (C) (D) (E)
- 2 (A) (B) (C) (D) (E)
- 3 (A) (B) (C) (D) (E)
- 4 (A) (B) (C) (D) (E)
- 5 (A) (B) (C) (D) (E)
- 6 (A) (B) (C) (D) (E)
- 7 (A) (B) (C) (D) (E)
- 8 (A) (B) (C) (D) (E)
- 9 (A) (B) (C) (D) (E)
- 10 (A) (B) (C) (D) (E)

- 15 (A) (B) (C) (D) (E)
- 16 (A) (B) (C) (D) (E)
- 17 (A) (B) (C) (D) (E)
- 18 (A) (B) (C) (D) (E)
- 19 (A) (B) (C) (D) (E)
- 20 (A) (B) (C) (D) (E)

- 25 (A) (B) (C) (D) (E)
- 26 (A) (B) (C) (D) (E)
- 27 (A) (B) (C) (D) (E)
- 28 (A) (B) (C) (D) (E)
- 29 (A) (B) (C) (D) (E)
- 30 (A) (B) (C) (D) (E)

- 31 (A) (B) (C) (D) (E)
- 32 (A) (B) (C) (D) (E)
- 33 (A) (B) (C) (D) (E)
- 34 (A) (B) (C) (D) (E)
- 35 (A) (B) (C) (D) (E)
- 36 (A) (B) (C) (D) (E)
- 37 (A) (B) (C) (D) (E)
- 38 (A) (B) (C) (D) (E)
- 39 (A) (B) (C) (D) (E)
- 40 (A) (B) (C) (D) (E)

