

# Form 63F

(June 2006)

# ACT Assessment<sup>®</sup>

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In response to your recent request for test information release materials, this booklet contains the test questions and conversion tables used in determining your ACT scores. Enclosed with this booklet is a report listing your answers to the ACT Assessment tests and the answer key.

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We hope that you will find this information helpful.

## ENGLISH TEST

45 Minutes—75 Questions

**DIRECTIONS:** In the five passages that follow, certain words and phrases are underlined and numbered. In the right-hand column, you will find alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is best, choose "NO CHANGE." In some cases, you will find in the right-hand column a question about the underlined part. You are to choose the best answer to the question.

You will also find questions about a section of the passage, or about the passage as a whole. These questions do not refer to an underlined portion of the passage, but rather are identified by a number or numbers in a box.

For each question, choose the alternative you consider best and fill in the corresponding oval on your answer document. Read each passage through once before you begin to answer the questions that accompany it. For many of the questions, you must read several sentences beyond the question to determine the answer. Be sure that you have read far enough ahead each time you choose an alternative.

## PASSAGE I

## A Life Lived on the Montana Frontier

In 1863, five adventurers camping in a gulch high in the Rocky Mountains happened upon <sup>1</sup> one of the largest gold deposits in North America. Within a year, 10,000 people had rushed to Alder Gulch, the Montana Territory was established, and nearby Virginia City became it's <sup>2</sup> first incorporated town and territorial capital. 3

In 1871, fifteen-year-old Sarah Gammon—an African American born in North Carolina and then raised by her aunt in Tennessee after the Civil War—was hired by Judge Murphy to help care for his three children on the long trek by covered wagon to the Montana Territory. Judge Murphy had been called to serve as <sup>4</sup> the magistrate of Virginia City.

1. A. NO CHANGE  
B. accidentally stumbled up against  
C. unintentionally without planning discovered  
D. ascertained and verified the existence of

2. F. NO CHANGE  
G. its  
H. its'  
J. their

3. At this point, the writer is considering adding the following true statement:

In fact, Virginia City was originally named Varina, after the wife of Jefferson Davis, president of the Confederate States of America during the Civil War.

Should the writer add this sentence here?

- A. Yes, because it's important to know that Virginia City had another name, as the woman portrayed in this essay had two different names.  
B. Yes, because a reference to the Civil War indicates that other historical events were going on at this time.  
C. No, because the former name of the city is irrelevant to the main topic of this essay.  
D. No, because the Civil War was a tragic event in United States history.

4. F. NO CHANGE  
G. for  
H. like  
J. to

Once settled in Virginia City and accustomed to life in this gold-rush boomtown, Sarah found work as a hotel chambermaid. In 1873, she married William Brown, but her husband passed away less than a decade later.  
5

In 1884, Sarah remarried, this time to a successful man who was twenty years older than she and who was  
6  
also a gold miner, Stephen Bickford. The Bickfords were

an enterprising couple. Purchasing two-thirds of the  
7

Virginia City Water Company in 1888. On their  
8  
stewardship, the city water service improved. They replaced the hollowed-out logs used to transport water with metal pipes, they allowed for the introduction of  
9  
indoor plumbing.

[1] Keeping change from the sale of  
10  
farm products in a sugar bowl, Sarah also ran the  
10

family farm selling fruit, vegetables, poultry, and  
11  
dairy products to people in the community. [2] After her husband's death in 1900, she continued to oversee both operations. [3] She took a correspondence course in business management and then acquired the remaining one-third of the water company, becoming the sole proprietor. [4] With help from two of her children, Elmer and Virginia, Sarah managed the company until her death in 1931. 12

5. A. NO CHANGE  
B. less then  
C. fewer than  
D. fewer then
6. F. NO CHANGE  
G. man older than she was in years who had been engaged in gold mining,  
H. gold miner twenty years her senior,  
J. pioneering old-timer gold miner,
7. A. NO CHANGE  
B. couple; purchasing  
C. couple, purchasing  
D. couple and purchasing
8. F. NO CHANGE  
G. As  
H. In  
J. Under
9. A. NO CHANGE  
B. pipes, which  
C. pipes in which  
D. pipes those
10. Given that all the choices are true, which one provides the most effective transition from the preceding paragraph to this new one?  
F. NO CHANGE  
G. After cleaning, cooking, and sewing for the household,  
H. Besides helping with the water business,  
J. Because of experiences in her youth,
11. A. NO CHANGE  
B. farm;  
C. farm:  
D. farm,
12. For the sake of the logic and coherence of this paragraph, Sentence 4 should be placed:  
F. where it is now.  
G. before Sentence 1.  
H. before Sentence 2.  
J. before Sentence 3.

1 Sidestepped by progress and frozen in  
time, Virginia City is now a living <sup>13</sup>historical

museum, preserving, a slice of frontier life. As one  
of the state's earliest settlers and businesspeople,  
<sup>14</sup>Sarah Gammon Bickford holds an important  
place in its history.

13. A. NO CHANGE  
B. froze  
C. freezed  
D. frozed

14. F. NO CHANGE  
G. museum, preserving  
H. museum; preserving  
J. museum preserving,

Question 15 asks about the preceding passage as a whole.

15. Suppose the writer's goal had been to write a brief essay focusing on the positive effects of improved water service in Virginia City in the 1880s. Would this essay successfully accomplish that goal?
- A. Yes, because the essay focuses on the improved water system, which enabled Sarah Gammon Bickford to grow and sell her own vegetables.  
B. Yes, because the essay describes how hollowed logs were used to transport water and then were replaced with metal pipes.  
C. No, because the essay focuses mainly on Sarah Gammon Bickford and her place in the history of Virginia City.  
D. No, because the essay describes other developments in Virginia City in the 1880s that were more important.

## PASSAGE II

### Two Countries, Two Homes

[1] It was a routine Saturday evening. [2] The  
clattering of pots and pans echoed through the house.  
<sup>16</sup>

[3] As my mother and I prepared dinner, we had our  
usual conversation about school and life. [4] She grew  
quiet as I shared my hopes of going away to college.  
<sup>17</sup>

[5] College applications should be completed as early as  
possible. [6] She looked at me sadly at the age of eighteen  
and said that I was abandoning our traditions by  
leaving home. [7] I talked with her about the  
benefits gained from being independent.  
<sup>18</sup>

16. F. NO CHANGE  
G. evening and like many others.  
H. evening, typical for us.  
J. evening, just as usual.

17. Which of the following alternatives to the underlined portion would NOT be acceptable?
- A. My mother and I prepared dinner meanwhile  
B. As my mother and I were preparing dinner,  
C. While my mother and I prepared dinner,  
D. My mother and I prepared dinner while
18. The best placement for the underlined portion would be:
- F. where it is now.  
G. after the word *said*.  
H. after the word *abandoning*.  
J. after the word *home* (ending the sentence with a period).

1 1

[8] She abruptly changed the subject. 19

[1] I have <sup>20</sup>as many happy memories  
of my childhood in Vietnam. [2] I loved  
our traditional New Year celebrations. 21

[3] <sup>22</sup>One would burn paper money for good luck  
and go from house to house wishing our relatives  
health and happiness. [4] During the Moon Festival,  
I would show off the <sup>23</sup>lanterns, my mother had made,

<sup>24</sup>eat mooncake, and drink tea with my grandparents.

[5] I looked forward to the ocean air and the sound  
of the waves. [6] My mother <sup>25</sup>walks with me on the  
wet sand, often buying me something from one  
of the shops along the beach. 26

19. Which of the following sentences is LEAST relevant to the development of this opening paragraph and therefore could be deleted?

- A. Sentence 2
- B. Sentence 4
- C. Sentence 5
- D. Sentence 6

20. F. NO CHANGE

- G. just as
- H. that
- J. OMIT the underlined portion.

21. At this point, the writer is considering adding the following true statement:

The New Year's holiday is celebrated on different days of the year in different cultures.

Should the writer make this addition here?

- A. Yes, because it supports the essay's focus on celebrations among different cultures.
- B. Yes, because it adds specific information about the narrator's culture.
- C. No, because it provides detail that is inconsistent with the focus of this paragraph.
- D. No, because it repeats information provided earlier in the essay.

22. F. NO CHANGE

- G. People
- H. You
- J. We

23. A. NO CHANGE

- B. lanterns, that
- C. lanterns;
- D. lanterns

24. F. NO CHANGE

- G. eaten mooncake, and drank
- H. eaten mooncake, and drunk
- J. ate mooncake, and drank

25. A. NO CHANGE

- B. would walk
- C. has walked
- D. was walking

26. Upon reviewing this paragraph and noticing that some information has been left out, the writer composes the following sentence, incorporating that information:

In the summer we would make trips to the beach to get away from the heat of the city.

For the sake of the logic of this paragraph, this sentence should be placed after Sentence:

- F. 3.
- G. 4.
- H. 5.
- J. 6.



But my mother's work as an art dealer has taken us far from home. When we immigrated to Houston, Texas,<sup>27</sup> I learned about the different groups and cultures that make up my high school. Through my friends, I have developed a love for ribs and tacos, alternative rock and hip-hop, mocha cappuccino and skateboarding. <sup>28</sup> I enjoy spending evenings at a local cafe with my classmates, talking and studying together.

My mother has often asked me<sup>29</sup> why I don't like to do the things or eat the foods that I did when I was younger. For a long time I could not understand why she was so protective of our Vietnamese traditions. Eventually, I began to understand that her reason for reminding me of our birthplace is to preserve in me a respect for it's culture.<sup>30</sup>

I still hope to go away to college next year. I also hope my mother is beginning to realize that I will take with me a part of the culture of our family and our home.

27. Given that all of the choices are accurate, which one provides the most effective and logical transition from the preceding sentence to this one?

- A. NO CHANGE
- B. She knows a lot about the art business, and
- C. Houston being the largest city in Texas,
- D. I really like Houston, Texas, where

28. If the writer were to delete the phrase "Through my friends" (and the comma) from the preceding sentence, the paragraph would primarily lose:

- F. a key point in support of the logical argument being presented.
- G. an indication that the narrator has been influenced by peers.
- H. a specific description of how popular the narrator has become.
- J. nothing at all, since this detail is stated elsewhere in the paragraph.

29. A. NO CHANGE

- B. me:
- C. me,
- D. me

30. F. NO CHANGE

- G. its
- H. their
- J. its'

### PASSAGE III

#### Meaning and Manners

While traveling abroad recently, my neighbor experienced a common<sup>31</sup> but poorly understood communication problem. One evening at a restaurant, a dish of stuffed mushrooms was ordered<sup>32</sup> with his meal, assuming the dish would be served as an appetizer. When the mushrooms hadn't arrived by the time the main course was served, he asked the waiter, "Are my mushrooms

31. A. NO CHANGE

- B. experienced, a common
- C. experienced a common,
- D. experienced; a common

32. F. NO CHANGE

- G. a dish was ordered of stuffed mushrooms
- H. he ordered a dish of stuffed mushrooms
- J. ordering a dish of stuffed mushrooms

1

ady yet?" The waiter went to the kitchen and  
returned in a moment. "Yes, sir, your mushrooms are  
ready," he said, and then left to wait on another table.

In due course, after waiting a while, my neighbor  
signaled for the waiter and asked him why he still hadn't  
received his mushrooms. When surprised, the waiter  
replied that he would be glad to bring the dish when my  
neighbor requested it. Knowing that the waiter spoke  
English quite well, my neighbor could not understand  
why the waiter seemed to be acting rude and impolite.

The miscommunication that occurred between  
my neighbor and the waiter was not related to grammar,  
pronunciation, or vocabulary. Rather, it resulted from  
a gap in what sociolinguists call "communicative  
competence." My neighbor did not understand that  
requests are communicated different from other

cultures. The waiter, although fluent in English, did

not know how to interpret this particular request. For many English-speakers from the United States,  
it is considered polite to make a request in the form  
of a question, but in other languages and cultures, this  
particular politeness convention is not always used.

33. Which choice would most clearly and effectively  
express the promptness of the waiter's actions?

- A. NO CHANGE
- B. when he had a moment.
- C. some time later.
- D. after a while.

34. F. NO CHANGE  
G. A little later,  
H. While waiting in due course,  
J. After a due course of time,

35. A. NO CHANGE  
B. (Do NOT begin new paragraph) Surprised,  
C. (Begin new paragraph) When surprised,  
D. (Begin new paragraph) Surprised,

36. F. NO CHANGE  
G. rude and ill-mannered.  
H. as rude as can be.  
J. rude.

37. A. NO CHANGE  
B. not being related  
C. relates not  
D. relating not

38. F. NO CHANGE  
G. different than  
H. differently in  
J. differently than

39. A. NO CHANGE  
B. waiter, although,  
C. waiter although,  
D. waiter although

40. At this point, the writer is considering adding the fol-  
lowing true statement:

Many waiters around the world do speak  
English very well.

Should the writer add this sentence here?

- F. Yes, because it supports the fact that this particular waiter spoke English.
- G. Yes, because it adds to the international flavor of the essay.
- H. No, because it simply repeats a detail stated earlier in the essay.
- J. No, because it doesn't contribute to the development of this paragraph.

1 ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ 1

The waiter had interpreted my neighbors question as  
a simple request for information, not as a request

to bring the dish. [42]

Without communicative competence, even people  
who speak the same language can misinterpret each  
other. It is sometimes as important to learn the  
politeness conventions used by speakers of  
other languages and cultures as learning their

vocabulary and grammar. [44] My neighbor's  
experience illustrates how important it is to

be persistent when learning a foreign language.

41. A. NO CHANGE  
B. neighbors' question  
C. neighbor's question  
D. neighbors question,
42. If the preceding sentence were deleted, the essay  
would primarily lose:  
F. a repetition of the main point of the essay.  
G. another example of communicative competence.  
H. a summary explanation of the waiter's behavior.  
J. a contrast with the paragraph's opening sentence.
43. A. NO CHANGE  
B. as having learned  
C. when he is learning  
D. as it is to learn
44. If the writer wanted to emphasize that there are other  
politeness conventions besides the one discussed in the  
essay, which of the following true statements should be  
added at this point?  
F. Such conventions can be hard to learn.  
G. Many such conventions exist in all cultures.  
H. Cultures are different in many ways.  
J. Politeness involves learning.
45. Which choice would best summarize the main point of  
the essay as illustrated by the narrator's neighbor's  
experience?  
A. NO CHANGE  
B. be aware of the social rules as well as the linguistic  
rules of a language.  
C. insist on good service when traveling in other  
countries.  
D. adjust to the dining customs and styles of other  
cultures.

PASSAGE IV

Prairie Eye, Woods Eye

[1]

As I was growing up in the Midwest, two  
landscapes made vivid impressions on my mind.  
The flat, open, Illinois, prairie allowed me to drink in  
huge vistas. The enclosed pine woods of Wisconsin,  
where my family vacationed, gave me comfort. Both  
prairie and woods were dear to me and important to the  
development of one's interactions with the world.

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46. F. NO CHANGE  
G. open Illinois prairie  
H. open Illinois prairie,  
J. open, Illinois, prairie,
47. A. NO CHANGE  
B. their  
C. your  
D. my



[2]

I'm not talking just about a landscape's familiarity but also about a way in which a landscape's impression on the mind can affect the way one thinks and feels. Midwestern writer Bill Holm distinguishes between a "prairie eye" and a "woods eye." The prairie eye "looks for distance, clarity, and light," as well as openness and harsh truth. The woods eye looks for "closeness, complexity, and darkness," the mysterious and the hidden. 48 Holm

claims at having a prairie eye, feeling uncomfortable in  
49

enclosed, mysterious spaces like the woods, he prefers  
50  
the "magnitude and delicacy" of the open prairie.

[3]

My prairie eye and my woods eye are equally dominant in terms of strength. When I lived in  
51  
Michigan a few years ago, I marveled at the complexity and mystery of the woody patches everywhere. At the same time, when I would drive in rural areas, I felt joyful 52. I would be intrigued and curious as I looked a mile ahead to spy a lone car, tiny and far

away, whether it came to a stop on a straight road.  
53

48. If the writer were to delete the phrase "the mysterious and the hidden" (placing a period after the word *darkness*), this sentence would primarily lose:
- F. a contrast to the phrase "closeness, complexity, and darkness" in the same sentence.
  - G. factual information about when the woods eye should be used.
  - H. a contrast to the phrase "openness and harsh truth" in the sentence before this one.
  - J. a logical connection to the woods mentioned in Paragraph 1.
49. A. NO CHANGE  
B. to having  
C. to have  
D. by having
50. F. NO CHANGE  
G. woods, thus,  
H. woods. He  
J. woods he
51. A. NO CHANGE  
B. equal and the same strengthwise.  
C. the same when strength is considered.  
D. equally strong.
52. Given that all the following are true, which one, if added here at the end of this sentence, would provide the most effective transition to the description in the sentence that follows?
- F. as I emerged from the woods into the open terrain of fields
  - G. that the lumber companies had left these woods alone
  - H. at being able to appreciate the landscape in ways others can't
  - J. to be able to live near a national forest
53. A. NO CHANGE  
B. coming  
C. if it comes  
D. and had it come

[4]

My woods eye and prairie eye provide  
 aried and different reactions to more than just

54

andscape, and these perspectives apply to my other  
 nterests as well. I revel in the dark maze of a 500-page  
 Victorian novel, yet I also appreciate the delicate beauty  
 of a three-line Japanese haiku. I savor each competing  
 taste in a pizza with everything, yet I also enjoy a  
 simple glass of water.

[5]

My tastes' are similarly diverse, whether  
 in art, literature, music, movies, TV shows, or  
 long walks are enjoyed. My woods eye and prairie

58

eye doesn't compete for dominance. Instead, they  
 help me enjoy a range of experiences.

59

54. F. NO CHANGE  
 G. difference in their varying  
 H. different  
 J. variously different

55. A. NO CHANGE  
 B. themselves for  
 C. myself to  
 D. for

56. Which of the following alternatives to the underlined  
 portion would NOT be acceptable?  
 F. that  
 G. though  
 H. but  
 J. while

57. A. NO CHANGE  
 B. taste's  
 C. tastes  
 D. tastes,

58. F. NO CHANGE  
 G. long walks' enjoyment.  
 H. long walks.  
 J. enjoying long walks.

59. A. NO CHANGE  
 B. isn't competing  
 C. hasn't competed  
 D. don't compete

Question 60 asks about the preceding passage  
 as a whole.

60. Suppose the writer had intended to write a brief essay  
 on the problems that threaten the natural environment  
 in the rural Midwest. Would this essay successfully  
 fulfill the writer's goal?  
 F. Yes, because both prairies and woods are threatened  
 by urban, commercial, and residential development.  
 G. Yes, because this essay deals with how one can  
 have a strong personal connection with nature and  
 want to preserve it.  
 H. No, because the essay focuses instead on the  
 writer's personal connection to and aesthetic  
 understanding of the landscape.  
 J. No, because the essay describes ways in which the  
 rural Midwest is being preserved, not how it is  
 threatened.

# Vegetable Seed Savers

[1]

Walking through any one of an increasing number  
<sup>61</sup> of vegetable gardens these days and you're likely to shake  
 your head in disbelief. Growing within many plots are  
 such oddities, as purple carrots, white tomatoes, striped  
<sup>62</sup> eggplants, potatoes with blue flesh, and other crops a  
 casual gardener would find strange indeed.

[2]

"Seed savers," the people who nurture these  
 rare and endangered vegetables, value the plants for  
 more than their unusual appearance. Many of the  
 plants are heirloom varieties whose seeds have been  
<sup>63</sup> privately passed from one generation to the next.

Others are once-popular commercial varieties that  
 are no longer available through any seed company.

All represent genetic strains in danger of extinction.

<sup>64</sup>

[3]

Because vegetable seeds must be planted every  
 three or four years to maintain their viability, these rare  
 varieties will be lost forever unless they are not kept  
<sup>65</sup>

alive by a network of dedicated gardeners. 66

61. A. NO CHANGE  
 B. Having walked  
 C. To walk  
 D. Walk

62. F. NO CHANGE  
 G. oddities  
 H. oddities:  
 J. oddities;

63. A. NO CHANGE  
 B. who's  
 C. whom  
 D. who

64. Given that all of the choices are true, which one would  
 most effectively conclude this paragraph while leading  
 into the main focus of the next paragraph?

- F. NO CHANGE  
 G. When the demand for these varieties decreased,  
 the seed companies stopped producing them.  
 H. Commercial reproduction may still be able to  
 revive some of these heirloom varieties.  
 J. Some genetic strains are not available in this day  
 and age.

65. A. NO CHANGE  
 B. being that  
 C. while  
 D. if

66. If the writer were to delete the phrase "a network of"  
 from the preceding sentence, the essay would primarily  
 lose:

- F. a detail that explains one of the planting tech-  
 niques of these gardeners.  
 G. a detail that indicates that there is communication  
 among the gardeners.  
 H. information that emphasizes the ecological value  
 of these plant varieties.  
 J. nothing, since this detail was mentioned earlier in  
 the essay.

Many seed savers order endangered plants

through a small; but growing number of

67

organizations that specialize in rare seeds.

68

By now, the seed-saving gardeners agree to

69

grow the plants and then offer the new seeds

to other equally concerned growers.

[4]

[1] Seed savers point out that the world's food supply

depends on fewer than two dozen species of plants, nearly

70

all of which are being reduced to only a few varieties

through the use of hybrids and plant genetics. [2] That

lack of variety had made the plants more vulnerable to

71

rapid climate change, insects, and disease. [3] Because

of the plants' nearly identical genetic heritage, and a

72

blight spread easily through Ireland's entire potato crop.

[4] The Irish potato famine of the nineteenth century

is just one example of the dangers of such genetic

homogenization. [73]

[5]

While it may seem as if seed savers are doing

nothing more than planting their gardens, in conclusion

74

they are doing nothing less than ensuring the future

of the world's food supply. Future generations may

one day thank them for their seed-saving efforts.

67. A. NO CHANGE

B. small but growing

C. small, but growing

D. small but growing,

68. Which of the following alternatives to the underlined portion would NOT be acceptable?

F. that being specialized

G. that have specialized

H. that are specializing

J. specializing

69. A. NO CHANGE

B. In exchange,

C. In contrast,

D. As proof,

70. F. NO CHANGE

G. lesser than

H. fewer then

J. less then

71. A. NO CHANGE

B. was making

C. makes

D. made

72. F. NO CHANGE

G. heritage that

H. heritage and

J. heritage,

73. For the sake of logic and coherence, Sentence 4 should be placed:

A. where it is now.

B. before Sentence 1.

C. before Sentence 2.

D. before Sentence 3.

74. F. NO CHANGE

G. for instance

H. as a result

J. in fact

1 ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ 1

Question 75 asks about the preceding passage as a whole.

75. Upon reviewing notes for this essay, the writer comes across some information and composes the following sentence, incorporating that information:

Three of the most popular tomato varieties in the United States are Beefsteak, Rutgers, and Roma.

For the sake of the logic and coherence of the essay, this sentence should be:

- A. placed at the end of Paragraph 1.
- B. placed at the end of Paragraph 2.
- C. placed at the end of Paragraph 3.
- D. NOT added to the essay at all.

END OF TEST 1

STOP! DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.



## MATHEMATICS TEST

60 Minutes—60 Questions

**DIRECTIONS:** Solve each problem, choose the correct answer, and then fill in the corresponding oval on your answer document.

Do not linger over problems that take too much time. Solve as many as you can; then return to the others in the time you have left for this test.

You are permitted to use a calculator on this test. You may use your calculator for any problems you choose,

but some of the problems may best be done without using a calculator.

Note: Unless otherwise stated, all of the following should be assumed.

1. Illustrative figures are NOT necessarily drawn to scale.
2. Geometric figures lie in a plane.
3. The word *line* indicates a straight line.
4. The word *average* indicates arithmetic mean.

## DO YOUR FIGURING HERE.

1. Which of the following expressions is equivalent to  $3x + 6y + 9z$ ?

- A.  $3(x + 2y + 3z)$
- B.  $3(x + 2y + 9z)$
- C.  $3(x + 6y + 9z)$
- D.  $3(x + 2y) + 3z$
- E.  $18(x + y + z)$

2. When written in symbols, "The square of the sum of  $x$  and  $y$ " is represented as:

- F.  $(x^2 + y^2)^2$
- G.  $x^2 + y^2$
- H.  $x^2 + y$
- J.  $x + y^2$
- K.  $(x + y)^2$

3. The odometer in DaNae's car read 18,790 miles when she left on a trip and 19,168 miles when she returned. DaNae drove the car for 7 hours on the trip. Based on the odometer readings, what was her average driving speed on the trip, to the nearest mile per hour?

- A. 68
- B. 65
- C. 55
- D. 54
- E. 40

4. The interior dimensions of a rectangular aquarium are 3 feet by 2 feet by 2 feet. What is the volume, in cubic feet, of the interior of the aquarium?

- F. 7
- G. 12
- H. 24
- J. 32
- K. 36



If  $a$  is a real number and  $4^a = 64$ , then  $2 \times 2^a = ?$

DO YOUR FIGURING HERE.

- A. 4
- B. 8
- C. 16
- D. 32
- E. 64

6. For the students enrolled at Sunnyside College, the ratio of male students to female students is 5:7. Which of the following statements about the students enrolled is(are) true?

- I. For every 7 females, there are 5 males.
- II. There are more males than females.
- III. Males comprise  $\frac{5}{7}$  of the students enrolled.

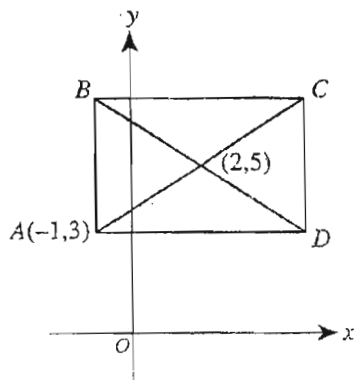
- F. I only
- G. II only
- H. III only
- J. II and III only
- K. I, II, and III

7. Camille needs  $6\frac{1}{8}$  yards of fabric for a craft project.

She has  $4\frac{1}{2}$  yards of fabric. How many more yards does she need?

- A.  $1\frac{5}{8}$
- B.  $1\frac{7}{8}$
- C.  $2\frac{1}{6}$
- D.  $2\frac{5}{8}$
- E.  $2\frac{7}{8}$

8. As shown below, the diagonals of rectangle  $ABCD$  intersect at the point  $(2,5)$  in the standard  $(x,y)$  coordinate plane. Point  $A$  is at  $(-1,3)$ . Which of the following are the coordinates of  $C$ ?



- F.  $(-1,7)$
- G.  $(\frac{1}{2}, 4)$
- H.  $(3, 7)$
- J.  $(5, 3)$
- K.  $(5, 7)$

2



2

9. Which of the following expressions is equivalent to

DO YOUR FIGURING HERE.

$$\frac{7m+70}{7} ?$$

- A.  $70m$
  - B.  $11m$
  - C.  $7m + 10$
  - D.  $m + 70$
  - E.  $m + 10$
10. The expression  $7kl - 3k(4k + 2l)$  is equivalent to:

- F.  $kl - 12k^2$
- G.  $2kl - 7k$
- H.  $8kl - 12k^2$
- J.  $-11kl$
- K.  $-k^2$

11. On a recent test, some questions were worth 2 points each and the rest were worth 3 points each. Tuan answered correctly the same number of 2-point questions as 3-point questions and earned a score of 60 points. How many 3-point questions did he answer correctly?

- A. 36
- B. 30
- C. 20
- D. 12
- E. 10

12. A postage stamp measures 2 centimeters by 2.5 centimeters. Angelina estimates that the area is 4 square centimeters. Her estimate is what percent *less* than the actual area?

- F. 80%
- G. 50%
- H. 40%
- J. 25%
- K. 20%

13. The *geometric mean* of 2 positive numbers is the square root of the product of the 2 numbers. What is the geometric mean of 12 and 48?

- A. 24
- B. 30
- C. 36
- D. 288
- E. 378

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DO YOUR FIGURING HERE.

14. A model for the braking distance,  $d$  feet, required to stop a certain car when it is traveling  $x$  miles per hour is  $d = \frac{x^2}{20}$ . According to this model, what is the braking distance, in feet, required to stop this car when it is traveling 70 miles per hour?

F. 13  
G. 25  
H. 70  
J. 123  
K. 245

15. The expression  $x^2 - x - 30$  can be written as the product of 2 binomials with integer coefficients. One of the binomials is  $(x - 6)$ . Which of the following is the other binomial?

A.  $x^2 - 5$   
B.  $x^2 + 5$   
C.  $x - 5$   
D.  $x + 5$   
E.  $x + 6$

16. The cost for a company to produce  $x$  televisions in 1 year is  $\$150x + \$250,000$ . How many televisions can the company produce in 1 year at a cost of  $\$550,000$ ?

F. 1,500  
G. 1,666  
H. 2,000  
J. 3,666  
K. 5,333

17. Given  $f(x) = \frac{x^3 + \frac{5}{8}}{x + \frac{1}{4}}$ , what is  $f\left(\frac{1}{2}\right)$ ?

A.  $\frac{30}{32}$   
B. 1  
C.  $\frac{36}{24}$   
D.  $\frac{20}{8}$   
E.  $\frac{7}{2}$

18. Teri has \$6 less than does her sister, Jennie, who has  $x$  dollars. Teri does not spend any money and earns \$4. Which of the following is an expression for the amount of money, in dollars, Teri has?

F. 2  
G.  $x + 2$   
H.  $x + 10$   
J.  $2x - 2$   
K.  $x - 2$



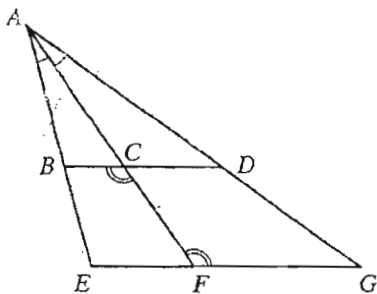
9. A rectangle is 3 times as long as it is wide. The perimeter of the rectangle is 160 meters. What is the area of the rectangle, in square meters?

DO YOUR FIGURING HERE.

- A. 400  
B. 1,200  
C. 1,600  
D. 3,600  
E. 6,400

20. In the figure below,  $B$  is on  $\overline{AE}$ ,  $D$  is on  $\overline{AG}$ ,  $F$  is on  $\overline{EG}$ ,  $C$  is on both  $\overline{AF}$  and  $\overline{BD}$ ,  $\angle BAC \cong \angle CAD$ , and  $\angle BCF \cong \angle CFG$ . Which of the following statements *must* be true?

(Note: The symbol  $\cong$  means "is congruent to.")

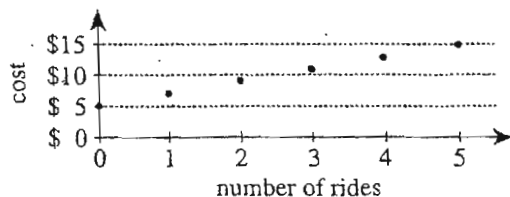


- F.  $\overline{EF} \cong \overline{FG}$   
G.  $\angle ACD \cong \angle CDG$   
H.  $\overline{BD}$  is parallel to  $\overline{EG}$   
J.  $\triangle ABC$  is similar to  $\triangle ACD$   
K. The areas of quadrilaterals  $BCFE$  and  $CDGF$  are equal.
21. Which of the following is equivalent to  $10^{\frac{1}{5}}$ ?
- A. 2  
B.  $\frac{1}{10^5}$   
C.  $\sqrt{2}$   
D.  $\sqrt[5]{10}$   
E.  $-1 \times 10^5$



DO YOUR FIGURING HERE.

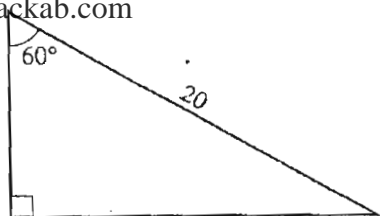
22. Admission to the school fair is \$5, and each ride is the same price as any other ride. The graph below shows the total cost for a person, for admission and rides, as a function of the number of rides paid for. One of the following is the price of a single ride. Which one is it?



- F. \$1  
G. \$2  
H. \$3  
J. \$4  
K. \$5

23. The figure below shows a right triangle whose hypotenuse is 20 inches long. How many inches long is the longer leg of this triangle?

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- A. 10  
B. 40  
C.  $10\sqrt{3}$   
D.  $\frac{10\sqrt{3}}{3}$   
E.  $\frac{40\sqrt{3}}{3}$
24. If you add up 6 consecutive even integers that are each greater than 25, what is the smallest possible sum?

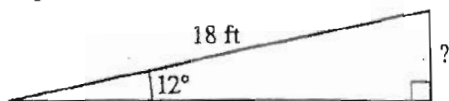
- F. 210  
G. 186  
H. 174  
J. 165  
K. 150

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GO ON TO THE NEXT PAGE.



5. As shown below, an 18-foot ramp forms an angle of  $12^\circ$  with the ground, which is horizontal. Which of the following is an expression for the vertical rise, in feet, of the ramp?



DO YOUR FIGURING HERE.

- A.  $18 \sin 12^\circ$   
 B.  $18 \cos 12^\circ$   
 C.  $18 \tan 12^\circ$   
 D.  $18 \cot 12^\circ$   
 E.  $18 \sec 12^\circ$

26. If  $x + 22 = |-11|$ , then  $x = ?$

F. -33

G. -11

H.  $\frac{1}{2}$

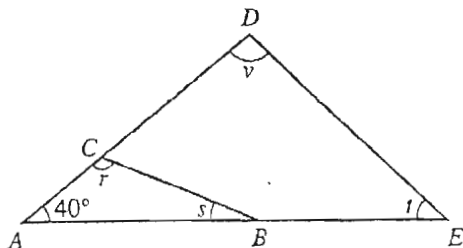
J. 11

K. 33

27. On the way to a family camping weekend, the Estradas stopped at a roadside stand to purchase firewood. The stand sold bundles of pine firewood for \$2 per bundle and bundles of hickory firewood for \$4 per bundle. The Estradas purchased a total of 25 bundles of pine firewood and hickory firewood for \$66. How many bundles of pine firewood did the Estradas purchase?

- A. 8  
 B. 11  
 C. 17  
 D. 21  
 E. 22

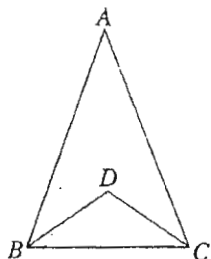
28. In  $\triangle ADE$  below,  $B$  lies on  $\overline{AE}$ ;  $C$  lies on  $\overline{AD}$ ; and  $r$ ,  $s$ ,  $t$ , and  $v$  are angle measures, in degrees. The measure of  $\angle A$  is  $40^\circ$ . What is  $r + s + t + v$ ?



- F.  $100^\circ$   
 G.  $140^\circ$   
 H.  $240^\circ$   
 J.  $280^\circ$   
 K.  $320^\circ$



29. Triangles  $\triangle ABC$  and  $\triangle DBC$ , shown below, are isosceles with base  $\overline{BC}$ . Segments  $\overline{BD}$  and  $\overline{CD}$  bisect  $\angle ABC$  and  $\angle ACB$ , respectively. Which of the following angle congruences is necessarily true?



- A.  $\angle ABC \cong \angle ACD$   
 B.  $\angle ABD \cong \angle ACB$   
 C.  $\angle ABD \cong \angle BCD$   
 D.  $\angle ACD \cong \angle BAC$   
 E.  $\angle BCD \cong \angle BAC$
30. What is the area, in square feet, of a trapezoid with a height of 4 feet and parallel bases of 7 feet and 5 feet, respectively?
- F. 16  
 G. 24  
 H.  $27\frac{1}{2}$   
 J. 48  
 K. 55
31. The table below lists the number (to the nearest 1,000) of Boy Scout units (packs, troops, posts, and groups) in the United States for 1994 through 1997. Of the following expressions with  $x$  representing the number of years after 1994, which best models the number of Boy Scout units (in thousands) in the United States?

Year	Boy Scout units (in thousands)
1994	129
1995	132
1996	135
1997	139

Table adapted from U.S. Census Bureau, *Statistical Abstract of the United States: 1998*. 1998.

- A.  $\frac{3}{10}x + 1,994$   
 B.  $\frac{10}{3}x + 129$   
 C.  $129x + 1,994$   
 D.  $139x + 1,997$   
 E.  $1,994x + 129$

DO YOUR FIGURING HERE.



Use the following information to answer questions 32–34.

DO YOUR FIGURING HERE.

The table below shows the percents of U.S. households with cable television out of all U.S. households with TVs, for each year from 1977 through 1997.

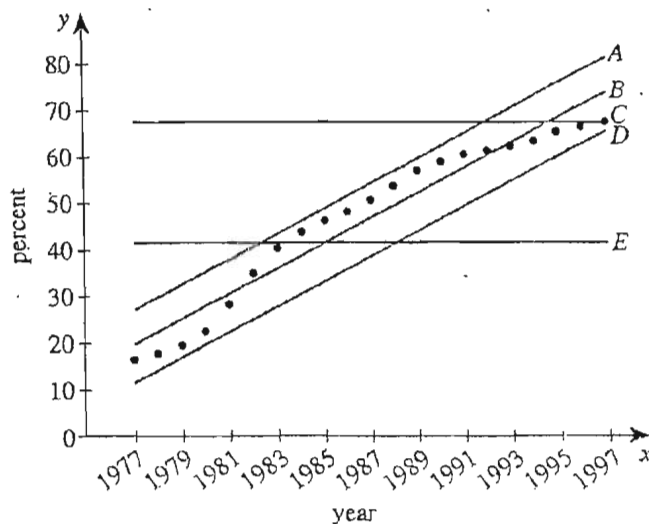
Year	Percent	Year	Percent	Year	Percent
1977	16.6	1984	43.7	1991	60.6
1978	17.9	1985	46.2	1992	61.5
1979	19.4	1986	48.1	1993	62.5
1980	22.6	1987	50.5	1994	63.4
1981	28.3	1988	53.8	1995	65.3
1982	35.0	1989	57.1	1996	66.7
1983	40.5	1990	59.0	1997	67.3

Table adapted from *The World Almanac and Book of Facts 1999*.  
©1998 by World Almanac Books.

32. Which of the following years had the greatest increase in the percent of U.S. households with cable television over the previous year?

F. 1981  
G. 1982  
H. 1983  
J. 1989  
K. 1990

33. The figure below shows a scatterplot for the data points in the table and 5 solid-line graphs that represent possible models for this data set. Among the 5 lines, which appears to be the best model for the data set?



A. A  
B. B  
C. C  
D. D  
E. E



34. The almanac states there were 64,654,160 U.S. households with cable television in 1996. According to this information, approximately how many U.S. households had TVs, with or without cable, in 1996?

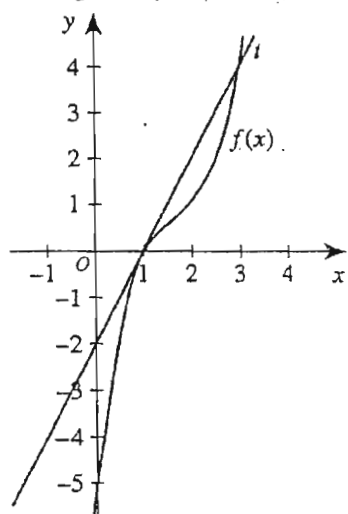
F. 32,000  
 G. 43,000,000  
 H. 97,000,000  
 J. 110,000,000  
 K. 4,300,000,000

DO YOUR FIGURING HERE.

35. For all nonzero  $b$  and  $c$ ,  $\frac{(b \times 10^4)(c \times 0.001)}{(b \times 10,000)(c \times 10^{-3})} = ?$

A. 1  
 B. 10  
 C.  $10^7$   
 D.  $\frac{b}{c}$   
 E.  $\frac{b^2}{c^2}$

36. The function  $f(x) = x^3 - 5x^2 + 9x - 5$  and line  $t$  are shown in the standard  $(x,y)$  coordinate plane below. Which of the following is an equation of line  $t$ , which passes through  $(3,4)$  and is tangent to  $f(x)$  at  $(1,0)$ ?



F.  $y = \frac{1}{2}x + \frac{5}{2}$   
 G.  $y = \frac{1}{2}x - \frac{1}{2}$   
 H.  $y = 3x + 4$   
 J.  $y = 2x + 1$   
 K.  $y = 2x - 2$

37. Which of the following degree measures is equivalent to  $3.75\pi$  radians?

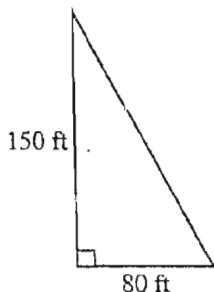
A.  $225^\circ$   
 B.  $337.5^\circ$   
 C.  $675^\circ$   
 D.  $1,350^\circ$   
 E.  $2,700^\circ$



Use the following information to answer questions 38–40.

DO YOUR FIGURING HERE.

Hasan and Parvani have a flower bed that is shaped like a right triangle, as shown below.



38. A bag of fertilizer costs \$7.99 and will cover approximately 500 square feet. Which of the following is closest to the cost, in dollars, of fertilizing the flower bed?

F. \$ 25.00  
G. \$ 95.00  
H. \$110.00  
J. \$150.00  
K. \$190.00

39. To determine how much fencing to buy to enclose their flower bed, Hasan and Parvani calculated the flower bed's perimeter. What is its perimeter, in feet?

A. 230  
B. 310  
C. 380  
D. 400  
E. 460

40. The angle opposite the 80-foot side measures about  $28.1^\circ$ . Hasan and Parvani are considering changing the shape of their flower bed. It will still be a right triangle with the 150-foot side as 1 leg, but they will extend the 80-foot side until the angle opposite that side is about  $40^\circ$ . By about how many feet would they need to extend the 80-foot side?

(Note:  $\sin 40^\circ \approx 0.64$ ,  $\cos 40^\circ \approx 0.77$ ,  $\tan 40^\circ \approx 0.84$ )

F. 12  
G. 16  
H. 36  
J. 46  
K. 51

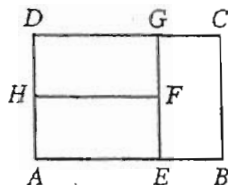




41. Rectangle  $ABCD$  consists of 3 congruent rectangles as shown in the figure below. Which of the following is the ratio of the length of  $\overline{AB}$  to the length of  $\overline{BC}$ ?

DO YOUR FIGURING HERE.

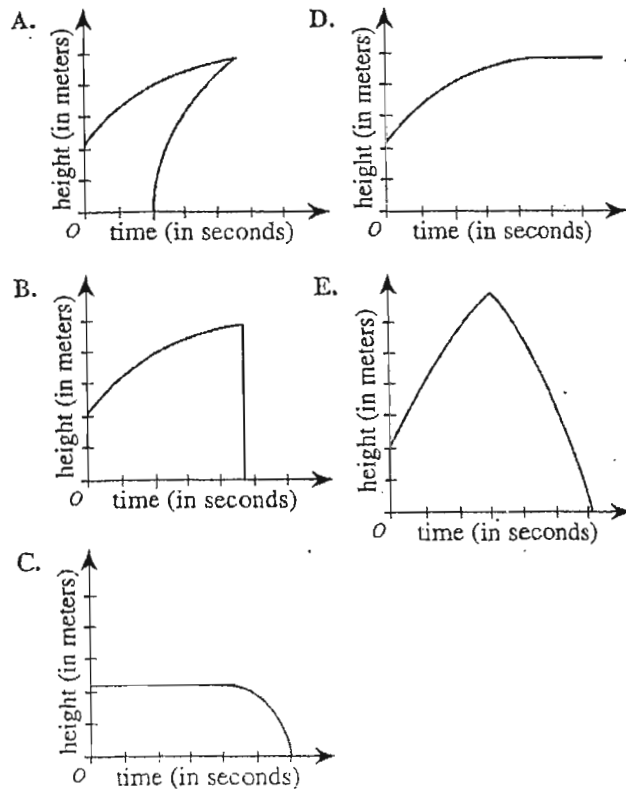
- A. 1:1  
B. 2:1  
C. 2:3  
D. 3:1  
E. 3:2



42. Melinda's test average after 6 tests was 73. Her score on the 7th test was 87. If all 7 tests were equally weighted, which of the following is closest to her test average after 7 tests?

- F. 87  
G. 85  
H. 80  
J. 75  
K. 73

43. A ball is thrown upward toward a vertical brick wall. The ball hits the wall and bounces back down to the ground. Among the following graphs, which one best represents the relationship between the height, in meters, of the ball and the time, in seconds, from when the ball is thrown until it hits the ground?



DO YOUR FIGURING HERE.

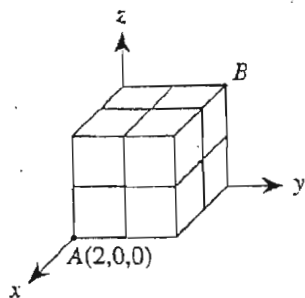
44. The sides of a right triangle measure 20 cm, 21 cm, and 29 cm. What is the tangent of the angle opposite the side that measures 20 cm?

F.  $\frac{20}{21}$   
 G.  $\frac{20}{29}$   
 H.  $\frac{21}{20}$   
 J.  $\frac{21}{29}$   
 K.  $\frac{29}{20}$

45. The noncommon rays of 2 adjacent angles form a straight angle. The measure of one angle is 3 times the measure of the other angle. What is the measure of the larger angle?

A.  $45^\circ$   
 B.  $60^\circ$   
 C.  $90^\circ$   
 D.  $135^\circ$   
 E.  $145^\circ$

46. A cube consisting of 8 smaller cubes that are identical is positioned in the standard  $(x,y,z)$  coordinate system, as shown below. Vertex A has coordinates  $(2,0,0)$ , and 3 other vertices are at the origin, on the positive  $y$ -axis, and on the positive  $z$ -axis, respectively. What are the coordinates of vertex B?



F.  $(0,0,2)$   
 G.  $(0,2,0)$   
 H.  $(0,2,2)$   
 J.  $(2,0,2)$   
 K.  $(2,2,2)$

47. What is the median of the data given below?

17, 25, 18, 15, 20, 27, 28, 18

A. 17.5  
 B. 18  
 C. 19  
 D. 20  
 E. 21.5

48. Let  $x \oplus y = (x - y)^3$  for all integers  $x$  and  $y$ . Which of the following is the value of  $3 \oplus (-2)$ ?

F. 1  
 G. 19  
 H. 35  
 J. 125  
 K. 216



49. For all positive integers  $n$ , which of the following is a correct ordering of the terms  $n^n$ ,  $(n!)^n$ , and  $(n!)^{n!}$ ?

(Note:  $n! = (n)(n-1)(n-2) \cdots (2)(1)$ )

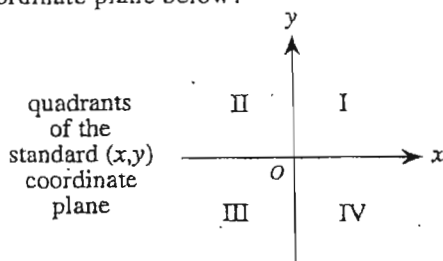
- A.  $n^n \geq (n!)^n \geq (n!)^{n!}$
- B.  $(n!)^n \geq n^n \geq (n!)^{n!}$
- C.  $(n!)^n \geq (n!)^{n!} \geq n^n$
- D.  $(n!)^{n!} \geq (n!)^n \geq n^n$
- E.  $(n!)^{n!} \geq n^n \geq (n!)^n$

DO YOUR FIGURING HERE.

50. What is the perimeter of quadrilateral  $ABCD$  if it has vertices with  $(x,y)$  coordinates  $A(0,0)$ ,  $B(1,3)$ ,  $C(4,4)$ ,  $D(3,1)$ ?

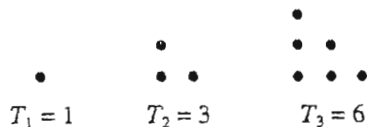
- F.  $2\sqrt{10}$
- G.  $4\sqrt{10}$
- H.  $6\sqrt{2} + 2\sqrt{10}$
- J. 40
- K. 100

51. The graph of the line with equation  $3x - 4y = 24$  does NOT have points in what quadrant(s) of the standard  $(x,y)$  coordinate plane below?

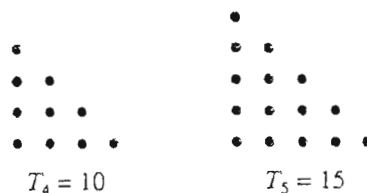


- A. Quadrant I only
- B. Quadrant II only
- C. Quadrant III only
- D. Quadrant IV only
- E. Quadrants I and II only

52. The figure below shows representations of the first 5 triangular numbers,  $T_1$  through  $T_5$ . What is the value of  $T_{32}$ ?



- F. 96
- G. 496
- H. 528
- J. 960
- K. 1,056





53. Four distinct points are chosen at random on a circle. Line segments are then drawn connecting every possible pair of these points. These line segments divide the interior of the circle into how many individual, nonoverlapping regions of nonzero area?

A. 2  
B. 4  
C. 6  
D. 8  
E. 24

DO YOUR FIGURING HERE.

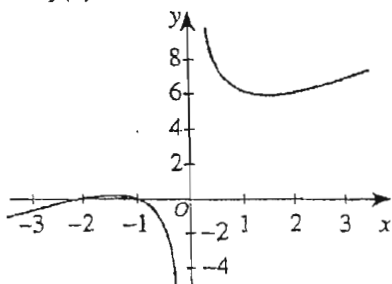
54. The radius of a circle is  $\frac{20}{\pi}$  inches. How many inches long is its circumference?

F.  $\frac{40}{\pi}$   
G.  $\frac{400}{\pi}$   
H. 20  
J. 40  
K. 80

55. In the  $(x,y)$  coordinate plane, what is the radius of the circle having the points  $(0,-2)$  and  $(-6,6)$  as endpoints of a diameter?

A. 5  
B. 10  
C. 14  
D. 25  
E. 100

56. The graph of the function  $f(x) = \frac{x^2 + 3x + 2}{x}$  is shown in the standard  $(x,y)$  coordinate plane below. Which of the following, if any, is a list of each of the vertical asymptotes of  $f(x)$ ?



F.  $x = 0$   
G.  $x = -1$  and  $x = -2$   
H.  $y = x + 3$   
J.  $y = 3x + 2$   
K. This function has no vertical asymptote.



DO YOUR FIGURING HERE.

57. The sum of 2 positive prime numbers is a prime number, and 3 times that sum is an odd number. Which of the following prime numbers *must* be one of the original prime numbers?

A. 2  
B. 3  
C. 5  
D. 7  
E. 11

58. The set of points created by the midpoints of all chords of length 4 centimeters in a circle of radius 8 centimeters is a:

F. point.  
G. line segment.  
H. line.  
J. semicircle.  
K. circle.

59. If  $h(x) = f(x) - g(x)$ , where  $f(x) = 5x^2 + 15x - 25$  and  $g(x) = 5x^2 - 6x - 11$ , then  $h(x)$  is *always* divisible by which of the following?

A. 3  
B. 5  
C. 7  
D. 9  
E. 17

60. A square,  $S_1$ , has a perimeter of 40 inches. The vertices of a second square,  $S_2$ , are the midpoints of the sides of  $S_1$ . The vertices of a third square,  $S_3$ , are the midpoints of the sides of  $S_2$ . Assume the process continues indefinitely, with the vertices of  $S_{k+1}$  being the midpoints of the sides of  $S_k$  for every positive integer  $k$ . What is the sum of the *areas*, in square inches, of  $S_1, S_2, S_3, \dots$ ?

F.  $\frac{40}{3}$   
G. 20  
H. 70  
J.  $\frac{400}{3}$   
K. 200

END OF TEST 2

STOP! DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

DO NOT RETURN TO THE PREVIOUS TEST.

## READING TEST

35 Minutes—40 Questions

**DIRECTIONS:** There are four passages in this test. Each passage is followed by several questions. After reading a passage, choose the best answer to each question and fill in the corresponding oval on your answer document. You may refer to the passages as often as necessary.

## Passage I

**PROSE FICTION:** This passage is adapted from the novel *Chamber Music* by Doris Grumbach (©1979 by Doris Grumbach). The narrator, Caroline Maclaren, was married to a well-known composer, Robert Maclaren. *The Community* refers to an artists' colony.

I have decided to write this account because, long as my life has been, it has given me no opportunity before this to say what I wish to put down here. Perhaps the time was not right to do it before.

5 When I was young, and even into my middle years, a scrim of silence surrounded what really happened in our lives. If there was talk, it was quiet conjecture about the indiscretions of our friends and neighbors. Rumor and gossip were conveyed in whis-  
10 pers. Secrets were surely no better kept than they are now, but they lived quietly, under the breath. They never appeared in public print or were reported by professional gossips on the air waves. They were confined to the inner coils of the private ear, a foot away, per-  
15 haps, no farther. We closeted our secrets, or forgot them. This we called decorum, and we lived securely under its warm protection.

But now the Maclaren Foundation, which I headed for so many years, almost fifty by now, wishes to have  
20 a permanent record of Robert's life, and mine. Ours together, to put it more exactly, and mine alone with the Community, after his death. The government has become interested, they tell me, in "the arts." There is a chance that, with its financial help, in some place, the  
25 Community will be restored to life.

My initial reluctance to accede to their request is a matter of personal habit, I suppose. I am an old woman born in the last quarter of the nineteenth century, with all that decent age's love of a calm surface to our soci-  
30 ety. It was then the custom to have a regular, uniform pattern to our lives, to present the historian with only those facts which would contribute to an orderly picture.

So I am not equipped to write a confession in the  
35 modern sense. Whether what I remember here will be useful as a record to the new Foundation I cannot say. I am of an age not to care, almost ninety. My hearing is defective, my bones seem to lie upon each other like

dry kindling, my skin falls away in slack little pinches  
40 of flesh. I am dry and brittle, I strain and break easily. Rarely any more do I insert my two rows of teeth; few persons bother to visit.

I write this description of myself not because I want pity—who pities the very old?—but to explain my  
45 unaccustomed openness in this account. I have nothing to lose that extreme old age has not already taken from me, and no time to gain. The way the world thinks of me may well change, but even that, if it happens, I will not survive. The Foundation promises me that it will be  
50 some time before the history of the founding of the Community can be completely collated and that it has no plans to publish it. I will not be here to witness the astonishment of the reader. I am comforted by the realization that there is no one I know alive to be surprised  
55 at me.

For the representation of truth, old age is a freeing agent. No one should write of her life until all the witnesses and acquaintances, family and lovers, are dead. In addition, it helps to outlive the mode of one's time  
60 until it has changed beyond recognition. Then one is left alone with what was. The wrinkled, spotted hand writes of a time out of the memory of everyone alive but itself. So what one tells is unavailable to verification or correction.

65 I write this, then, because I am freed by my survival into extreme old age, and because I write in the air of freer times. Whether this air is entirely salutary, whether the old must of chests, of closets, bell jars, and horsehair sofas is not a better climate for the storage of  
70 the private life, I do not know. But I tire very quickly these days and must speak openly, for once. I am now free. Extraordinary for me, and for one of my time, I intend to put down extraordinary truths.

I rejected the offer to dictate to a secretary, decid-  
75 ing I would celebrate my ninetieth year with a final effort to donate to paper my inner life together with the externals already known. I would put it down in my own hand as a way, I think, of signifying, attesting to the truth by the witness of my handwriting as well as  
80 the force of my own words.

The Foundation will say: What you have managed to remember is perhaps only partial and personal.

biased truth. You have not given us Robert's truth. Surely it would have differed from yours. I would  
85 reply: True. He never wrote about his life.

But, at the last, I think, the historian's view always superimposes itself upon history. Out of a vast amount of available facts from an infinite acreage he chooses what fits his limited and single vision and writes one  
90 story. In this case, the story is mine alone. It is all I am able to know.

1. As presented in the passage, how does the narrator's attitude toward writing her account change over time?
  - A. She is hesitant at first but later embraces the project as a useful opportunity.
  - B. She is enthusiastic about the work until she realizes she can't tell "Robert's truth."
  - C. She is reluctant to write the account but relents when the Foundation offers to publish it.
  - D. She is highly motivated until she begins to feel the limiting effects of her advanced age.
2. The second paragraph (lines 5–17) primarily emphasizes an earlier era's:
  - F. sense of discretion.
  - G. lack of intimacy.
  - H. lack of honesty.
  - J. sense of optimism.
3. The narrator makes clear that the Foundation is now interested in an account of her and Robert's lives because:
  - A. Robert's fame has grown substantially since his death.
  - B. Foundation officials worry she will not live much longer.
  - C. it would help correct the public history of the Community.
  - D. it could help solicit funds needed to revive the Community.
4. The narrator indicates that she provides the information in lines 37–42 in order to:
  - F. evoke the sympathy of the reader.
  - G. explain why her current writing is unusually frank.
  - H. suggest that old age has robbed her of vitality.
  - J. reveal that she has nothing to lose and little motivation to write.
5. When the narrator talks about being "left alone with what was" (line 61), she most nearly means that she:
  - A. finds most people prefer living in the past to enjoying the present.
  - B. has the freedom now to re-create the past without fear of contradiction.
  - C. feels abandoned by those who have died before her.
  - D. thinks outliving one's time can be exhilarating but sometimes lonely.
6. In the passage, how does the narrator respond to the Foundation's hypothetical reaction to her account (lines 81–84)?
  - F. She argues that she can in fact do justice to "Robert's truth."
  - G. She contends that "Robert's truth" and her own are ultimately the same.
  - H. She acknowledges the uniqueness of her version but claims she has no other choice.
  - J. She admits that her account is biased but feels that her writing is more honest than Robert's was.
7. The narrator indicates that unlike in modern times, in her youth and into her middle years:
  - A. secrets were better kept.
  - B. gossip was not as common.
  - C. friends were less respectful of privacy.
  - D. private matters were not publicized.
8. It can most reasonably be inferred that in her youth and into her middle years, the narrator found the idea of decorum:
  - F. restrictive.
  - G. pretentious.
  - H. comforting.
  - J. inspiring.
9. As it is used in line 29, the phrase *decent age* most nearly refers to:
  - A. the extremely advanced age of the narrator.
  - B. a time long past that embraced propriety.
  - C. the period when the narrator ran the Foundation.
  - D. an early period in the history of the Community.
10. The narrator states that she feels which of the following about the usefulness of her account to the new Foundation?
  - F. Curious
  - G. Pleased
  - H. Uncertain
  - J. Anxious

## Passage II

**SOCIAL SCIENCE:** This passage is adapted from the article "Farewell to Mr. Fix-It" by James Surowiecki (©2001 by The Condé Nast Publications Inc.).

Ricardo Gomez runs an electronics-repair shop in Brooklyn. He started in the business fifteen years ago. Today, he can fix just about anything, from tape-eating VCRs to CD players with errant lasers. The one thing he can't fix is the fact that people don't seem to get things fixed anymore.

"Years ago, I had more work," Gomez says. "But today prices have come down so much for things like TVs and VCRs that people would rather just buy a new one than fix an old one. That also means that I can't charge that much for repairs. It's a tough life, being a technician."

And it's getting tougher. The shelves at the back of Gomez's shop hold rows of TVs and VCRs with their innards spilling out, but Gomez makes just a slim profit on them. He charges around forty dollars to fix a VCR, a bit more for a stereo or a TV. There are some things he generally doesn't bother with—camcorders, some brands of disc-players—because it costs as much to buy parts as it would to buy a replacement. But at least he's still in business. By some accounts, only a fifth of the repair shops that were open fifteen years ago are around today. Even the computer-service business is slow. In the good old days, the repair trade was a business where you were guaranteed a steady stream of customers. Today, about all you're guaranteed is a long lunch break.

That's because the repair business is on the wrong side of the most powerful trends in global manufacturing of the past twenty years: the sharp rise in quality and the steady decline in price. When it comes to most manufactured goods, these are the good old days. Products are more reliable and more durable than ever. In a recent survey, *Consumer Reports* found that, in most product categories, repair rates were between just ten and twenty per cent.

The average life of a car is up by nearly half since 1970. All this, and stuff often actually costs less. Your run-of-the-mill VCR is forty per cent cheaper than it was seven years ago. High quality, low price: for the repair shop, it's a deadly combination.

"You don't find the kinds of things you had decades ago, like toasters that could electrocute you or TVs that blew up," David Heim, the managing editor of *Consumer Reports*, says. "If you buy a TV, you're going to get a good picture, and if you buy a stereo you're going to get great sound. In fact, the guy who used to test stereos for us told me that you cannot buy a bad stereo. They don't make the parts anymore."

Americans have become the most demanding consumers in the history of the world—we expect our

machines to work. Nonetheless, we have a vestigial memory of the days when they didn't. How else to explain the fact that, every year, people shell out millions of dollars on extended warranties that they seldom get a chance to take advantage of?

For manufacturers and retailers, warranties are easy money. Service plans usually run just two or three years and cover products that either will last much longer or are easily replaced. The consumer pays up front and rarely collects. You can see the results in the quarterly reports for any major electronics retailer. A big chunk of the profit margin comes from the sale of extended warranties. Some retailers even call customers months after a sale to offer repair plans and warranties. Needless to say, they wouldn't make such offers if they really believed that your TV was likely to go on the fritz. But folks still bite. "People spend a lot of money for a little extra peace of mind," Heim says.

The lingering allure of warranties is understandable if you consider how recent the quality revolution is. Before the nineteen-eighties, most American corporations saw quality as something that cost them a lot and profited them little. They believed that it didn't play a big role in a consumer's decision to buy a product, and that there was no way to make things both better and cheaper. Japan's success in the seventies changed that. Japanese companies, influenced by the ideas of the quality-control guru W. Edwards Deming, began winning market share by producing televisions, cameras, cars, and VCRs that were vastly superior to American products. Eventually, American companies woke up and adopted Deming as a prophet.

The impact of the quality revolution was immediate. The marketplace no longer tolerates shoddy products. Consumers have grown so accustomed to things being ever cheaper and ever more reliable that companies have to keep driving cost down and quality up just to stay in the game.

11. In the context of lines 28–49, the statement "They don't make the parts anymore" (line 49) is used to support the idea that:

- A. it is hard for repair-shop owners to find the parts for electronic devices made before 1980.
- B. no one knows as well as repair-shop owners how long it takes to receive parts from manufacturers.
- C. consumers are increasingly frustrated over products that have to be replaced rather than repaired when they break down.
- D. manufacturers are making products of a higher quality and durability than ever before.



12. It can reasonably be inferred from the passage that Heim's attitude toward the plight of repair workers is that they:
- F. unknowingly helped create the circumstances that are putting them out of business.
  - G. are casualties of changes in manufacturing practices that have many positive outcomes for consumers.
  - H. deserve the increased income from work that is a result of the widespread success of extended warranties.
  - J. would be wise to specialize in the advanced electronics products on the market today rather than on the products that date back a decade or more.
13. It can reasonably be inferred from the passage that before the 1980s, the percentage of most categories of American manufactured products that required repair was:
- A. under 10 percent.
  - B. between 10 and 15 percent.
  - C. between 15 and 20 percent.
  - D. 20 percent or more.
14. Which of the following best expresses the paradox described in the seventh paragraph (lines 50-56)?
- F. Manufacturers are selling more products than ever to American consumers but having to spend less than ever on sales promotions.
  - G. Americans are spending more on repairs than ever before and less than ever on adequate warranties.
  - H. Products are more reliable than ever, but Americans are spending a great deal on extended warranties.
  - J. American consumers are complaining more than ever about the quality of manufactured products, but products have never been more reliable.
15. According to the passage, the impact of extended warranties on the financial status of American electronics businesses is that the warranties account for a:
- A. significant loss that is usually compensated for by high sales of high-quality products.
  - B. small loss that is easily compensated for by skyrocketing sales of an increasingly varied range of products.
  - C. substantial portion of the profits earned by these companies.
  - D. profit or loss depending on a company's ability to identify its market.
16. The author traces the quality revolution back to its origins in:
- F. Japan in the 1970s.
  - G. Japan in the 1980s.
  - H. the United States in the 1970s.
  - J. the United States in the 1980s.
17. The main point of the first paragraph is that:
- A. even highly competent and experienced repair technicians are struggling under current market conditions.
  - B. tape-eating VCRs are harder to fix than CD players with errant lasers.
  - C. Gomez takes on more work to compensate for the fact that he can't increase his repair-work rates.
  - D. fifteen years ago Gomez could not fix a VCR but today he is an expert at it.
18. According to the passage, which of the following statements is accurate regarding the decline in the number of repair shops?
- F. Of the repair shops in business fifteen years ago, only one in five is still open.
  - G. Of the repair shops open twenty years ago, only 5 percent are still in business.
  - H. Twenty percent of the repair shops that specialize in TVs and VCRs are expected to close in the next five years.
  - J. Half of the electronics repair shops in New York City are expected to close in the next ten years.
19. The passage states that before the 1980s, most American corporations viewed quality as all of the following EXCEPT:
- A. almost irrelevant to consumers' buying decisions.
  - B. something that could not be achieved at the same time as lowering prices.
  - C. something that cost them a lot.
  - D. an unnecessary hardship on the repair industry and therefore to be avoided.
20. According to the passage, Deming's role in the quality revolution is as:
- F. a spokesperson for the electronics-repair industry.
  - G. an American manufacturer who brought Japanese ideas to the American market.
  - H. an influential figure in shifting the Japanese and American manufacturing industries to produce high-quality goods for a low price.
  - J. a journalist for *Consumer Reports* focusing on the issue of international growth in the quality of manufactured goods.

## Passage III

**HUMANITIES:** This passage is adapted from the essay "The Mambo King" by Oscar Hijuelos (©2001 by The New York Times).

In 1966, at the age of 15, I was a member of a rock group in the South Bronx. We used to practice our songs in the basement of an apartment building off 169th Street and Third Avenue.

5 Once or twice a week I would make the trip to the Bronx from Manhattan with my father, and while, down below, we youngsters pursued our noisy musical education, through buzzy amplifiers and \$10 microphones, the adults gathered upstairs in a third-floor apartment and ate, talked and listened to music. On our breaks, we would head upstairs to grab some food, and in that congenial atmosphere, we mixed with the adults, who seemed amused by our preoccupation with rock. While we chatted and ate, their music played out of a stereo console—Cuban *charangas* and *sons*, Puerto Rican *plenas* and the music of the great mambo orchestras, led by the likes of Machito, Noro Morales, Mario Bauzá and the upstart bandleader, already a star, Tito Puente.

20 Of course, as teenagers smitten by American pop culture, we sort of only half-listened to that music; we considered Latin music archaic—the music of our immigrant parents. It was the kind of music we had been hearing every day of our lives in the city, on the streets, in people's living rooms, out of car radios. "Time for something new" is what went through our heads. Latin music was so much a part of growing up in New York that we, or at least I, took it for granted. What was happening *now*, the music of the Beatles and the Rolling Stones and so many others, was what we aspired to. And yet, on one of those afternoons when our bandleader, breathlessly late for rehearsal, burst into our dingy practicing room and announced: "Tito Puente's playing a block party! Come on, let's go," we swarmed out behind him, anxious about missing something special.

The block party was up on East Fordham Road, around Roosevelt High School. We arrived while the band was performing one of Tito's classics, "El Cayuco" or "Oye Cómo Va" or "Ran Kan Kan." A crowd filled the street—vendors were selling hot dogs, *pasteles*, chorizo sandwiches, sodas; women danced; most of the men too, in T-shirts or guayaberas, weary from their week of work but happy to be there. It was a hot day, and we worked our way through all the people toward the stage. There, on the plumber's-pipe platform, were a trombonist, a saxophone player, a few trumpeters, a pianist, a fellow banging the congas and bongos, then a bassist, a man playing a standard drum kit and Tito Puente himself, drumsticks in hand, poised before the thin kettledrums that were his timbales, beside the vibraphone on which he would also perform the sublime "Hong Kong Mambo."

When you're a young musician—or think you are—you watch everything a real musician does. So I observed Tito Puente carefully. There he was, performing regally, as if his working-class audience were kings and queens, as if that street were the greatest venue in all of New York. He was already a legend, so much a part of the history of New York and of Latin music (for he had been a hallmark performer in the glory days of the Palladium ballroom in the 1950's) that it would have been easy for him to slough the music off. But he played his heart out. He froze time, dissipated heat and cheered hearts.

He went into jams—long, sustained mambo sections, during which his instrumentalists improvised—and played his drums as if there were no tomorrow. He sweated, dabbing his brow with a kerchief, and offhandedly introduced his own formidable compositions as if they were simply little tunes. That music flew toward us like elongating barrels of mischief, like singing angels, like mysterious sonic hieroglyphics, all transmitted from some sacred musical place for our amusement. From the time we arrived, he and his band played for another hour, and not once did he give the impression that he wanted the party to be over. Most beautifully, when the band had finished its last encore, when everybody, even the kids hanging off the rooftops, were chanting "Tito!" he bowed to the audience, sent kisses flying and then began to walk off stage. That's when our lead singer, Santiago, who had passed the concert jumping up and down in place, scrambled toward him. He caught Tito's ear with the phrase "*Soy borinqueño!*"—"I'm Puerto Rican"—and Tito, nodding, called him aside and listened to Santiago's story—19 years old and I want to be a great musician like you—and what I, eavesdropping, heard from Tito were the words, "I'll look out for you, kid. *Y exitos!*"—much success.

21. The point of view from which this passage is narrated is best described as:

- A. an adult reflecting on his youth.
- B. a parent recalling his son's rock band.
- C. a teenager who aspires to be a musician.
- D. Santiago, a teenager who meets Puente.

22. Which of the following best summarizes the emotional shift that is presented by the narrator in the passage?
- F. A narrator moves from being preoccupied with the newness of Latin music to appreciating American pop culture.
  - G. Young musicians move from merely accepting the music of their heritage to deeply identifying with it.
  - H. The teenagers change from pursuing their noisy musical education to preferring the *charangas* and *plenas* of Puente.
  - J. The band members move from hoping to be band-leaders like Puente to wanting to be better rock musicians.
23. Puente is presented by the narrator as being:
- A. talented but distant.
  - B. energetic and accessible.
  - C. gracious but intimidating.
  - D. responsive and overconfident.
24. The fifth and last paragraphs (lines 54–90) most nearly indicate that in his relationship to the community, Puente is:
- F. overbearing though committed.
  - G. distracted yet concerned.
  - H. supportive and loyal.
  - J. famous and therefore isolated.
25. In the second paragraph (lines 5–19), the adults' attitude toward the teens' music-making can best be characterized as:
- A. delighted.
  - B. accepting.
  - C. confused.
  - D. impatient.
26. It can most reasonably be inferred that with his declaration "*Soy borinqueño!*" (line 85), Santiago intends to:
- F. join in the chant of the kids on the rooftops.
  - G. show admiration for the encore Puente's band had just performed.
  - H. capture Puente's attention by expressing a mutual connection.
  - J. introduce the members of his band in hopes of being discovered.
27. Which of the following best represents the narrator's band's initial opinions about Latin music?
- A. It was old-fashioned and the music of their parents.
  - B. Because it was so familiar, it formed the basis for their rock music.
  - C. It represented the music that they considered to be "happening now."
  - D. It was a huge part of their growing-up experience in New York and what they aspired to play.
28. When the narrator states that the band was "anxious about missing something special" (lines 35–36), he most nearly means that the band:
- F. recognized a fun opportunity to avoid practice for a day.
  - G. hated to miss any good block party.
  - H. was nervous they might miss an opportunity to play music.
  - J. was excited by the chance to see a legend perform.
29. As it is used in line 63, the phrase "slough the music off" most nearly means to:
- A. perform wholeheartedly.
  - B. ignore his audience.
  - C. not give a full effort.
  - D. shed his old music for newer styles.
30. As it is used in line 83, the word *passed* most nearly means:
- F. continued on.
  - G. succeeded.
  - H. gone by.
  - J. experienced.

## Passage IV

**NATURAL SCIENCE:** This passage is adapted from the book *Wind* by Jan DeBlieu (©1998 by Jan DeBlieu). *Convection currents* in the atmosphere, which are responsible for breezes, begin when air is heated over warm land masses or seas and then expands and rises. *Thermals* are columns of rising warm air.

No other class of animals lives so starkly at the mercy of wind as the insects. In its benign, convective form, wind plucks up bugs by the millions, the trillions, every day and scatters them widely. (This is not to say they are dispersed at random. Biologists have often seen insects choose a precise moment to set out—say, just before the onset of a light rainstorm with west-bearing winds—presumably so that they are most likely to arrive in protected, food-rich habitat.) Once aloft they depend on horizontal currents to ferry them onward. Often they drift all night. In the atmosphere's upper strata they encounter waves of turbulence and layers of different densities that sort and compress them into compact swarms. They may drift as a unit through honeycombs of thermals and land lightly in a rogue's paradise—a flower garden, a newly cultivated field of vegetables. Or they may be accosted by a freshening gale, tossed out to sea, and slammed rudely into the water.

Many insects are wingless, at least in their larval forms, and must depend entirely on wind for transit. Those that can fly have neither the mass nor the strength to fight headwinds. So they ride the breeze, perhaps passively, perhaps with some precise collective plan. In certain species, individuals bunch together like flocks of birds, turning as one organism. In studies conducted during the 1950s, aphids carried by west winds from the irrigated oasis of southern California into the arid basin of the Colorado desert showed an uncanny knack for finding potted alfalfa plants left out for them. Some investigators speculate that spiders and other balloon-riding creatures may control their altitude by trimming the lengths of silk that lift them. At present, however, scientists do not know whether insect wayfarers have anything but the crudest ability to navigate from one habitat to another.

Until the 1920s researchers were unaware that insects can survive well up into the troposphere (the lowest part of Earth's atmosphere). It had been known for a century that the smallest insects could be easily transported by wind. In 1827 and again in 1924 British Arctic explorers discovered live spruce aphids and syrphid flies on the Norwegian island of Spitsbergen. Apparently they had been carried by wind from Russia, 800 miles away. Monarch butterflies had been observed 500 miles from land over the South Pacific, and once a swarm of migratory locusts was seen over the North Atlantic, 1,500 miles from land. With the spread of tree-destroying European gypsy moth larvae through the eastern United States during the early 1920s, research into the dispersal of insects took on special urgency.

In 1926 Perry Glick, an entomologist in Louisiana, made a series of flights in which he sampled the fauna of the air with traps made of wire screen mounted on the wings of a small biplane. Few scientists had tried to examine life at such heights, and Glick's study is regarded as a pioneering work. At 200 feet he found a great number and diversity of insects. He caught by far the most when wind velocities were between five and eight miles an hour. Lesser winds seemed to discourage insect flight; greater winds made it nearly impossible.

Above 300 feet the insect population rapidly thinned. Nevertheless, Glick found a few spiders and flies as high as 5,000 feet. He never devised an accurate means of measuring the flow of convection currents in the atmosphere. But on days when the plane encountered turbulent air, he caught many more bugs at 1,000 feet, as if strong thermals had tossed them to unusual heights. Over five years Glick trapped 700 identifiable species. In the end he calculated that on any midsummer day the air above each square mile of Louisiana contained more than 14 million insects.

Many insects travel at night, presumably to avoid the upper-air turbulence caused by convection. Most individuals migrate no more than five miles over the course of their lives. Only a few species embark on lengthy seasonal movements, and then largely because of their proximity to favorable avenues of wind. Monarch butterflies, migrating from the eastern United States to their overwintering grounds in Mexico, follow routes that parallel the major flyways used by birds. In the North American interior and in northern China and Japan (all regions where winters tend to be particularly severe), certain butterfly species ride jets of warm air north with the coming of spring.

31. The main purpose of the passage is to:

- A. document insects' reliance on wind for transport.
- B. discuss the dangers wind can pose for insects.
- C. provide data on the seasonal migrations of wind-borne insects.
- D. describe the research techniques of scientists studying insects.

32. It can reasonably be inferred that the most important and intense research into insects and insect dispersal occurred in which of the following decades?

- F. 1820s
- G. 1870s
- H. 1920s
- J. 1950s

33. As presented in the passage, the statement in lines 71–73 is best characterized as:
- A. a fact based on a full count of insects in one square mile of air above Louisiana.
  - B. speculation based on nearly a year's study of the insect population in Louisiana.
  - C. an estimate based on extensive sampling at varying altitudes.
  - D. a hypothesis based on the work of Glick and other scientists who came after him.
34. The author uses the information in parentheses in lines 4–9 primarily to:
- F. undermine some scientists' claim that wind has a benign, convective form.
  - G. suggest that biologists are divided over whether insects can pick times to travel.
  - H. support her assertion that wind affects the lives of trillions of insects every day.
  - J. prevent readers from misinterpreting her claim that wind scatters insects widely.
35. Based on the passage, some scientists speculate that compared to many insects, spiders may be:
- A. better able to control their travel by wind.
  - B. less interested in eating alfalfa plants.
  - C. more inclined to bunch together.
  - D. less able to fight headwinds.
36. The main purpose of the third paragraph (lines 37–52) is to:
- F. suggest the need for research into highly destructive insect species transported by wind.
  - G. chronicle a century of insect-related discoveries made by Arctic explorers.
  - H. trace the typical geographical range of insects such as monarch butterflies and locusts.
  - J. offer several examples highlighting the power of wind to transport insects.
37. Suppose that a scientist were exactly repeating Glick's experiments as described in the passage. Under which of the following conditions would the scientist reasonably expect to find the most insects?
- A. At 210 feet with a 7 mph wind
  - B. At 230 feet with a 12 mph wind
  - C. At 240 feet with no measurable wind
  - D. At 310 feet with a 6 mph wind
38. Based on the passage, how should the claim that Glick "caught many more bugs at 1,000 feet" (lines 68–69) most likely be read?
- F. Glick found many more insects at 1,000 feet than he ever did at 200 feet.
  - G. Under turbulent conditions, Glick found more insects at 1,000 feet than he normally did.
  - H. Glick found many insects at 1,000 feet when his biplane was accidentally tossed to unusual heights.
  - J. Strong thermals at 1,000 feet enabled Glick to trap 700 identifiable insect species.
39. The passage identifies which of the following as a limitation to Glick's research?
- A. His use of a small biplane to gather insect samples
  - B. His failure to conduct research at night, the time when most insects travel
  - C. His inability to measure accurately the flow of atmospheric convection currents
  - D. His narrow focus on studying Louisiana
40. The author most nearly characterizes the type of seasonal migration made by monarch butterflies as:
- F. unusual among insects.
  - G. typical among butterflies.
  - H. common for North American insects.
  - J. uncommon for day-traveling butterflies such as monarchs.

END OF TEST 3

STOP! DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

DO NOT RETURN TO A PREVIOUS TEST.

# SCIENCE TEST

35 Minutes—40 Questions

**DIRECTIONS:** There are seven passages in this test. Each passage is followed by several questions. After reading a passage, choose the best answer to each question and fill in the corresponding oval on your answer document. You may refer to the passages as often as necessary.

You are NOT permitted to use a calculator on this test.

## Passage 1

Transient luminous events (TLEs) are brief flashes of light that appear above large thunderstorm clouds. A TLE is produced by a positive cloud-to-ground (+CG) lightning stroke. However, not every +CG lightning stroke is followed by a TLE. Figure 1 shows the typical shape, width, and altitudes of 3 types of TLEs—red sprites, blue jets, and elves. Table 1 shows the typical duration (in milliseconds, msec) and brightness (in kiloRayleighs, kR) of each type of TLE. Figure 2 shows the number of +CG lightning strokes of a given peak electrical current (in kiloamperes, kA) from 6 thunderstorms and the percent of those +CG lightning strokes that produced a TLE.

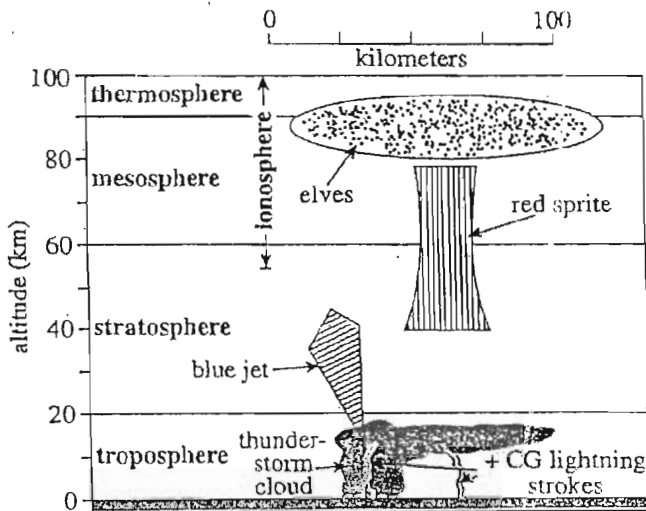


Figure 1

Type of TLE	Duration (msec)	Average brightness (kR)
Red sprite	10–100	10
Blue jet	100–300	800
Elves	< 1	1,000

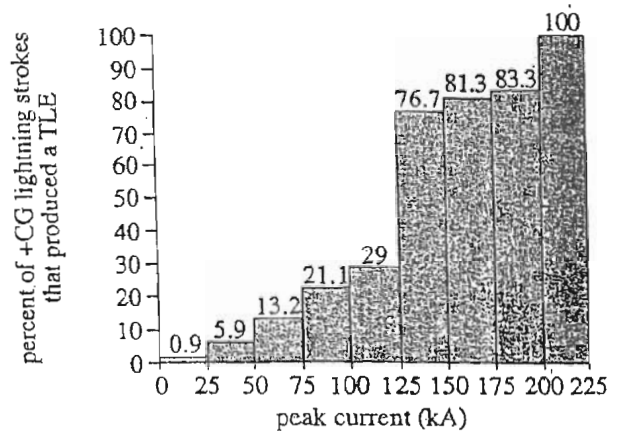
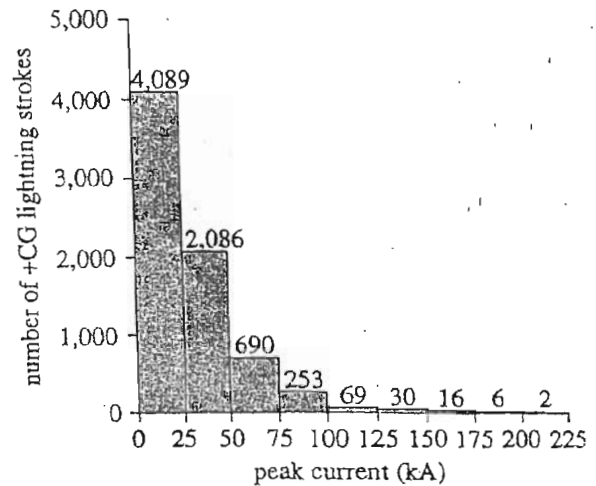


Figure 2

Figure 1 adapted from W. Lyons, R. J. Vavrek, and R. Holle, "Mysterious Flasher: Red Sprites—Blue Jets—Elves." ©2000 by the National Earth Science Teachers Association.

Figure 2 adapted from W. Lyons et al., "Characteristics of Thunderstorms and Lightning Flashes Which Produce Mesospheric Transient Luminous Events." ©1999 by the National Aeronautics and Space Administration.

1. Figure 1 defines the ionosphere as a region of the atmosphere that overlaps which of the following atmospheric layers?
  - I. Mesosphere
  - II. Stratosphere
  - III. Troposphere
  - A. II only
  - B. III only
  - C. I and II only
  - D. II and III only
2. A flash was observed above a large thunderstorm cloud. The flash had a duration of 100 msec and an altitude between 50 km and 80 km. Based on Figure 1 and Table 1, that flash was most likely which of the following?
  - F. A red sprite
  - G. A blue jet
  - H. Elves
  - J. A +CG lightning stroke
3. According to Figure 2, the percent of +CG lightning strokes that produced a TLE more than doubled between which of the following 2 peak current ranges?
  - A. Between 75–100 kA and 100–125 kA
  - B. Between 100–125 kA and 125–150 kA
  - C. Between 125–150 kA and 150–175 kA
  - D. Between 175–200 kA and 200–225 kA
4. According to Figure 2, the probability that a TLE will follow a +CG lightning stroke is highest for which of the following ranges of peak currents?
  - F. 25 kA to 50 kA
  - G. 75 kA to 100 kA
  - H. 125 kA to 150 kA
  - J. 175 kA to 200 kA
5. Based on Figure 2, TLEs were produced by approximately what fraction of +CG lightning strokes with peak currents between 75 kA and 100 kA ?
  - A.  $\frac{1}{2}$
  - B.  $\frac{1}{3}$
  - C.  $\frac{1}{4}$
  - D.  $\frac{1}{5}$



Passage II

Soils are classified by *texture* (nature of the soil based on the proportions of sand, silt, and clay particles) and *porosity* (percent of a soil's volume occupied by open space). Typical soil particle categories and their particle diameters are shown in Table 1. A soil with particles that have a small range of different diameters is described as *well sorted*, whereas a soil with particles that have a wide range of different diameters is described as *poorly sorted*.

Table 1	
Particle category	Particle diameter (mm)
Gravel	> 2.0
Very coarse sand	1.1–2.0
Coarse sand	0.6–1.0
Medium sand	0.26–0.5
Fine sand	0.14–0.25
Very fine sand	0.07–0.13
Silt	0.004–0.06
Clay	< 0.004

Study 1

A dry, 500 g sample of a soil (Soil 1) was washed through a screen with 0.06 mm holes to remove all of the silt and clay particles. The soil remaining on the screen was dried and weighed, then sifted through a series of screens, each successive screen having smaller holes than the one before, to separate the particles in different categories. The particles of each category were then weighed, and the procedure was repeated for samples of 4 other soils (Soils 2–5). The results are shown in Table 2.

Table 2					
Particle category	Weight (g) of particles				
	Soil 1	Soil 2	Soil 3	Soil 4	Soil 5
Gravel	0	0	0	0	36
Very coarse sand	0	132	0	0	54
Coarse sand	0	241	0	0	197
Medium sand	0	127	35	134	76
Fine sand	14	0	136	245	36
Very fine sand	11	0	79	96	33

Study 2

Another sample of each soil was dried by heating at 101°C for 24 hours, and was then weighed. The porosity and the *void ratio* (ratio of the volume of open space to the volume of solid material) of each soil sample were calculated (see Table 3).

Table 3		
Soil	Porosity (%)	Void ratio
1	45	0.82
2	34	0.52
3	43	0.75
4	42	0.72
5	10	0.11

6. It is known that soils with a higher porosity can hold more water when saturated than can soils with a lower porosity. Based on this information, which of the following soils in Study 2 would hold the most water when saturated?

F. Soil 1  
G. Soil 2  
H. Soil 4  
J. Soil 5

7. Based on the results of Study 2, another soil sample that had a porosity of 25% would have had a corresponding void ratio of:

A. less than 0.11.  
B. between 0.11 and 0.52.  
C. between 0.52 and 0.72.  
D. greater than 0.72.

8. In Study 2, if a soil sample had shown virtually no decrease in weight during the heating process, the scientist conducting the study would most likely have concluded which of the following?

F. The particles in the soil sample were all larger than 2 mm in diameter.  
G. The particles in the soil sample were all smaller than 0.06 mm in diameter.  
H. The heating process removed significant amounts of water.  
J. The heating process removed little or no water.

9. In Study 1, after removing the silt and clay particles, it was necessary to dry the soil samples before passing them through a series of screens to ensure that the particles:

A. larger than 2 mm in diameter would pass through all of the screens.  
B. smaller than 0.06 mm in diameter would stick to each other.  
C. would more easily stick to the screens and to each other.  
D. would not stick to the screens or to each other.

10. The sample of which soil in Study 1 would most likely be considered the most poorly sorted?

F. Soil 1  
G. Soil 2  
H. Soil 3  
J. Soil 5

11. Assume that *permeability* (a measure of how fast water moves through a soil) increases as the proportion, by weight, of a soil's particles that are coarse sand size or larger increases. Based on the results of Study 1, the sample of which of the following soils most likely has the highest permeability?

A. Soil 2  
B. Soil 3  
C. Soil 4  
D. Soil 5



## Passage III

Ice cream was made by stirring an ice cream mixture (M1) at a constant rate in the apparatus shown in Figure 1.

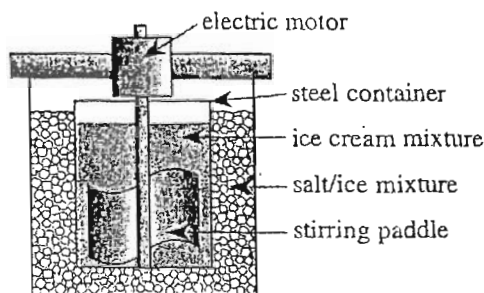


Figure 1

Figure 2 shows how the temperature of M1 and the temperature of the salt/ice mixture varied with mixing time.

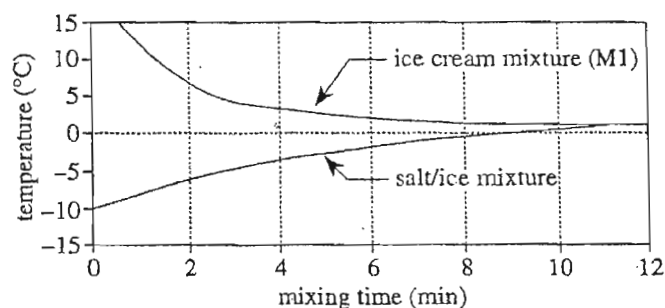


Figure 2

The *viscosity* (resistance to flow) of M1 was monitored by measuring how the current drawn by the motor turning the stirring paddle changed with mixing time. Two other ice cream mixtures (M2 and M3) were also monitored under conditions identical to those used during the mixing of M1 (see Figure 3).

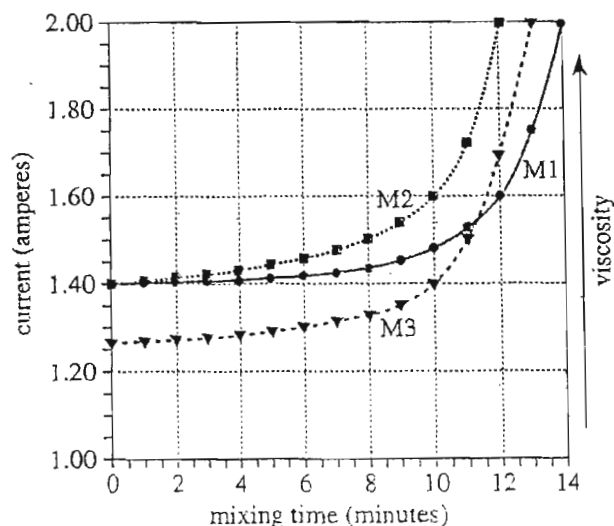


Figure 3

Figures adapted from D. Gibbon et al., "The Thermodynamics of Home-Made Ice Cream." ©1992 by Division of Chemical Education, Inc., American Chemical Society.

12. Based on Figures 2 and 3, for M1, as the temperature of the salt/ice mixture increased, the electrical current:
  - F. increased only.
  - G. decreased only.
  - H. increased, then decreased.
  - J. decreased, then increased.
13. A fourth ice cream mixture (M4) was monitored under the same conditions used to gather the data for Figure 3. The current at 0 min was 1.33 amperes. How did the initial viscosity of M4 compare with that of M1–M3? The initial viscosity of M4 was:
  - A. less than that of M1, M2, and M3.
  - B. less than that of M1 and M2, but greater than that of M3.
  - C. greater than that of M1 and M2, but less than that of M3.
  - D. greater than that of M1, M2, and M3.
14. According to Figure 3, the current drawn by the motor at a mixing time of 8 min for M2 was closest to which of the following?
  - F. 1.40 amperes
  - G. 1.45 amperes
  - H. 1.50 amperes
  - J. 1.55 amperes
15. Some ice cream makers automatically shut off when the current drawn by the electric motor reaches 2 amperes to indicate that the process is complete. Based on Figure 3, in this type of ice cream maker, which ice cream mixture, if any, would have the longest completion time?
  - A. M1
  - B. M2
  - C. M3
  - D. All 3 mixtures would have the same completion time.
16. Based on Figure 1, which of the following best explains the trends in the results shown in Figure 2? Overall, as mixing time increased, heat was conducted by the:
  - F. steel container from the ice cream mixture to the salt/ice mixture.
  - G. steel container from the salt/ice mixture to the ice cream mixture.
  - H. electric motor from the stirring paddle to the ice cream mixture.
  - J. electric motor from the ice cream mixture to the stirring paddle.

Passage IV

To grow on a *medium* (a nutrient system) that lacks arginine (an amino acid), the bacterium *E. coli* must synthesize arginine from the medium. Figure 1 shows a portion of the reaction pathway for the synthesis of arginine in *E. coli*. Each of these reactions is catalyzed by an enzyme (E1–E4). In the first reaction, acetylornithine is the precursor, ornithine is the product, and E1 is the enzyme. In the second reaction, ornithine is the precursor, citrulline is the product, and E2 is the enzyme.

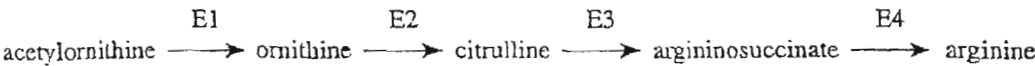


Figure 1

Figure 1 adapted from Ursula Goodenough, *Genetics*, 3rd ed. ©1984 by CBS College Publishing.

Table 1 lists the *E. coli* genes that normally code for the enzymes in Figure 1.

Table 1	
Gene	Enzyme
arg1	E1
arg2	E2
arg3	E3
arg4	E4

Sometimes a gene that normally codes for an enzyme is damaged in such a way that the enzyme is not produced. The pathway then shuts down at the reaction catalyzed by that enzyme. As a result, the precursor increases in concentration and the product is not produced. An undamaged gene is labeled with a plus sign (for example, arg1<sup>+</sup>). A damaged gene that cannot code for its enzyme is labeled with a minus sign (for example, arg1<sup>-</sup>).

Experiment

A biologist grew *wild-type* (naturally occurring) *E. coli* on *minimal medium* (MM), a medium that lacks arginine.

To induce genetic damage, the biologist exposed wild-type *E. coli* to radiation. She then identified those *E. coli* that could no longer synthesize arginine from MM. She tested these *E. coli* on various media, classifying them into 5 types depending on the media on which they grew (see Table 2).

In Table 2, an "x" indicates that a given type could grow on a given medium and thus could synthesize arginine from that medium.

Table 2					
Medium	Type:				
	1	2	3	4	5
MM					
MM + acetylornithine					x
MM + ornithine	x				x
MM + citrulline	x	x			x
MM + argininosuccinate	x	x	x		x

Table 2 adapted from Anthony J. F. Griffiths et al., *Genetic Analysis*, 5th ed. ©1993 by W. H. Freeman and Company.

17. One of the media listed in Table 2 acted as a control to provide evidence for the biologist's belief that each of the 5 types of *E. coli* listed in Table 2 had some genetic damage. This medium was:
- A. MM.
  - B. MM + acetylornithine.
  - C. MM + citrulline.
  - D. MM + argininosuccinate.
18. For each of the 5 types of *E. coli* listed in Table 2, if a given type was able to grow on MM + citrulline, it was also able to grow on:
- F. MM.
  - G. MM + acetylornithine.
  - H. MM + ornithine.
  - J. MM + argininosuccinate.
19. Which of the following statements best describes the relationships between argininosuccinate, citrulline, and ornithine as shown in the reaction pathway represented in Figure 1 ?
- A. Ornithine is a precursor of argininosuccinate, and argininosuccinate is a precursor of citrulline.
  - B. Ornithine is a precursor of citrulline, and citrulline is a precursor of argininosuccinate.
  - C. Argininosuccinate is a precursor of citrulline, and citrulline is a precursor of ornithine.
  - D. Argininosuccinate is a precursor of ornithine, and ornithine is a precursor of citrulline.
20. According to the information provided, *E. coli* that are  $\text{arg1}^+ \text{arg2}^- \text{arg3}^+ \text{arg4}^-$  CANNOT produce:
- F. E1 and E2.
  - G. E1 and E3.
  - H. E2 and E4.
  - J. E3 and E4.
21. Based on the information presented, the highest concentration of argininosuccinate would most likely be found in which of the following *E. coli* ?
- A. *E. coli* that cannot produce E1
  - B. *E. coli* that cannot produce E2
  - C. *E. coli* that cannot produce E3
  - D. *E. coli* that cannot produce E4
22. Type 1 *E. coli* were most likely NOT capable of converting:
- F. acetylornithine into ornithine.
  - G. ornithine into citrulline.
  - H. citrulline into argininosuccinate.
  - J. argininosuccinate into arginine.

# Passage V

In a study of human sleep cycles, subjects in 4 different age groups performed a brief mental task at a scheduled time. Immediately following the task, their oral temperatures were taken and then the time for each subject to fall asleep was measured.

The results were averaged for each group. Figure 1 shows how the average time to fall asleep for the 4 groups varied with the time of day that the task was performed. Figure 2 shows how the average oral temperature of 2 of the groups varied with the time of day that the task was performed.

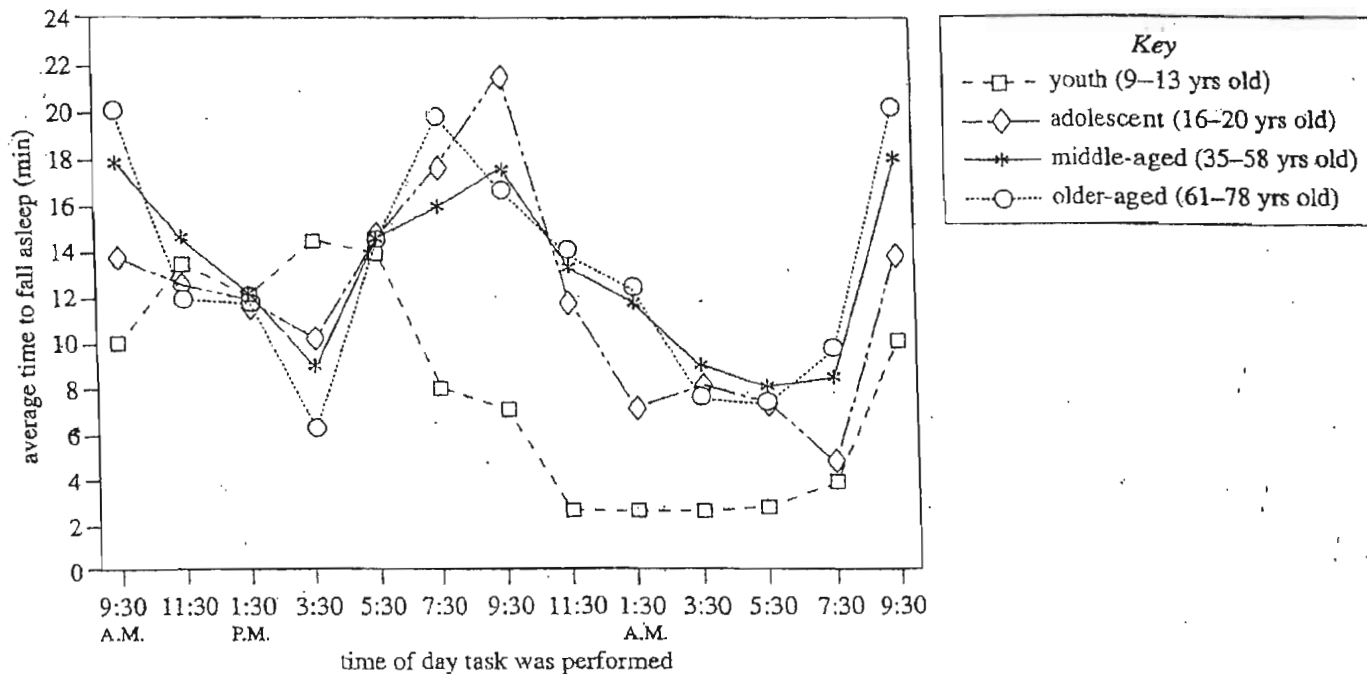


Figure 1

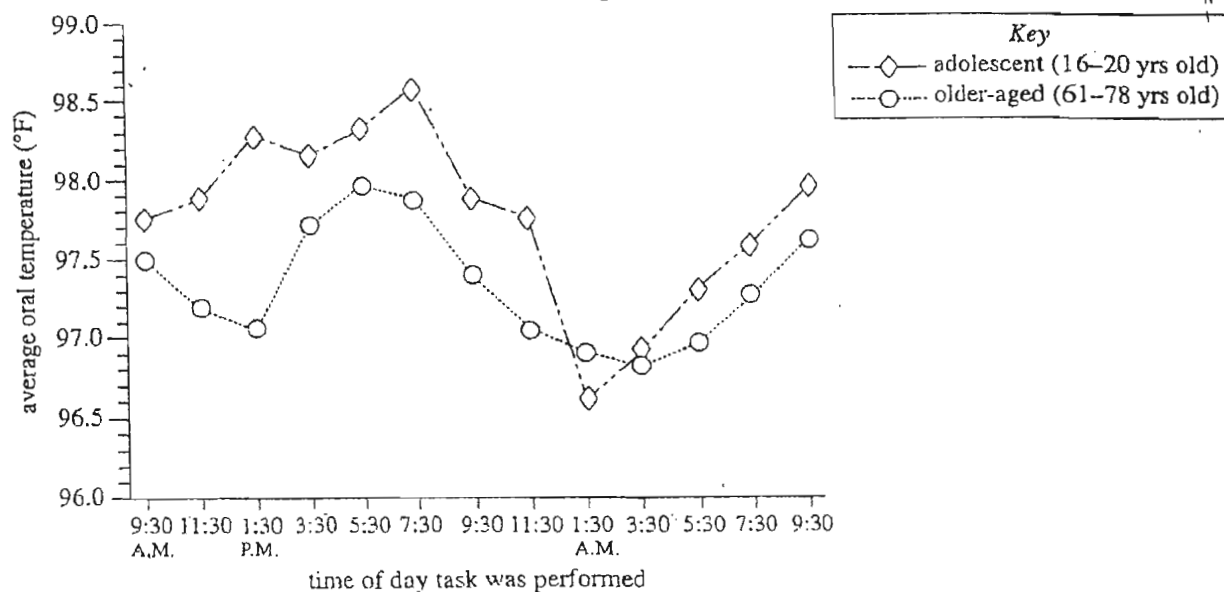


Figure 2

Figures 1 and 2 are adapted from G. S. Richardson et al., "Circadian Variation of Sleep Tendency in Elderly and Young Adult Subjects." ©1982 by Raven Press. Figure 1 is also adapted from M. A. Carskadon & W. Dement, "Daytime Sleepiness: Quantification of a Behavioral State." ©1987 by Pergamon Journals Ltd.

23. Based on Figure 1, at which of the following times was the average time to fall asleep most similar for the 4 age groups?
- A. 11:30 A.M.
  - B. 1:30 P.M.
  - C. 9:30 P.M.
  - D. 1:30 A.M.
24. A scientist claimed that the average oral temperature of the subjects in the older-aged group was always lower than that of the subjects in the adolescent group. The data for which of the following times shown in Figure 2 are *inconsistent* with this claim?
- F. 9:30 A.M.
  - G. 5:30 P.M.
  - H. 1:30 A.M.
  - J. 5:30 A.M.
25. According to Figure 1, for the adolescent group, the average time to fall asleep was greatest at which time of day?
- A. 1:30 P.M.
  - B. 5:30 P.M.
  - C. 9:30 P.M.
  - D. 1:30 A.M.
26. According to Figure 1, the average time to fall asleep at 3:30 A.M. was *least* for which age group?
- F. Youth
  - G. Adolescent
  - H. Middle-aged
  - J. Older-aged
27. Suppose that there were 4 subjects in each age group, and that in 1 age group the time to fall asleep at 3:30 P.M. for the 4 subjects was 14 min, 11 min, 16 min, and 17 min. Based on Figure 1, these 4 subjects were most likely:
- A. 9–13 yrs old.
  - B. 16–20 yrs old.
  - C. 35–58 yrs old.
  - D. 61–78 yrs old.

## Passage VI

*Polarity* is a measure of the separation of charge in a molecule. Molecules are attracted to other molecules based on polarity. In *liquid column chromatography*, a mixture is carried by the flow of solvent through a glass column containing an adsorbent material. If the components of the mixture have different polarities, they will interact differently with the solvent and adsorbent, causing the mixture to separate into its components. When the components *elute* (exit) from the column, they pass through a detector (see Figure 1).

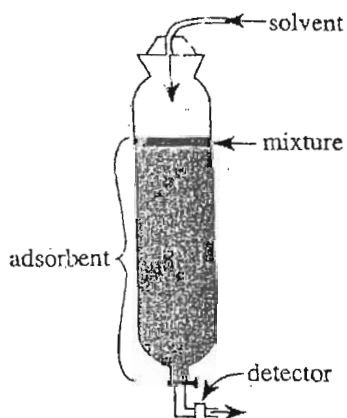


Figure 1

The following experiments were done to study how using solvents and adsorbents of differing polarities affects the separation of a mixture. A component's *elution time* is the time it takes (from the start of the flow) for 100% of the component to be eluted. Table 1 shows the relative polarities (0 being nonpolar and 10 being extremely polar) of the components of the mixture and of the solvents used.

Table 1	
Substance	Polarity
Component	
A	5.6
B	4.2
C	1.1
D	0.4
Solvent	
I	8.2
II	4.1
III	0.2

## Experiment 1

A glass column 50 cm tall and 7 cm in diameter was packed with 3 kg of a *normal-phase* (highly polar) adsorbent. A mixture containing 0.2 g each of Components A–D was dissolved and then added to the top layer of the adsorbent. Solvent I was then allowed to flow through the column at a constant rate. The % *eluted* of each component was measured for 50 min. The procedure was repeated using Solvents II and III (see Figure 2).

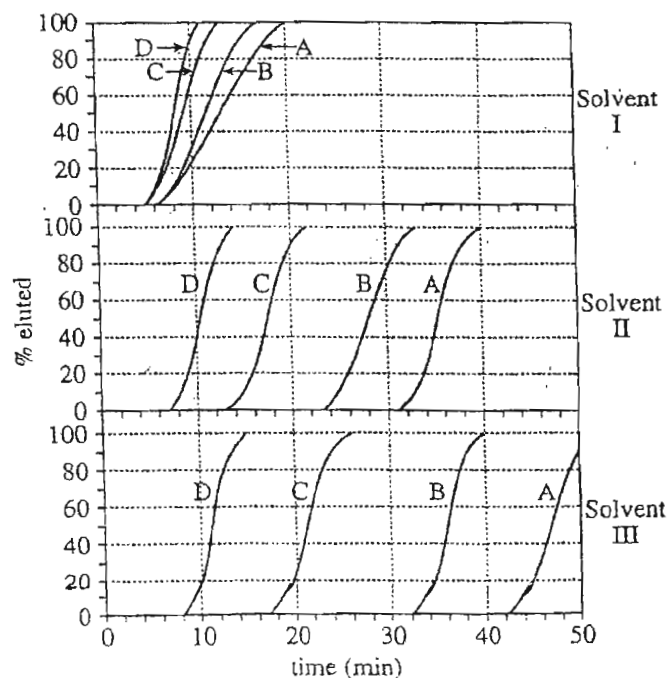


Figure 2

## Experiment 2

Experiment 1 was repeated, but a *reverse-phase* (non-polar) adsorbent was used in each trial (see Figure 3).

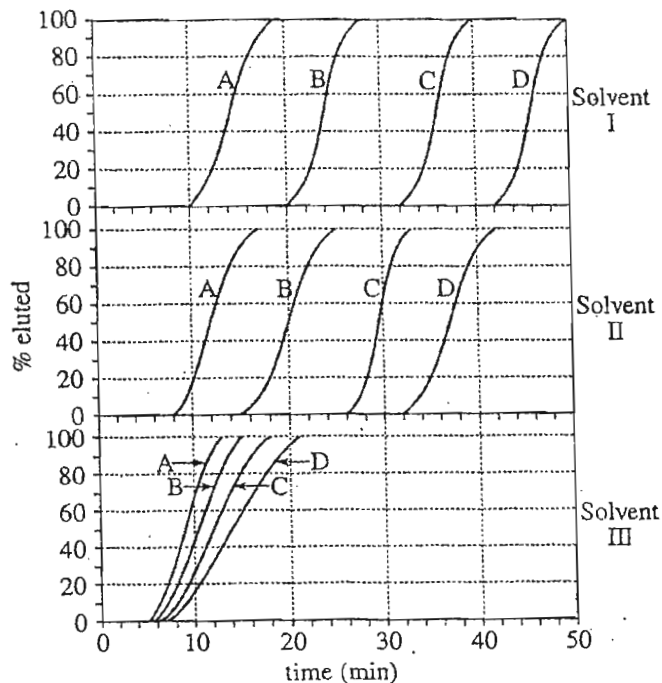


Figure 3

28. In Experiment 1, when Solvent III was used, exactly half the amount of Component B had eluted from the column at a time closest to:

F. 10 min.  
G. 15 min.  
H. 35 min.  
J. 40 min.

29. Component X has a polarity of 3.9. The results of Experiments 1 and 2 would have been most similar to those shown in Figures 2 and 3 if, in each trial, Component X had been substituted in the mixture for:

A. Component A.  
B. Component B.  
C. Component C.  
D. Component D.

30. Suppose that Experiment 1 will be repeated using Solvent I, but 0.2 g of Component Z (polarity = 0.7) will be part of the mixture. Which of the following best predicts the order of the elution times of the 5 components, from shortest to longest?

F. A, B, C, Z, D  
G. A, Z, B, C, D  
H. D, Z, C, B, A  
J. D, C, B, Z, A

31. The *resolution* of a chromatographic separation increases as the amount of time between the elutions of each of the components increases. Based on the results of Experiments 1 and 2, which of the following sets of conditions had the greatest resolution for the separation of the mixture?

	Normal-phase	Reverse-phase
A.	Solvent I	Solvent II
B.	Solvent I	Solvent III
C.	Solvent II	Solvent I
D.	Solvent III	Solvent I

32. In Experiment 1, for Solvent I, at the time when exactly 50% of the amount of Component B had eluted from the column, the percent of Component D that had eluted from the column was closest to:

F. 10%.  
G. 20%.  
H. 90%.  
J. 100%.

33. Suppose that Experiment 2 was repeated using a solvent with a polarity of 9.3. The elution time of Component D would most likely be:

A. less than 20 min.  
B. between 20 min and 40 min.  
C. between 40 min and 50 min.  
D. greater than 50 min.

Passage VII

Introduction

Students studying a unit on motion and conservation of energy were given the following information:

- *Kinetic energy* (energy that changes as an object's speed changes) and *gravitational potential energy* (energy that changes as an object's altitude changes) are forms of mechanical energy.
- An object's *total mechanical energy* is the sum of its kinetic energy and its gravitational potential energy.
- If an object's total mechanical energy is constant, its total mechanical energy is said to be *conserved*.
- Friction causes some of an object's total mechanical energy to be lost, in which case its total mechanical energy is *not* conserved.

The students' teacher then described the following experiment:

Suppose a student placed a block upon a surface and gave the block a single push. As the block moved along the surface, the student measured the block's speed twice in succession and found that the second measured speed was lower than the first.

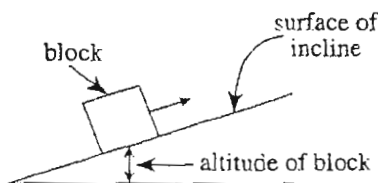
Given no other information, 3 students were asked to explain the results of the 2 measurements and to predict the block's motion after the 2 measurements.

Student 1

The block was moving on a rough, *horizontal* surface (a surface with no incline). There was a constant frictional force between the block and the surface. This force alone caused the block to slow down at a constant rate and would have caused the block eventually to stop. Once stopped, the block would have remained at rest.

Student 2

When the 2 measurements were made, the block was moving up a frictionless, inclined surface as shown in the figure, and was slowing down at a constant rate. No air was present.

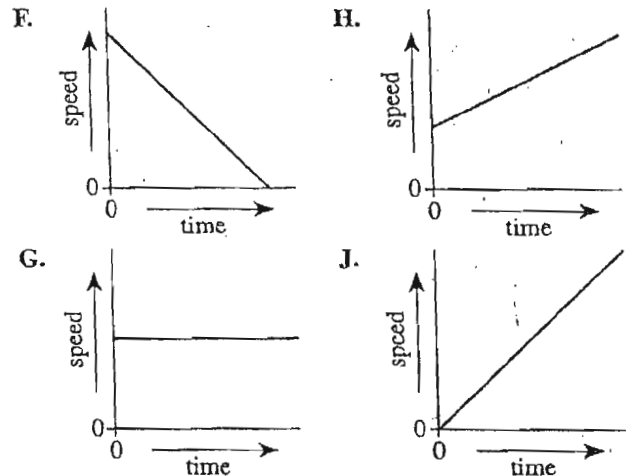


Eventually, the block would have stopped moving up the incline; then gravity alone would have caused the block to accelerate down the incline. At any specified altitude, the block's speed going down the incline would have been the same as its earlier speed going up the incline.

Student 3

The block moved on a frictionless, horizontal surface. As a result of its motion, the block encountered air resistance. Air resistance alone caused the block to slow down and lose mechanical energy. The rate at which the block slowed down depended upon the amount of air resistance it encountered. As the block's speed decreased, the amount of air resistance decreased.

34. Assume that the block was pushed and then released at time = 0. Student 1's description of the block's speed over time after its release is best illustrated by which of the following graphs?



35. The 3 explanations of the block's motion are similar to each other in that all 3 explanations:
- contradicted the law of conservation of total mechanical energy.
  - were based on 2 measurements.
  - were formulated using the assumption that no friction would exist between the block and the air.
  - were formulated using the assumption that there would be no friction between the block and the surface on which it moved.
36. Based on the explanations of the 3 students, what did the 3 students most likely assume about the block's speed between the times the 2 measurements were made?
- The speed increased only.
  - The speed decreased only.
  - The speed increased, then decreased.
  - The speed changed, but with no general trend.



37. The teacher posed another question: Suppose, in a second experiment, the student placed the block and the surface in an airless chamber. Then the student repeated the procedure from the first experiment, except that he measured the block's speed throughout the experiment. If the block's speed remained constant throughout this second experiment, the explanation(s) of which student(s) for the results of the first experiment would be best supported?
- A. Student 1 only
  - B. Student 3 only
  - C. Students 1 and 2 only
  - D. Students 1 and 3 only
38. Based on Student 2's explanation, the block's gravitational potential energy at the highest point on its path most likely equaled:
- F. the block's kinetic energy one-third of the way up the incline.
  - G. the block's gravitational potential energy two-thirds of the way up the incline.
  - H. the block's total mechanical energy.
  - J. zero.
39. According to Student 1, while the block was moving, did the block's speed affect the frictional force on the block?
- A. Yes; as the block's speed increased, the frictional force on the block decreased only.
  - B. Yes; as the block's speed increased, the frictional force on the block increased, then decreased.
  - C. No; as the block's speed decreased, the frictional force on the block decreased, then increased.
  - D. No; as the block's speed decreased, the frictional force on the block was unaffected.
40. Assuming that Student 1's explanation is correct, while the block moved, was the total mechanical energy of the block conserved?
- F. Yes, because the block's kinetic energy increased and its gravitational potential energy remained constant.
  - G. Yes, because both the block's kinetic energy and its gravitational potential energy increased.
  - H. No, because the block's kinetic energy decreased and its gravitational potential energy remained constant.
  - J. No, because both the block's kinetic energy and its gravitational potential energy decreased.

END OF TEST 4

STOP! DO NOT RETURN TO ANY OTHER TEST.

## Explanation of Procedures Used to Obtain Scale Scores from Raw Scores

On each of the four tests on which you marked any responses, the total number of correct responses yields a raw score. Use the table below to convert your raw scores to scale scores. For each test, locate and circle your raw score or the range of raw scores that includes it in the table below. Then, read across to either outside column of the table and circle the scale score that corresponds to that raw score. As you determine your scale scores, enter them in the blanks provided on the right. The highest possible scale score for each test is 36. The lowest possible scale score for any test on which you marked any responses is 1.

Next, compute the Composite score by averaging the four scale scores. To do this, add your four scale scores and divide the sum by 4. If the resulting number ends in a fraction, round it off to the nearest whole number. (Round down any fraction less than one-half; round up any fraction that is one-half or more.) Enter this number in the blank. This is your Composite score. The highest possible Composite score is 36. The lowest possible Composite score is 1.

**ACT Test 63F**

**Your Scale Score**

English \_\_\_\_\_

Mathematics \_\_\_\_\_

Reading \_\_\_\_\_

Science \_\_\_\_\_

**Sum of scores** \_\_\_\_\_

**Composite score (sum ÷ 4)** \_\_\_\_\_

NOTE: If you left a test completely blank and marked no items, do not list a scale score for that test. If any test was completely blank, do not calculate a Composite score.

Scale Score	Raw Scores				Scale Score
	Test 1 English	Test 2 Mathematics	Test 3 Reading	Test 4 Science	
36	75	60	40	40	36
35	73-74	59	39	38-39	35
34	72	58	38	--	34
33	71	57	37	37	33
32	70	56	36	36	32
31	69	54-55	35	--	31
30	68	53	34	35	30
29	66-67	51-52	33	34	29
28	65	49-50	31-32	33	28
27	63-64	47-48	30	32	27
26	61-62	44-46	29	31	26
25	59-60	41-43	28	29-30	25
24	57-58	38-40	26-27	27-28	24
23	55-56	36-37	25	25-26	23
22	52-54	34-35	24	23-24	22
21	49-51	32-33	22-23	22	21
20	46-48	30-31	21	20-21	20
19	44-45	28-29	19-20	18-19	19
18	41-43	25-27	18	16-17	18
17	39-40	22-24	17	14-15	17
16	36-38	18-21	15-16	13	16
15	33-35	15-17	14	12	15
14	31-32	12-14	12-13	11	14
13	29-30	10-11	11	10	13
12	27-28	08-09	09-10	09	12
11	25-26	06-07	08	08	11
10	23-24	05	07	07	10
9	22	04	06	06	9
8	18-21	--	05	05	8
7	15-17	03	04	04	7
6	12-14	02	--	03	6
5	09-11	--	03	02	5
4	07-08	--	02	--	4
3	05-06	01	--	01	3
2	03-04	--	01	--	2
1	00-02	00	00	00	1

JUNE 2006

ENGLISH

1. A
2. G
3. C
4. F
5. A
6. H
7. C
8. J
9. B
10. H
11. D
12. F
13. A
14. G
15. C
16. F
17. A
18. J
19. C
20. J
21. C
22. J
23. D
24. F
25. B
26. G
27. A
28. G
29. D
30. G
31. A
32. H
33. A
34. G
35. B
36. J
37. A
38. H
39. A
40. J
41. C
42. H
43. D

44. G
45. B
46. G
47. D
48. H
49. C
50. H
51. D
52. F
53. B
54. H
55. A
56. F
57. C
58. H
59. D
60. H
61. D
62. G
63. A
64. F
65. D
66. G
67. B
68. F
69. B
70. F
71. C
72. J
73. D
74. J
75. D

MATH

1. A
2. K
3. D
4. G
5. C
6. F
7. A
8. K
9. E
10. F
11. D
12. K
13. A
14. K
15. D
16. H
17. B
18. K
19. B
20. H
21. D
22. G
23. C
24. G
25. A
26. G
27. C
28. J
29. C
30. G
31. B
32. G
33. B
34. H
35. A
36. K
37. C
38. G
39. D
40. J
41. E
42. J
43. E

44. F
45. D
46. H
47. C
48. J
49. D
50. G
51. B
52. H
53. D
54. J
55. A
56. F
57. A
58. K
59. C
60. K

## ACT Resource Links

**ACT Online Practice Tests:** <https://www.crackab.com/act/>

✧ **ACT English Practice Tests:**

<https://www.crackab.com/act/english/>

✧ **ACT Math Practice Tests:**

<https://www.crackab.com/act/math/>

✧ **ACT Reading Practice Tests:**

<https://www.crackab.com/act/reading/>

✧ **ACT Science Practice Tests:**

<https://www.crackab.com/act/science/>

**ACT Grammar:** <https://www.crackab.com/act/grammar/>

**ACT Real Past Papers Download:**

<https://www.crackab.com/act-downloads/>

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**Digital SAT & New SAT Practice Tests:**

<https://www.cracksat.net>

**Real SAT Tests Download:**

<http://www.cracksat.net/sat-downloads/>

**AP Exams Practice Tests:**

<https://www.crackap.com>

<https://www.apstudy.net>

## READING

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

## SCIENCE

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

Start Reading.

→ HW ~~Passage 2~~

- Passage 2

- Passage 3

Science Physics w/