

Test 7801

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Diagnostic Test for the **ACT[®]**

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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 each 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 of the passage. You are to choose the best answer to the question.

You will also find questions about a section of the passage or 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 blacken 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

Crocheting Makes a Good Hobby

Crocheting is the art of making fabric by twisting yarn or thread with a hook. Although many associate it by ¹ older women,

crocheting can be a fun hobby for people of both genders and all ² ages. Once you start crocheting, you won't be able to put down the hook; you'll have a hobby for life. 3

1. A. NO CHANGE
B. to
C. by
D. with
2. F. NO CHANGE
G. for people of both genders, masculine and feminine,
H. for male and female people of both genders
J. for people of both genders, both males and females,
3. At this point, the author is considering adding the following true statement:

Irish nuns helped save lives with crocheting when they used it as a way to make a living during the Great Irish Potato Famine of 1846.

Should the writer add this sentence here?
A. Yes, because it is essential to know when crocheting became internationally prominent and how it did so.
B. Yes, because the reference to the Great Irish Potato Famine demonstrates that the author is conscious of historical events.
C. No, because the reference to the Great Irish Potato Famine is not relevant to the main topic of this essay.
D. No, because many people who left Ireland in 1846 brought crocheting with them to the United States and Australia.

Time-honored and easily taught⁴ to all, crocheting is an easy hobby to pick up. Instructional books are readily available, and

once you've learned a few basic stitches⁵. Picking up the more advanced ones is a snap. Once you learn how to crochet, you can

purchase store-bought books that detail crocheting patterns⁶ that tell you exactly how to make the projects that interest you. Even if you want to try several projects, the supplies required for

it's completion⁷ are minimal; all you need are a crochet hook, yarn, and a pair of scissors. You don't need to worry about making a big investment, either; fifteen dollars will buy you no

fewer than three starter kits!⁸

[1] As you grow more proficient, you can expand your supplies by purchasing hooks of different types⁹ to vary the size of your stitches. [2] Crochet hooks are available in all

sizes, ranging¹⁰ from very small to very large, with everything in between. [3] Some are so big that you need to use two strands of yarn. [4] Other hooks are very tiny, so small that you must use thread. [5] These hooks are suitable for making smaller, more delicate things such as lace doilies, tablecloths, and bedspreads. [6] These hooks make big stitches, so you can finish a project with them very quickly. [7] It is best to start with hooks that are medium in size; these are the easiest to manipulate and require only one strand of yarn. 11

4. F. NO CHANGE

- G. teaches
- H. taughted
- J. taught

5. A. NO CHANGE

- B. stitches; picking
- C. stitches, picking
- D. stitches since picking

6. F. NO CHANGE

- G. buy books and other pamphlets at craft and book stores detailing certain specific patterns
- H. buy pattern books
- J. acquire store-bought pattern books

7. A. NO CHANGE

- B. its
- C. its'
- D. their

8. F. NO CHANGE

- G. fewer then
- H. less than
- J. less then

9. A. NO CHANGE

- B. types;
- C. types:
- D. types,

10. F. NO CHANGE

- G. sizes, ranging
- H. sizes; ranging
- J. sizes ranging,

11. For the sake of the logic and coherence of this paragraph, Sentence 6 should be placed:

- A. where it is now.
- B. after Sentence 1.
- C. after Sentence 3.
- D. after Sentence 7.

Because it seems like there are a million hooks to keep track of, ¹²crocheting makes a good hobby because it requires only ¹²time and patience, not attention or tremendous investment. You can crochet while watching television, listening to music, or visiting with other people. It is fun and relaxing and allows you

to express your creative side in an easy way. ¹³Also, you have finished a project, you have a cherished keepsake. Whether

you have made an afghan to keep you warm ¹⁴on cold winter nights or a lace tablecloth to add a touch of elegance to your dining room, your creation is sure to be cherished for a long time to come.

12. Given that all the choices are true, which one provides the most effective transition from the preceding paragraph to this one?

F. NO CHANGE
G. Because it can take a long time to finish a project,
H. With such a simple and inexpensive set of materials,
J. No longer a field dominated primarily by older women,

13. A. NO CHANGE
B. Also, finally you
C. Also, despite the fact you
D. Also, once you

14. F. NO CHANGE
G. at
H. of
J. within

Question 15 asks about the preceding passage as a whole.

15. Suppose the writer's goal had been to write an essay that demonstrates the commercial potential of crocheting. Would this essay successfully accomplish that goal?
- A. Yes, because it gives examples of end products of crocheting and shows the different kinds of materials needed to produce a wide range of products.
B. Yes, because it discusses the supplies necessary to create crocheted products, and it shows the usefulness of many of them during the cold winter months.
C. No, because it does not mention the market value of crocheted products or how one might go about selling them.
D. No, because it describes other industries and hobbies that would be more commercially successful.

PASSAGE II

Seurat's Masterpiece

[1] How can I describe the wonder I felt the first time I saw my favorite painting, Georges Seurat's *A Sunday on La Grande Jatte*? [2] I had admired the work for years in art books, but I never thought I ¹⁶saw the actual painting, which was housed in Chicago, many miles from where I lived. [3] I finally got my

16. F. NO CHANGE
G. would see
H. had seen
J. was seeing

chance to when I met someone else who loved the painting as
¹⁷
 much as I did. [4] We both had three days off at the same time,
 so we decided to make a road trip to Chicago so we could see

the painting in all it's grandeur. [5] We packed our bags,
¹⁸

jumped in the car, and headed on our way toward Chicago. 20
¹⁹

[1] The first thing that struck me as we entered the room
 where the painting was displayed; was the size of the painting.
²¹
 [2] A common size for canvases is 24 by 36 inches. [3] It was
 enormous! [4] It covered a large part of an even larger wall. [5]
 The painting's size amazed me since it was painted with dots, a
 technique called pointillism. [6] To create a painting of such
 magnitude using this technique seemed an almost impossible
 task. [7] Seurat had done it, though, and had made it look easy!

²²

23

17. A. NO CHANGE
 B. at the moment
 C. just to
 D. DELETE the underlined portion.

18. F. NO CHANGE
 G. our
 H. its
 J. its'

19. A. NO CHANGE
 B. jumped in the car, and had headed
 C. jumped in the car, and head
 D. had jumped in the car, and headed

20. Upon reviewing this paragraph and noticing that some
 information has been left out, the writer composes the fol-
 lowing sentence, incorporating the information:

Her name was Lisa; she lived in my dorm, and a mutual
 friend had introduced us to each other, knowing how
 much both of us loved art.

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

- F. 2.
 G. 3.
 H. 4.
 J. 5.

21. A. NO CHANGE
 B. displayed:
 C. displayed,
 D. displayed

22. F. NO CHANGE
 G. task and difficult to complete.
 H. task, difficult to complete.
 J. task, overwhelming in its difficulty.

23. Which of the following sentences is LEAST relevant to
 the development of this paragraph and therefore could be
 deleted?
- A. Sentence 2
 B. Sentence 4
 C. Sentence 5
 D. Sentence 6

Even more impressive, however, was the beauty of the painting. Viewed from a distance, the colors looked muted, capturing the idyllic mood of a summer day in the park.

When I approached the painting, though, its colors exploded into myriad hues, illustrating the artist's skill in combining colors to create a mood. Even the parts of the painting that appeared white from a distance were vibrantly multicolored when viewed up close. ²⁴ 26 The effect was incredible;

he sat and stared at the painting in wonder for a good portion of ²⁵ the afternoon. 28

My friend and I saw many other sights, on our trip to Chicago, but the best part by far was being able to see our favorite work of art. The image is forever imprinted in my mind

24. Given that all of the choices are accurate, which provides the most effective and logical transition from the preceding paragraph to this one?
- F. NO CHANGE
G. One thing that struck me was
H. Many art critics have written about
J. The debate rages on over
25. Which of the following alternatives to the underlined portion would NOT be acceptable?
- A. As I approached the painting, though,
B. However, as I approached the painting,
C. I approached the painting, though,
D. However, when I approached the painting,
26. If the writer were to delete the phrase "from a distance" from the preceding sentence, the paragraph would primarily lose:
- F. an essential point explaining the author's love of the painting.
G. the first part of the contrast in this sentence, which the author uses to describe viewing the painting.
H. a further indication of the length of the road trip taken by the author and her friend.
J. nothing, because the information provided by this phrase is stated more clearly elsewhere in the paragraph.
27. A. NO CHANGE
B. one
C. they
D. we
28. At this point, the writer is considering adding the following true statement:
- The Art Institute of Chicago contains many other famous paintings, among them Edvard Munch's *The Scream* and Grant Wood's *American Gothic*.
- Should the writer make this addition here?
- F. Yes, because it gives additional details essential to understanding the collection at the museum.
G. Yes, because it demonstrates a contrast between the author's favorite painting and those in this sentence.
H. No, because it provides information that is not relevant at this point in the paragraph and essay.
J. No, because it is contradicted by other information presented in this essay.
29. A. NO CHANGE
B. sights, which
C. sights;
D. sights

at the museum gift shop, even when I'm not looking at the
souvenir print I bought.

30. The best placement for the underlined portion would be:

- F. where it is now.
- G. after the word *image*.
- H. after the word *looking*.
- J. after the word *bought* (ending the sentence with a period).

PASSAGE III

The Language of Cats

Many people believe that language is the domain of human beings. However, cats have developed an intricate language not for each other, but for the human beings who

have adopted them as pets.

When communicating with each other, cats' "talk" is a complex system of nonverbal signals. In particular, their tails,

rather than any kind of "speech," provide cats' chief means of expression. They also use physical contact to express their feelings. With other cats, cats will use their voices only to express pain.

Next, incredibly, all of that changes when a human walks into the room. Cats use a wide range of vocal expressions when they communicate with a person, from affectionate meows to

- 31. A. NO CHANGE
B. developed, an intricate language
C. developed an intricate language,
D. developed; an intricate language
- 32. Which choice would most clearly and effectively express the ownership relationship between humans and cats?
F. NO CHANGE
G. like to have cats around.
H. often have dogs as well.
J. are naturally inclined to like cats.
- 33. A. NO CHANGE
B. a complicated system of nonverbal signals is used by cats to "talk."
C. cats "talk" with a complex system of nonverbal signals.
D. "talking" is done by them with a system of complex non-verbal signals.
- 34. F. NO CHANGE
G. having provided
H. has provided
J. were provided by
- 35. If the preceding sentence were deleted, the essay would primarily lose:
A. a redundant point made elsewhere in the essay.
B. another description of the ways in which cats communicate nonverbally.
C. an exception to the general trend described in this paragraph.
D. a brief summary of the information contained in the essay up to this point.
- 36. F. NO CHANGE
G. (Do NOT begin new paragraph) Incredibly,
H. (Begin new paragraph) Next incredibly,
J. (Begin new paragraph) Incredibly,

menacing hisses. Since cats verbal expressions are not used to

37

communicate with other cats, it is logical and reasonable
to conclude that cats developed this “language” expressly to
communicate with their human owners.

38

This fact is demonstrated more clear since observing
households that have only one cat. An only cat is usually very
vocal, since the only creature around with whom the cat can
communicate is its owner. Cats with other feline companions,
though, are much quieter. If they want to have a conversation,
they need only go to their fellow cats and communicate in their
natural way. 40

39

Since cats learned to meow for the sole purpose of
communicating with human beings, owners should take the time
to learn what their different meows mean. If an owner
knows, to name just a few examples, which meow means the cat
is hungry, which means the cat wants to be petted, and which
means the cat wants to have a little “conversation,” the bond

41

between cat and owner will grow deeper. 42 Certainly, after a
time, owners will see that communicating with their pets, not
just cats, is every bit as important to forging good relationships

42

as to communicate with other humans. Once, as an owner,
you know that the cat is not just

43

37. A. NO CHANGE
B. cat’s verbal expressions
C. cats’ verbal expressions
D. cats verbal expressions,
38. F. NO CHANGE
G. logical and well-reasoned
H. logical to a startling degree
J. logical
39. A. NO CHANGE
B. clear when
C. clearly since
D. clearly when
40. At this point, the writer is considering adding the following true statement:

On the other hand, the natural way for most birds to communicate is vocally, by way of the “bird song.”

Should the writer add this sentence here?
F. Yes, because it shows that cats are truly unique in communicating nonverbally.
G. Yes, because it adds a relevant and enlightening detail about another animal.
H. No, because it basically repeats information given earlier in the essay.
J. No, because it does not contribute to the development of this paragraph and the essay as a whole.
41. A. NO CHANGE
B. knows, to,
C. knows to,
D. knows to
42. If the writer wanted to emphasize that cats communicate vocally with their owners to express a large number of different emotions in addition to those listed in the previous sentence, which of the following true statements should be added at this point?
F. Many animals communicate hunger similarly to cats.
G. Cats will tell their owners when they feel pain, sadness, irritation, or love.
H. Cats communicate these emotions differently to other cats.
J. Humans have the easiest time communicating with other mammals.
43. A. NO CHANGE
B. as being communicative
C. as communicating
D. through communicating

making senseless noises without any rhyme or reason but is
 making an attempt to communicate, you can make an effort to
 communicate back. After all, your cat isn't meowing just for the
 sake of making noise; however, cats are less communicative than
 many other animals.

44. F. NO CHANGE
 G. making senseless noises
 H. senselessly making noises with no thought involved
 J. making senseless noises, having no idea what they mean,
45. Which choice would best summarize the main point the essay makes about cats' communication with their human owners?
 A. NO CHANGE
 B. rather, there's a good chance your cat is trying to tell you something.
 C. instead, your cat is probably trying to communicate with other cats by meowing.
 D. on the other hand, it is better to have more than one cat so they can undergo a natural development.

PASSAGE IV

Visiting Mackinac Island

Visiting Mackinac (pronounced "Mackinaw") Island is like
 taking a step back to the past in time. Victorian

houses' and a fort dating back to the War of 1812 surround the
 historic downtown, where horses and buggies still pull
 passengers down the road.

The only way to get to Mackinac Island is by boat or private
 plane, and you may not bring your car. Automobiles are

outlawed on the little, isolated, Michigan, island, so visitors can

see the sights only by horse, carriage, or by riding a bicycle, or
 on foot. Luckily, the island is small enough that cars are not

necessary, Mackinac measures only a mile and a half in
 diameter.

46. F. NO CHANGE
 G. moving in a past-related direction
 H. going back to the past, not the future,
 J. stepping back
47. A. NO CHANGE
 B. house's
 C. houses
 D. houses,
48. F. NO CHANGE
 G. your sweet self over to
 H. yourself on down to
 J. over to
49. A. NO CHANGE
 B. isolated Michigan island
 C. isolated Michigan island,
 D. isolated, Michigan, island
50. F. NO CHANGE
 G. by bicycle,
 H. riding on a bicycle,
 J. bicycle,
51. A. NO CHANGE
 B. necessary, furthermore, Mackinac
 C. necessary. Mackinac
 D. necessary Mackinac

There are many things to see while visiting Mackinac Island. The majestic Grand Hotel is a popular tourist spot, as are the governor's mansion and Arch Rock, a towering limestone arch formed naturally by water erosion. ⁵² Fort Mackinac, where they still set off cannons every hour, is also a popular place to visit. Visible from parts of the island are Mackinac Bridge—the longest suspension bridge ever built—and a picturesque old lighthouse.

Shopping is also a favorite pastime on Mackinac Island. The island's biggest industry is tourism, ⁵³ For the island's many

tourists, the most popular item of sale on Mackinac Island is ⁵⁴

fudge. The downtown streets are lined with fudge shops, where ⁵⁵ tourists can watch fudge of all different flavors being made before lining up to buy some for themselves. These fudge shops

are so numerous and abundant that the local residents have even ⁵⁶

developed a special nickname for these tourists: I call the ⁵⁷ tourists "fudgies."

Apart from sightseeing and shopping, Mackinac Island is a great place to just sit back and relax. In the summer, a gentle lake breeze floats through the air, when it creates a beautiful, ⁵⁸ temperate climate. It is peaceful to sit in the city park and watch the ferries and private boats float into the harbor. The privacy of

52. If the writer were to delete the phrase "formed naturally by water erosion" (placing a period after the word *arch*), this sentence would primarily lose:
- F. a detail describing the unique formation of the Arch Rock.
 - G. factual information concerning the geological formations of the tourist attractions on Mackinac Island.
 - H. a contrast to the governor's mansion, which was constructed by human hands.
 - J. nothing; this information is detailed elsewhere in this paragraph.
53. 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 topic discussed in the sentence that follows?
- A. so there are many souvenir stores, T-shirt shops, and candy and ice cream parlors.
 - B. so Mackinac Island has not been negatively affected by outsourcing.
 - C. which is a big change from the island's eighteenth-century use in the fur trade.
 - D. but it's not a tourist attraction like many others with theme parks and chain restaurants.
54. F. NO CHANGE
G. for selling
H. for sale
J. of selling
55. Which of the following alternatives to the underlined portion would NOT be acceptable?
- A. which
 - B. so
 - C. and
 - D. in which
56. F. NO CHANGE
G. abundantly numerous
H. numerous
J. of an abundance truly numerous
57. A. NO CHANGE
B. one calls
C. it calls
D. they call
58. F. NO CHANGE
G. creating
H. once it creates
J. as if it had created

the island's environs certainly don't give it the hustle-bustle
⁵⁹
 quality of a city, but the relaxing atmosphere makes Mackinac
 Island the perfect place to visit to get away from the hectic pace
 of everyday life.

59. A. NO CHANGE
 B. isn't giving
 C. hasn't given
 D. doesn't give

Question 60 asks about the preceding passage as a whole.

60. Suppose the writer had intended to write an essay on the difficulty the residents of Mackinac Island have had prohibiting automobile traffic from the historic island. Would this essay have successfully fulfilled that goal?
- F. Yes, because the automobile has become such an essential part of American tourist travel that the residents are clearly threatened.
- G. Yes, because this essay discusses the fact that automobiles are outlawed and goes on to detail many of the reasons this was possible.
- H. No, because the essay focuses instead on other aspects of Mackinac Island, mentioning automobiles in only one part of the passage.
- J. No, because this essay describes the ways the residents of Mackinac Island have sought to bring automobiles back to the island, not to outlaw them.

PASSAGE V

Fun with Karaoke

[1]

[1] Karaoke is one of the most popular forms of entertainment in the world. [2] What defies understanding, though, is why so many ordinary people insist on getting up on stage in public, humiliating themselves in front of both their friends; and peers. [3] Whether practiced at home, in a ⁶¹ restaurant, or at a party, karaoke is a form of entertainment

that provides people with a great time and a positive feeling. [4] ⁶² It is understandable that people would enjoy singing in the privacy of their homes. [5] There are many different ways to respond to this question. ⁶³

61. A. NO CHANGE
 B. friends and peers.
 C. friends, and peers.
 D. friends and, peers.
62. Which of the following alternatives to the underlined portion would NOT be acceptable?
- F. that has provided
 G. , providing
 H. , that is, providing
 J. that having provided
63. For the sake of logic and coherence, Sentence 2 should be placed:
- A. where it is now.
 B. after Sentence 3.
 C. after Sentence 4.
 D. after Sentence 5.

[2]

Looking more closely, and you'll see a main reason for
karaoke's success is its glitz and glamour. Karaoke provides
people with a moment when they are more than just everyday
folks—they are stars. Even though their performances may be
heard only in dimly lit bars or busy restaurants, but karaoke
singers are still performing as if in a true concert with such

concert-hall staples, as microphones, lights, and applause. Even
though the singers' voices are not spectacular, the audience

has known that it's all for fun and responds anyway. And in the

end, everyone would like to be a rock star. Karaoke is as close as
many people will get to fame and stardom, but this is not the
only reason for its enduring popularity.

[3]

There is another, more obvious reason why karaoke is so
popular and singing in public is such fun. The average person
allows his or her singing to be heard only in the shower or in the

car as the radio plays. Karaoke, by contrast, allows the average
person the opportunity to share that ordinarily solitary

experience with other people. In lieu of how good or bad
their voices are, people can experience the sheer joy of music

shared with others, whose singing is mostly a private affair as
well, through karaoke.

64. F. NO CHANGE
G. Having looked
H. To look
J. Look

65. A. NO CHANGE
B. restaurants which
C. restaurants,
D. restaurants but

66. F. NO CHANGE
G. staples:
H. staples
J. staples;

67. A. NO CHANGE
B. is knowing
C. knew
D. knows

68. Given that all 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. This is why AudioSynTrac and Numark Electronics were so successful in debuting the first singalong tapes and equipment back in the 1970s.
H. Japan's lasting influence on karaoke is obvious all the way down to its name—the Japanese word karaoke translates roughly to “empty orchestra.”
J. Singing in front of people is more fun for many people than singing in the shower or in the car.

69. A. NO CHANGE
B. furthermore,
C. moreover,
D. as a result,

70. F. NO CHANGE
G. Regardless of
H. However
J. Because of

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



[4]

The effect karaoke has on people may also provide an explanation for its popularity: it helps bring people who are ordinarily shy out of their shells. ⁷² Karaoke helps them overcome stage fright, build their self-confidence, and conquer

their fears. The singers may feel nervous or silly if they first take the stage, but when the audience breaks out into ⁷³ applause, the singers are sure to feel rewarded.

[5]

Whatever the reason, karaoke continues to grow in popularity. Last year, karaoke made no less than ⁷⁴ \$7 billion in profit in Japan. Many dismiss it as a fad, but as long as karaoke is fun and leaves people feeling good, it will not disappear.

72. If the writer were to delete the clause “who are ordinarily shy” from the preceding sentence, the essay would primarily lose:

- F. a detail that explains why karaoke is so popular in the international community.
- G. a detail meant to indicate that karaoke is popular among those not normally inclined to sing in public.
- H. information that emphasizes the possible psychological benefits of karaoke for the chronically shy.
- J. an indication that karaoke may be used at some future time to help singers overcome stage fright.

73. A. NO CHANGE

- B. when
- C. unless
- D. where

74. F. NO CHANGE

- G. lesser than
- H. fewer then
- J. few than

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:

While different regions of the United States prefer different artists, the most popular karaoke requests are invariably for country artists, varying from the modern Carrie Underwood to the classic Johnny Cash.

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

- A. placed at the end of Paragraph 3.
- B. placed at the end of Paragraph 4.
- C. placed at the end of Paragraph 5.
- 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 darken the corresponding oval on your answer sheet.

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.

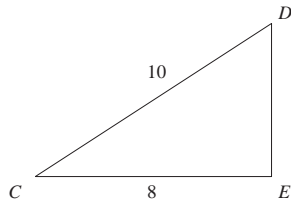
Note: Unless otherwise stated, all of the following should be assumed:

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.

1. Point X is located at -15 on the real number line. If point Y is located at -11 , what is the midpoint of line segment XY ?

- A. -13
- B. -4
- C. -2
- D. 2
- E. 13

2. Given triangle CDE (shown below) with a right angle at E , what is the length of leg DE ?



- F. $\sqrt{2}$
- G. 2
- H. 6
- J. $\sqrt{164}$
- K. 16

3. Lucy is studying her ant farm. She needs to approximate the number of ants in the population, and she realizes that the number of ants, N , is close to 50 more than double the volume of the ant farm, V . Which of the formulas below expresses that approximation?

- A. $N \approx \frac{1}{2}V + 50$
- B. $N \approx \frac{1}{2}(V + 50)$
- C. $N \approx 2V + 50$
- D. $N \approx 2(V + 50)$
- E. $N \approx V^2 + 50$

DO YOUR FIGURING HERE.



DO YOUR FIGURING HERE.

4. Lisa has 5 fiction books and 7 nonfiction books on a table by her front door. As she rushes out the door one day, she takes a book at random. What is the probability that the book she takes is fiction?

F. $\frac{1}{5}$

G. $\frac{5}{7}$

H. $\frac{1}{12}$

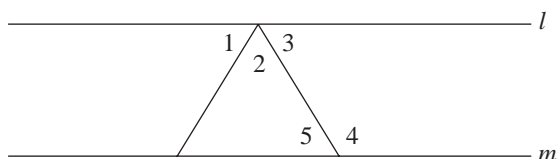
J. $\frac{5}{12}$

K. $\frac{7}{12}$

5. In the spring semester of her math class, Katie's test scores were 108, 81, 79, 99, 85, and 82. What was her average test score in the spring semester?

- A. 534
B. 108
C. 89
D. 84
E. 80

6. Given parallel lines l and m , which of the following choices lists a pair of angles that must be congruent?



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

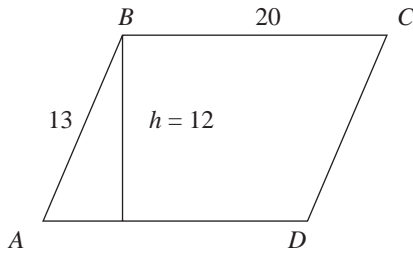
7. Gregor works as a political intern and receives a monthly paycheck. He spends 20% of his paycheck on rent and deposits the remainder into a savings account. If his deposit is \$3,200, how much does he receive as his monthly pay?

- A. \$ 4,000
B. \$ 5,760
C. \$ 7,200
D. \$ 8,000
E. \$17,000



8. Given parallelogram $ABCD$ below and parallelogram $EFGH$ (not shown) are similar, which of the following statements must be true about the two shapes?

DO YOUR FIGURING HERE.



- F. Their areas are equal.
 G. Their perimeters are equal.
 H. Side AB is congruent to side EF .
 J. Diagonal AC is congruent to diagonal EG .
 K. Their corresponding angles are congruent.
9. A size 8 dress that usually sells for \$60 is on sale for 30% off. Victoria has a store credit card that entitles her to an additional 10% off the reduced price of any item in the store. Excluding sales tax, what is the price Victoria pays for the dress?
- A. \$22.20
 B. \$24.75
 C. \$34.00
 D. \$36.00
 E. \$37.80
10. Erin and Amy are playing poker. At a certain point in the game, Erin has 3 more chips than Amy. On the next hand, Erin wins 4 chips from Amy. Now how many more chips does Erin have than Amy?
- F. -1
 G. 1
 H. 7
 J. 11
 K. 14
11. If $y = 4$, what does $|1 - y| = ?$
- A. -5
 B. -3
 C. 3
 D. 4
 E. 5
12. $(3a + 2b)(a - b^2)$ is equivalent to:
- F. $4a + b^2$
 G. $3a^2 - 2b^3$
 H. $3a^2 + 2ab + 2b^3$
 J. $3a^2 - 3ab^2 + a^2b^2$
 K. $3a^2 - 3ab^2 + 2ab - 2b^3$



13. For all real values of y , $3 - 2(4 - y) = ?$

DO YOUR FIGURING HERE.

- A. $-2y - 9$
- B. $-2y + 8$
- C. $-2y - 1$
- D. $2y - 5$
- E. $2y + 11$

14. What does $(y^3)^8 = ?$

- F. y^{11}
- G. y^{24}
- H. $8y^3$
- J. $8y^{11}$
- K. $24y$

15. If the first day of the year is a Monday, what is the 260th day?

- A. Monday
- B. Tuesday
- C. Wednesday
- D. Thursday
- E. Friday

16. If a square has an area of 64 square units, what is the area of the largest circle that can be inscribed inside the square?

- F. 4π
- G. 8π
- H. 16π
- J. 64
- K. 64π

17. What is the product of the solutions of the expression $x^2 - 5x - 14 = 0$?

- A. -14
- B. -2
- C. 0
- D. 5
- E. 7

18. Factoring the polynomial $x^{12} - 9$ reveals a number of factors for the expression. Which of these is NOT one of the possible factors?

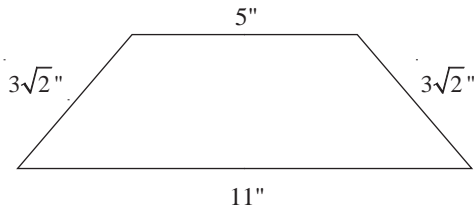
- F. $x^6 + 3$
- G. $x^6 - 3$
- H. $x^3 + \sqrt{3}$
- J. $x^3 - \sqrt{3}$
- K. $x - \sqrt{3}$



19. What is the value of $\frac{2x+4}{3x}$ when $x = \frac{1}{6}$?

DO YOUR FIGURING HERE.

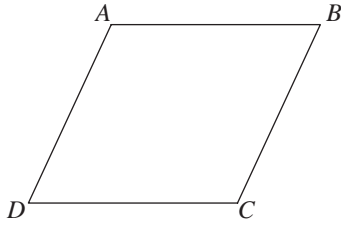
- A. $4\frac{1}{3}$
 B. 2
 C. $\frac{26}{3}$
 D. 12
 E. 24
20. If you drive 60 miles at 90 miles an hour, how many minutes will the trip take you?
- F. 15
 G. 30
 H. 40
 J. 60
 K. 90
21. The area of a trapezoid is found by multiplying the height by the average of the bases: $A = \frac{1}{2}h(b_1 + b_2)$. Given the side measurements below, what is the area, in square inches, of the trapezoid?



- A. $15\sqrt{2}$
 B. 22
 C. 24
 D. $24\sqrt{2}$
 E. $30\sqrt{2}$
22. If $x = -\frac{2}{3}$ and $x = \frac{1}{4}$ are the roots of the quadratic equation $ax^2 + bx + c = 0$, then which of the following could represent the two factors of $ax^2 + bx + c$?
- F. $(3x + 2)$ and $(4x - 1)$
 G. $(3x + 1)$ and $(4x - 2)$
 H. $(3x - 1)$ and $(4x + 2)$
 J. $(3x - 2)$ and $(4x + 1)$
 K. $(3x - 2)$ and $(4x - 1)$



23. In the rhombus below, diagonal $AC = 6$ and diagonal $BD = 8$.
What is the length of each of the four sides?



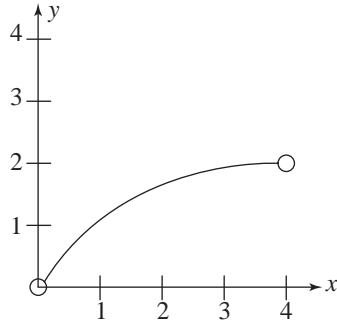
DO YOUR FIGURING HERE.

- A. $\sqrt{7}$
 B. $\sqrt{14}$
 C. 5
 D. 7
 E. 10
24. A rectangular rug has an area of 80 square feet, and its width is exactly 2 feet shorter than its length. What is the length, in feet, of the rug?
- F. 8
 G. 10
 H. 16
 J. 18
 K. 36
25. In the Cartesian plane, a line runs through points $(1, -5)$ and $(5, 10)$. Which of the following represents the slope of that line?
- A. $\frac{4}{15}$
 B. $\frac{4}{5}$
 C. 1
 D. $\frac{5}{4}$
 E. $\frac{15}{4}$
26. The equation of a circle in the standard (x, y) coordinate plane is given by the equation $(x + 5)^2 + (y - 5)^2 = 5$. What is the center of the circle?
- F. $(-\sqrt{5}, \sqrt{5})$
 G. $(-5, 5)$
 H. $(\sqrt{5}, -\sqrt{5})$
 J. $(5, -5)$
 K. $(5, 5)$

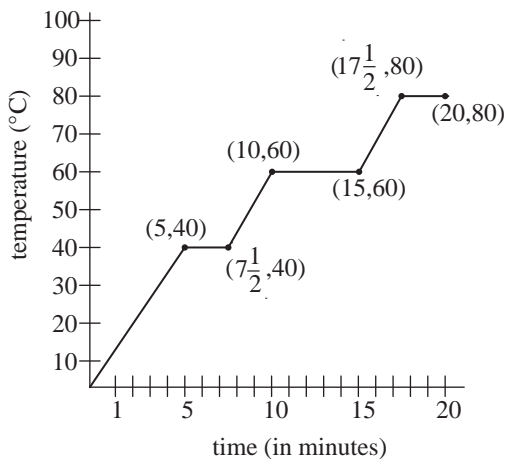


27. The graph below shows a function, $f(x)$, in the coordinate plane. Which of the following choices best describes the *domain* of this function?

(Note: The domain is defined as the set of all values of x for which a function is defined.)



- A. $\{0, 1, 2, 3, 4\}$
 B. $\{0, 1, 2\}$
 C. $\{x: 0 < x < 2\}$
 D. $\{x: 0 < x < 4\}$
 E. All real values of x
28. Amber decides to graph her office and the nearest coffee shop in the standard (x,y) plane. If her office is at point $(-1,-5)$ and the coffee shop is at point $(3,3)$, what are the coordinates of the point exactly halfway between those of her office and the shop? (You may assume Amber is able to walk a straight line between.)
- F. $(1, -1)$
 G. $(1, 4)$
 H. $(2, -1)$
 J. $(2, 4)$
 K. $(2, 0)$
29. For a chemistry class, Sanjay is doing an experiment that involves periodically heating a container of liquid. The graph below shows the temperature of the liquid at different times during the experiment. What is the average rate of change of temperature (in degrees Celsius per minute) during the times in which Sanjay is applying heat to this container?



- A. 4
 B. 5
 C. 8
 D. 10
 E. 20

DO YOUR FIGURING HERE.



30. If $\frac{a^x}{a^y} = a^5$, for $a \neq 0$, which of the following statements must

be true?

F. $x \neq 0$ and $y \neq 0$

G. $x + y = 5$

H. $x - y = 5$

J. $xy = 5$

K. $\frac{x}{y} = 5$

DO YOUR FIGURING HERE.

31. What is the slope of the line given by the equation $8 = 3y - 5x$?

A. -5

B. $-\frac{5}{3}$

C. $-\frac{3}{5}$

D. $\frac{3}{5}$

E. $\frac{5}{3}$

32. When adding fractions, a useful first step is to find the least common denominator (LCD) of the fractions. What is the LCD for these fractions?

$$\frac{2}{3^2 \cdot 5}, \frac{13}{5^2 \cdot 7 \cdot 11}, \frac{2}{3 \cdot 11^3}$$

F. $3 \cdot 5 \cdot 7 \cdot 11$

G. $3^2 \cdot 5^2 \cdot 7 \cdot 11$

H. $3^2 \cdot 5^2 \cdot 11^3$

J. $3^2 \cdot 5^2 \cdot 7 \cdot 11^3$

K. $3^3 \cdot 5^3 \cdot 7 \cdot 11^4$

33. $\frac{1}{4} \times \frac{2}{5} \times \frac{3}{6} \times \frac{4}{7} \times \frac{5}{8} \times \frac{6}{9} \times \frac{7}{10} = ?$

A. $\frac{1}{720}$

B. $\frac{1}{360}$

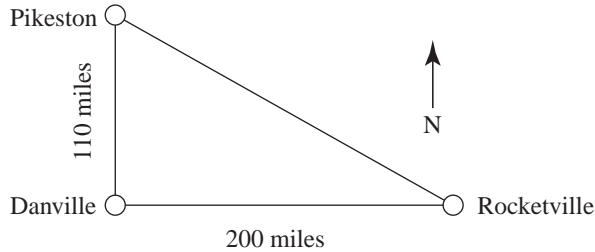
C. $\frac{1}{120}$

D. $\frac{27}{49}$

E. 1

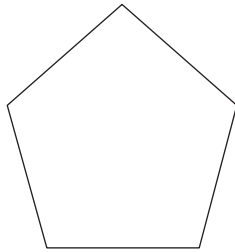


34. Dave is in Pikeston and needs to go to Danville, which is about 110 miles due south of Pikeston. From Danville, he'll head east to Rocketville, about 200 miles from Danville. As he sets out on his trip, a plane takes off from the Pikeston airport and flies directly to Rocketville. Approximately how far, in miles, does the plane fly?



DO YOUR FIGURING HERE.

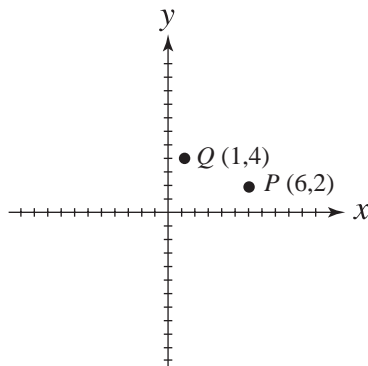
- F. 310
 G. $\sqrt{310}$
 H. $\sqrt{27900}$
 J. $\sqrt{30000}$
 K. $\sqrt{52100}$
35. The figure below is a pentagon (5-sided figure). Suppose a second pentagon were overlaid on this pentagon. At most, the two figures could have how many points of intersection?



- A. 1
 B. 2
 C. 5
 D. 10
 E. Infinitely many
36. MicroCorp will hold its annual company picnic next week and will assign 3 planning duties to its employees. One person selected will reserve a venue, another will arrange catering, and a third will plan activities. There are 10 employees eligible to fulfill these duties, and no employee can be assigned more than one duty. How many different ways are there for duties to be assigned to employees?
- F. 7^3
 G. 9^3
 H. 10^3
 J. $9 \cdot 8 \cdot 7$
 K. $10 \cdot 9 \cdot 8$



37. In the (x,y) coordinate plane below, points $P(6,2)$ and $Q(1,4)$ are two vertices of $\triangle PQR$. If $\angle PQR$ is a right angle, then which of the following could be the coordinates of R ?



- A. $(4, -3)$
 B. $(3, 0)$
 C. $(2, 1)$
 D. $(2, 4)$
 E. $(3, 9)$

DO YOUR FIGURING HERE.

38. If $y = 0.25(100 - y)$, then what is the value of y ?

- F. 200
 G. 75
 H. 25
 J. 20
 K. 18

39. If $0^\circ \leq x^\circ \leq 180^\circ$ and $4\cos^2 x = 1$, then $x^\circ = ?$

- A. 0°
 B. 60°
 C. 90°
 D. 150°
 E. 180°

40. Danielle's living room is a rectangle with the dimensions 16 feet by 18 feet. If she partially covers the bare floor with a circular throw rug with a diameter of 12 feet, what is the approximate area of bare floor, in square feet, that remains exposed?

(Note: Assume the rug lies completely flat and does not touch any wall.)

- F. 113
 G. 144
 H. 175
 J. 288
 K. Cannot be determined without knowing the exact position of the rug.



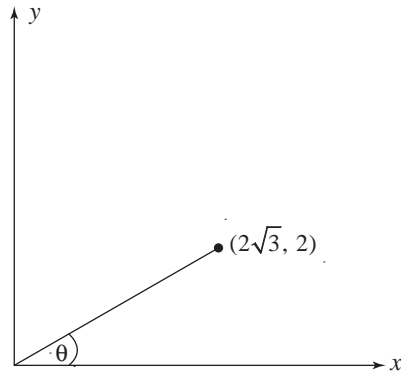
41. In the standard (x,y) coordinate plane, which of the following is the equation of the line perpendicular to the line $y = -2x + 2$ and that passes through the point $(0,-3)$?

- A. $y = -2x - 3$
- B. $y = -\frac{1}{2}x + 2$
- C. $y = \frac{1}{2}x - 3$
- D. $y = \frac{1}{2}x + 2$
- E. $y = 2x - 3$

DO YOUR FIGURING HERE.

42. In the figure given below, what is $\sin \theta$?

- F. $\frac{1}{2}$
- G. $\frac{\sqrt{3}}{3}$
- H. $\frac{\sqrt{3}}{2}$
- J. 1
- K. $\sqrt{3}$



43. If $a = 5$ and $b = -\frac{1}{4}$, which of the following expressions will be the greatest?

- A. $a + b$
- B. $a - b$
- C. $a \times b$
- D. $a \div b$
- E. $|a \times b|$

44. When $\frac{x}{3} - 1 = -\frac{13}{12}$, which of the following must be true?

- F. $-12 < x < -3$
- G. $-3 < x < 0$
- H. $0 < x < 3$
- J. $3 < x < 4$
- K. $4 < x$



45. Which choice below is the complete solution set of $|2z - 3| \geq 7$?

DO YOUR FIGURING HERE.

- A. $z \geq 5$
- B. $z \leq -2$ or $z \geq 5$
- C. $-5 \leq z \leq 5$
- D. $z \leq -6$ or $z \geq 2$
- E. $z \leq -5$ or $z \geq 2$

46. Which trigonometric function (where defined) is equivalent to

$$\frac{\sin^2 x}{\cos x \tan x} ?$$

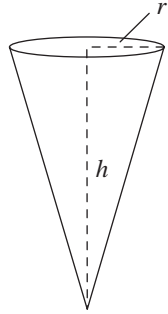
- F. $\frac{\cos x}{\sin^2 x}$
- G. $\frac{1}{\cos x}$
- H. $\sin x$
- J. $\frac{1}{\sin x}$
- K. $\frac{1}{\sin^2 x}$

47. When $a \neq b$, the expression $\frac{ax - bx}{4a - 4b} < 0$. Which of the following describes the complete set of x values that make this inequality true?

- A. $x = -4$ only
- B. $x = 4$ only
- C. $x = -\frac{1}{4}$ only
- D. $x < 0$
- E. $x > 0$



48. The volume of a cone, which is derived by treating it as a pyramid with infinitely many lateral faces, is given by the formula $V = \frac{1}{3}\pi r^2 h$, where r is the radius of the base and h is the height. If the radius is halved and the height is doubled, what will be the ratio of the new volume to the old volume?



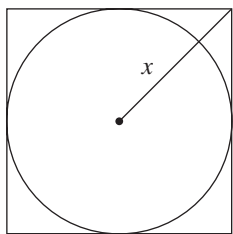
- F. 4:1
G. 2:1
H. 1:1
J. 1:2
K. 1:4
49. Al bikes a trail to the top of a hill and back down. He bikes up the hill in m minutes, then returns twice as quickly downhill on the same trail. What is the total time, in hours, that Al spends biking up the hill and back down?
- A. $\frac{m}{60}$
B. $\frac{m}{40}$
C. $\frac{m}{30}$
D. $\frac{3m}{2}$
E. $2m$
50. Pippin the guinea pig is running on her wheel when, due to a manufacturing error, the wheel breaks free of its axis. Pippin remains in her wheel, running in a straight line until the wheel has rotated exactly 15 times. If the diameter of the wheel is 10 inches, how many inches has the wheel rolled?

- F. 75
G. 150
H. 75π
J. 150π
K. $1,500\pi$

DO YOUR FIGURING HERE.



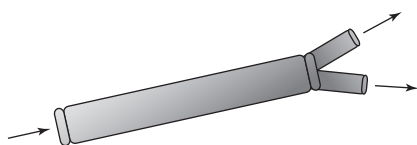
51. A circle is inscribed in a square, as shown below. If x is the distance from the center of the circle to a vertex of the square, then what is the length of the radius of the circle, in terms of x ?



DO YOUR FIGURING HERE.

- A. $2x$
 B. $x\sqrt{2}$
 C. x
 D. $\frac{x\sqrt{2}}{2}$
 E. Cannot be determined from the information given
52. A function is defined for x and y such that $f_{(x,y)} = -2xy + y + x - 4$. So, for $x = 2$ and $y = 3$, $f_{(2,3)} = -2 \times 2 \times 3 + 3 + 2 - 4 = -12 + 1 = -11$. If x and y are to be chosen such that $f_{(x,y)} = f_{(y,x)}$, then which of the following restrictions must be placed on x and y ?
- F. $x > 0$ and $y > 0$
 G. $x < 0$ and $y < 0$
 H. $x = y$
 J. $xy < 0$
 K. No restrictions are needed.

53. A pipe of radius 4 feet sends water to two smaller pipes of equal size. If each of the smaller pipes allows exactly half as much water to flow as the larger pipe, what is the radius of one of the smaller pipes?



- A. 2
 B. 2π
 C. $2\sqrt{2}$
 D. $4\sqrt{2}$
 E. $2\pi\sqrt{2}$



54. The cross-sectional view of a tent is shown below. If the tent is 6 feet wide at its base, then which of the following expressions could be used to calculate the height of the tent, in feet?

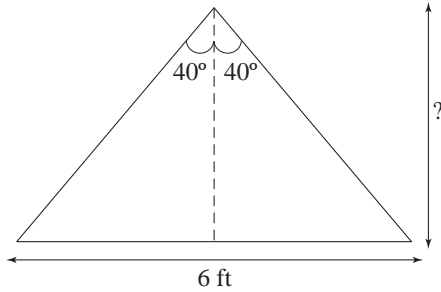
F. $\frac{3}{\tan 80^\circ}$

G. $3 \tan 40^\circ$

H. $\frac{3}{\tan 40^\circ}$

J. $6 \tan 40^\circ$

K. $3 \tan 80^\circ$



DO YOUR FIGURING HERE.

55. Two girls walk home from school. Starting from school, Susan walks north 2 blocks and then west 8 blocks, while Cindy walks east 3 blocks and then south 1 block. Approximately how many blocks apart are the girls' homes?

A. 7.1

B. 10.4

C. 11.4

D. 12.7

E. 16.0

56. For all integer values of a and b such that $a > 0$ and $b < 0$, which of the following must also be an integer?

F. 3^{a+b}

G. 3^{a-b}

H. 3^{ab}

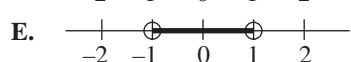
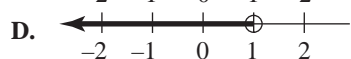
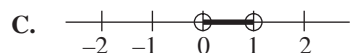
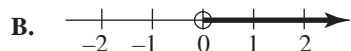
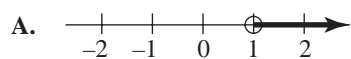
J. 3^{-a}

K. $3^{\frac{a}{b}}$



DO YOUR FIGURING HERE.

57. If x and y are real numbers and $0 < x < y < \frac{y}{x}$, which of the following gives the set of all values which $\frac{y}{x}$ could have?



58. A circular running track is being built in a fenced-in athletic field 100 feet wide and 150 feet long. If a border of 10 feet is needed between the outside edge of the track and the fence, what is the radius of the largest track that can be built?

- F. 40
G. 45
H. 65
J. 90
K. 110

59. If a sphere is cut by two different planes, dividing it into sections, how many sections is it possible to end up with?

- A. 2 only
B. 2 or 4 only
C. 3 only
D. 3 or 4 only
E. 2, 3, or 4 only

60. For all real values of a and b , the equation $|a - b| = 5$ can be interpreted as “the positive difference of a and b is 5.” What is the positive difference between the 2 solutions for a ?

- F. b
G. $b + 5$
H. $2b$
J. $\sqrt{b^2 - 25}$
K. 10

END OF TEST 2

STOP! DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.
DO NOT RETURN TO A 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: The following passage is excerpted from the coming-of-age novel *The Year of the Unicorn* by Krista Prouty (2008).

It was always the same, every Christmas. My sister and I would wake up early, my parents would send us back to bed, and we would instead huddle in my room, discussing which gifts might be waiting for us downstairs. One year it was a bicycle
5 that I wanted, and I can still remember telling my sister exactly what it would look like: pink, with silver streamers and a sparkly silver seat. Eventually we would hear our parents moving around downstairs and we would know that it was almost time. Once the scent of coffee made it to our rooms, we would hurl ourselves
10 downstairs since that signified that our parents were not only awake but caffeinated and ready for gift-giving.

The year that I was nine, and Lily was six, the gift that I had been craving was the Barbie Dream House. Another girl from my school had one and I had been lucky enough to be allowed
15 a glimpse of it after school one day. She was like a princess bestowing largesse; allowing one or two people over after school most days, demonstrating the various clever mechanisms, then sitting quietly, contentedly, while we gazed in wonder for a few minutes. Then, she sent us on our way. I knew that if I could only
20 have a Dream House of my own, my life would be complete. It was a bigger gift than I usually requested but, logically, I felt, that meant I was all the more likely to have my wish granted.

One night I overheard my parents, after they thought Lily and I had gone to bed.

25 “Bill, what are we going to do about Christmas this year?” My mother’s voice, quiet and unsettlingly uncertain, came from the kitchen.

“I don’t know yet, Mel, but we’ll figure something out. We always do, honey.”

30 “I know. I just can’t help but worry.” Whatever my mother said next was drowned out by the running water—she must have been washing up after dinner. I crept back to my bedroom, a little bit troubled by what I had heard but, as is the way of children, soon forgot and went back to Barbie Dream House dreaming.

35 On the Christmas morning in question, Lily and I huddled in my room, waiting for the signal to appear. She wanted a new bike and kept asking me if Santa would get it for her, but all I could think about was my Dream House. Somehow, I had convinced myself that I was certain to get it, that life and the fates
40 could not possibly be cruel enough to deny me this. I could see the wallpaper that was printed on the plastic walls, the darling matching furniture, and the ingenious hand-operated elevator. It would smell like new plastic. I inhaled deeply, imagining myself showing my gift off to friends and foes alike. Instead of
45 new plastic, however, my nostrils quivered to the odor of freshly brewed coffee. It was time.

My eyes still full of the glories I expected, I barreled down the stairs, almost knocking Lily down in my haste. Both of my parents were standing in the kitchen, sipping coffee. I tore past
50 them, even though I knew that they would expect me to stop and wait for them to walk into the living room with me. My longing was simply too exquisite to wait any longer. I burst through the double doors into our living room, words of joy and gratitude ready on my lips, only to find—there was no Dream House. Frantically, I began to paw through the boxes under the tree, certain
55 that it had to be there, somewhere, blind to the movement of my parents and sister entering the room behind me, nervous smiles on both my parents’ faces. Eventually I was forced to concede that the tree was not somehow harboring a Dream House under its limbs. I looked up at my parents, grief and confusion painted
60 large on my features.

“Hold up a minute, honey. Santa brought you one more gift that wouldn’t quite fit under the tree. Bill, go ahead—show her.”

As I watched my father head towards a corner where a
65 large blanket was draped over some bulky object, hope flickered back to life a bit. But the size was all wrong, as was the shape. Still smiling anxiously, my father pulled the blanket away from what appeared to be a huge dollhouse. If Barbie’s Dream House was sleek and modern, this was awkward and old-fashioned. It
70 had a peaked roof and a patio, with what looked like handmade furniture and wallpaper that looked suspiciously like the paper my parents had hung in Lily’s room last fall. Slowly, realization dawned—my father had made it for me.

Looking back, I can only recall the rest of that day hazily,
 75 even though the events up until that moment are as clear today
 as they were at the time. I remember the feeling of devastation
 that I felt, as I realized that the other girls from school would
 not, in fact, be blown away by my Christmas gift. I tried to be as
 grateful as I could, understanding even then that my father had
 80 probably spent countless hours working on the house, but my
 disappointment was only too evident. I just couldn't understand
 why they had given me this crude approximation instead of my
 heart's desire. As an adult, I wish I could go back in time, whis-
 per the reason to my younger self, try to be more appreciative
 85 of my father's efforts, but that is not the way of the world. I still
 have the house, though, and when I have children of my own, I
 will tell them the whole story, and I hope they will understand
 better than I did.

1. Which of the following statements does NOT describe one of the narrator's reactions to her Christmas gift?
 - A. She is devastated by the realization that the other children at school will not be impressed by this gift.
 - B. She wishes that her parents had bought her a real Barbie Dream House instead of a handmade one.
 - C. She despises the house for its old-fashioned appearance and lack of modern conveniences, such as an elevator.
 - D. She appreciates all the effort her father went to in order to give her this gift and tries to convey a sense of gratitude.
2. According to the passage, when the narrator smells coffee on Christmas morning, it means that:
 - F. her parents are ready to proceed with the Christmas festivities.
 - G. she and her sister should hurry to the kitchen for breakfast.
 - H. her father has finally finished preparing her Christmas gift.
 - J. it is time to burst into the living room in front of her parents.
3. The narrator would most likely agree with which of the following statements about owning a Barbie Dream House?
 - A. She would become a princess able to bestow largesse on other children.
 - B. She would, at least for the moment, be content with her life.
 - C. It would allow her to appreciate her parents' hard work and sacrifices.
 - D. She would then be able to pass it on to her own children someday.
4. What is the main point of the first paragraph?
 - F. The smell of coffee still reminds the narrator of the Christmases of her childhood.
 - G. The narrator's family had a specific ritual that was followed every Christmas morning.
 - H. Most years, the narrator and her sister would hurl themselves into their gifts without warning.
 - J. The narrator had once desperately wanted a pink and silver bicycle.
5. Which of the following statements most accurately expresses the narrator's feelings when she first sees the gift that her father made for her?
 - A. She is disappointed that it is not the exact gift that she had hoped to receive.
 - B. She gratefully acknowledges the long hours her father must have put into the gift.
 - C. She admires the traditional architecture of the house and its attractive wallpaper.
 - D. She looks forward to showing her new house off to all of the other girls at school.
6. The narrator's father can most accurately be characterized as:
 - F. ignorant and cruel.
 - G. thoughtful but lazy.
 - H. concerned and hard-working.
 - J. caring but inaccessible.
7. It can logically be inferred from the passage that the reason the narrator was not given the official Barbie Dream House for Christmas is because:
 - A. it is too costly a gift for her parents to buy that year.
 - B. she had already been given the pink and silver bicycle that she wanted.
 - C. her father had always wanted to make his daughter a dollhouse.
 - D. her parents do not wish for their daughter to be happy.
8. According to the passage, the reason why the narrator hopes to someday give her dollhouse to her children is that she:
 - F. wants them to be able to impress the other children at school as she once did.
 - G. knows that, by that time, it is likely to be worth a great deal of money.
 - H. remembers how much she appreciated the gift when it was given to her.
 - J. hopes that they will be better able to understand the meaning behind the gift than she was.

9. A reasonable conclusion that the narrator draws regarding her dollhouse is that:
- A. it is far more beautiful than was the plastic Barbie Dream House that she had initially desired.
 - B. without an elevator, it is less valuable than it would otherwise have been.
 - C. it was given to her with the intention that she keep it to pass on to her own children someday.
 - D. constructing it must have been time-consuming and labor-intensive.
10. The main point of the last paragraph is that:
- F. the narrator would have been much happier if she had been given a Barbie Dream House.
 - G. it is not fair to give one child a long-desired gift and not give the same to another child.
 - H. the disappointments suffered in childhood affect people well into adulthood.
 - J. the passage of time can alter the way events from the past are viewed.

Passage II

SOCIAL SCIENCE: This passage is adapted from T. H. Watkins' *The Great Depression* (©1993, Little, Brown and Co.; Blackside Inc.).

One of the most durable and well regarded of all the New Deal's programs came from President Roosevelt himself, who had his own share of inventiveness. If the president cared about the fate of people, he also cared about the fate of trees, having practiced the art of silviculture on his Hyde Park estate with such enthusiasm that on various official forms he was fond of listing his occupation as "tree farmer." It was in early March, 1933, that he proceeded to bring the two concerns together—enlisting young unemployed men in a kind of volunteer "army" to be put to work in the national forests, national parks, and on other federal public lands. When he went to Congress for authorization of the program, he called the new agency the Civilian Corps Reforestation Youth Rehabilitation Movement, but before sinking under the weight of an acronym like CCRYRM, it was soon changed to the Civilian Conservation Corps (known forever after as the CCC). Congress chose not to handle the details itself. It simply authorized the president to create the program and structure it as he saw fit by executive order; it was to last two years. Responsibility was divided up among the Labor Department, which was to screen and select the enrollees, the War Department, which would house and feed them in their nonworking hours, and the Departments of Agriculture and Interior, which would design and supervise projects in regional and national forests, national parks, and other public lands. The men would be paid \$30 a month, anywhere from \$23 to \$25 of it to be sent to their families.

The CCC officially began on April 5, 1933, calling for an enrollment of 250,000 to be housed in 1,468 camps around the country. The cost for the first year was estimated at \$500 million.

The men had to be US citizens between the ages of seventeen and twenty-seven (later, twenty-four), out of school, out of work, capable of physical labor, over 60 inches but under 78 inches in height, more than 107 pounds in weight, and had to possess no fewer than "three serviceable natural masticating teeth above and below." They would serve terms of no more than nine months so that as many as possible could be accommodated over the course of time.

Among the earliest enrollees were some veterans who had returned to Washington, setting up camp and demanding payment of their bonuses for service during the war. While making it clear that he opposed the payments on economic grounds, FDR provided tents, showers, mess halls, and latrines, and, waiving the age restriction for them, invited the members of this new Bonus Army to join his new agency. What was more, Eleanor Roosevelt dropped by one rainy day for a visit, slogging through ankle-deep mud to meet and talk with the men. "Hoover sent the army," said one veteran of the previous summer's BEF disaster, "Roosevelt sent his wife." When it became clear that no bonus would be forthcoming, about twenty-five hundred of the men took Roosevelt up on his offer and joined the CCC.

In the summer of 1934, Roosevelt expanded the size of the CCC to 350,000 and would raise it to 500,000 in 1935. Congress continued to reauthorize it faithfully over the next seven years, and by the time it was closed out in 1942, the CCC had put more than three million young "soil soldiers" to work. In the national forests alone they built 3,470 fire towers, installed 65,100 miles of telephone lines, scraped and graded thousands of fire breaks, roads, and trails, and built 97,000 miles of truck trails and roads, spent 4.1 million man-hours fighting fires, and cut down and hauled out millions of diseased trees and planted more than 1.3 billion young trees in the first major reforestation campaign in the country's history. For the National Park Service, they built roads, campgrounds, bridges, and recreation and administration facilities; for the Biological Survey (a predecessor of today's Fish and Wildlife Service), they conducted wildlife surveys and improved wildlife refuge lands; and for the Army Corps of Engineers, they built flood control projects in West Virginia, Vermont, and New York State.

In return, the CCC, at its best, took at least some young men out of the urban tangle of hopelessness where so many resided, introduced them to the intricacies and healing joy of the outdoors, and clothed and fed them better than many had been for years. Moreover, the program taught more than a hundred thousand to read and write, passed out twenty-five thousand eighth-grade diplomas and five thousand high-school diplomas, gave structure and discipline to lives that had experienced little of either, strengthened bodies and minds, and for many provided a dose of self-esteem they had never known.

11. The main idea of the passage is that:
- A. the CCC forced unemployed young men to work in the national forests, national parks, and on other federal public lands for no payment or bonus.
 - B. it was only after President Roosevelt created the CCC that veterans had suitable employment during the Great Depression.
 - C. research into the history of the New Deal shows that the idea for the CCC came from the Congress.
 - D. among the programs of the New Deal, the CCC employed young men to build public works projects on public lands in return for modest wages, food, clothing, and some education.
12. The main idea of the third paragraph (lines 37–49) is that:
- F. President Hoover had dispatched the army to meet with disgruntled veterans, but President Roosevelt sent his wife, Eleanor, to meet with the Bonus Army.
 - G. when they realized President Roosevelt would not pay the bonus, many veterans abandoned the Bonus Army and accepted his invitation to join the CCC.
 - H. President Roosevelt supplied shelter and food to the veterans before paying the bonus the veterans demanded.
 - J. many of the veterans were above the age requirement of the CCC.
13. As it is used in line 7 to describe President Roosevelt, the term *tree farmer* most nearly means that Roosevelt:
- A. had supported his family by growing trees before he entered politics.
 - B. believed in an agrarian economy over urban industrialization.
 - C. continued his successful business selling trees while in office.
 - D. had a great interest in trees and knew a good deal about them.
14. According to the passage, which of the following was a project the CCC performed for the National Park Service?
- F. Building fire towers
 - G. Building campground facilities
 - H. Installing telephone lines
 - J. Conducting wildlife surveys
15. According to the passage, which of the following statements is true about the CCC?
- A. The agency provided enrollees with academic instruction.
 - B. The agency provided enrollees with urban job training.
 - C. The agency accepted only men with six teeth.
 - D. The agency offered courses in nutrition and self-esteem.
16. Information in the fourth paragraph (lines 50–67) makes it clear that the CCC:
- F. was voluntary and therefore did not pay members anything.
 - G. ran for more years and employed more men than was originally intended.
 - H. employed 4.1 million men.
 - J. battled fires in West Virginia, Vermont, and New York.
17. The passage most strongly suggests that before the 1930s, the national forests:
- A. received no federal support or aid for projects to clear diseased trees.
 - B. included land reserved for wildlife refuges.
 - C. had never undergone a major reforestation campaign.
 - D. experienced more floods than forest fires.
18. According to the passage, when did the CCC change its name?
- F. After President Roosevelt received authorization from Congress.
 - G. After Congress protested that CCRYRM was too difficult to say.
 - H. In the same year the size expanded to 500,000 men.
 - J. After the Bonus Army disbanded.
19. The passage states that the same year the CCC was authorized enrollees had to be:
- A. over 78 inches in height.
 - B. in school.
 - C. between the ages of seventeen and twenty-seven.
 - D. between the ages of seventeen and twenty-four.
20. According to the passage, CCC programs in national parks and forests were:
- F. conducted far from where the members were fed and housed.
 - G. under the control of the Departments of Agriculture and the Interior.
 - H. supervised by the Labor Department.
 - J. minimum-wage jobs.

Passage III

HUMANITIES: This passage is adapted from John Gattuso, ed., *Native American* (©1993, Houghton Mifflin Co.).

Northwest natives are carvers by tradition, but it was the natives of the far north, in what is now British Columbia and Alaska, who first carved totem poles. The history of these fascinating works is surprisingly brief, for it wasn't until the mid-18th century, when European explorers first encountered these remote tribes, that the unique sculptures began to appear. Although the natives were already expert carvers of canoes, tools, longhouses, and furniture, they lacked the iron tools necessary to fell a massive tree in one piece and carve its entire length.

With the iron axes they got in trade for their baskets, boxes, and pelts, the coastal tribes of the far north could take advantage of the trees that grew so tall and straight in their wet climate. Initially, the poles were made to stand against the front of a house, with figures facing out and a door cut through the base, so all would enter the house through the pole. In this case, the totem pole functioned as a family crest, recounting genealogies, stories, or legends that in some way identified the owner. Towards the end of the 19th century, the poles stood free on the beach or in the village outside the carvers' homes. Some villages were virtual forests of dozens, sometimes hundreds, of poles.

The family that carved the pole gave a potlatch with feasting, games, and much gift-giving. The guests, in return, raised the pole. These gatherings were costly and required a great deal of preparation and participation. The custom frustrated whites trying to "civilize" the Indians, especially missionaries who solved the problem by knocking the poles down. Employers, too, complained that their Indian workers were unreliable when a pole was being carved or a potlatch planned. Eventually, both the Canadian and United States governments banned potlatches, and pole carving nearly died out. The ban was lifted in the 1950s.

The Tlingit, on the southeastern coast of Alaska, and the Haidas and Tsimshian of western Canada are known for their pole carving. On a tour in 1899, a group of Seattle businessmen visited the Tlingit village of Tongas and, finding no one there, took one of the poles. They erected it in Seattle where, at a towering 50 ft., it became one of the city's most distinctive monuments. In 1938, Tlingit carvers copied the pole after the original was destroyed by fire, and it remains in Pioneer Square today.

Poles serve the important purpose of recording the lore of a clan, much as a book would. The top figure on the pole identifies the owner's clan, and succeeding characters (read from top to bottom) tell their stories. Raven, the trickster, might tell the story of how he fooled the Creator into giving him the sun, or Frog might tell how he wooed a human woman. With slight variations between villages, everyone knew these stories, and potlatch guests dramatized them at the pole-raising with masks, drumming, and songs. And so the legends were preserved from one generation to the next.

There is a story behind almost every image on the pole. For example, if an animal had the power to transform itself into other beings, the carver would portray it in all its forms. If Raven were sometimes bird, sometimes human, he would be carved with both wings and limbs, or have a human face with a raven's beak. Other images are used to describe the spirits' special abilities. Eyes are frequently used to suggest acuteness or skill. So, for example, if an eye appears in an animal's ear, it might indicate that that animal has a sharp sense of hearing. And human figures in unexpected places, like an ear or nose, might mean that the animal has great powers.

Learning to read totem poles is like learning to read a language. They speak of history, mythology, social structure, and spirituality. They serve many purposes and continue to be carved by the descendants of the original carvers.

Today, Haida, Tlingit, Tsimshian, Kwakiutl and other native craftsmen carve, predominantly for the tourist trade, small "souvenir" totem poles in wood and black slate (or argillite). They also carve extraordinarily beautiful masks, effigies, boxes, house posts, and fixtures...

21. Which of the following statements best expresses the main idea of the passage?
 - A. Many Native American tribes created totem poles with meaningful symbols, but these poles were less important than the canoes carved before the mid-18th century.
 - B. Although the Tlingit village was deserted, the Seattle businessmen who took the totem pole were not right to take it without permission.
 - C. The history of totem pole carving dates back to only the mid-18th-century, but these poles have played an important role in Native American culture since that time.
 - D. The ban issued by the Canadian and United States governments against potlatches was lifted in the 1950s, but interest in totem-pole carving had diminished by that time.
22. Which of the following questions is NOT answered in the passage?
 - F. In terms of geographical region, which were the first groups to carve totem poles?
 - G. What is the tallest totem pole in North America?
 - H. What is the predominant use of the small totem poles carved today?
 - J. What prevented Native American tribes from carving totem poles before the 18th century?

23. The passage suggests that one of the main purposes of totem poles is the way in which they:
- A. demonstrate the artistic skill of the carvers.
 - B. function as landmarks in major North American cities.
 - C. document the history and mythology of various clans.
 - D. complement the festivities of the potlatch.
24. The main function of the sixth paragraph (lines 49–59) is to:
- F. identify the origins of the stories behind every image on a totem pole.
 - G. describe and explain some of the images that might appear on a totem pole.
 - H. contrast the images on the totem poles of the Northwest natives with those of British Columbia and Alaska.
 - J. explain the role of the Raven in Native American mythology.
25. All of the following are used in the passage as illustrations of the role totem poles play in Native American culture EXCEPT the:
- A. function of the top figure on the pole.
 - B. descriptions of the Raven and Frog as characters on the pole.
 - C. reference to the popularity of totem poles in the tourist industries of many tribes.
 - D. placement of the Tlingit totem pole in Seattle's Pioneer Square.
26. The second paragraph (lines 10–20) establishes all of the following about the totem poles carved by the coastal tribes of the far north EXCEPT that they were:
- F. initially used as the entryways of houses.
 - G. fashioned from tall, straight trees.
 - H. used to identify the owners of the poles.
 - J. produced only by clans with family crests.
27. One of the main points of the fifth paragraph (lines 39–48) is that the various characters on a totem pole are meant to represent:
- A. the owner of the totem pole.
 - B. the lore of the owner's clan.
 - C. Raven, the trickster, fooling the Creator.
 - D. Frog wooing a human woman.
28. According to the passage, which of the following places is home to the Tlingit?
- F. Seattle
 - G. Western Canada
 - H. Pioneer Square
 - J. Alaska
29. The author most likely includes the information in lines 60–63 to suggest that:
- A. totem poles are notable for reasons beyond physical beauty.
 - B. totem poles have replaced books for Native American tribes.
 - C. Native American tribes have no spoken or written language.
 - D. the descendants of the original carvers of totem poles carve copies of older poles.
30. Which of the following words best describes the attitude of the employers referred to in the third paragraph (lines 21–30) in reaction to potlatches?
- F. Patient
 - G. Accepting
 - H. Irritated
 - J. Civilized

Passage IV

NATURAL SCIENCE: This passage is adapted from the article “The Pioneer Mission to Venus” by Janet G. Luhmann, James B. Pollack, and Lawrence Colin (©1994, *Scientific American*).

Venus is sometimes referred to as the Earth’s “twin” because it resembles the Earth in size and in distance from the sun. Over its 14 years of operation, the National Aeronautics and Space Administration’s *Pioneer Venus* mission revealed that the relation between the two worlds is more analogous to Dr. Jekyll and Mr. Hyde. The surface of Venus bakes under a dense carbon dioxide atmosphere, the overlying clouds consist of noxious sulfuric acid, and the planet’s lack of a magnetic field exposes the upper atmosphere to the continuous hail of charged particles from the sun. Our opportunity to explore the hostile Venusian environment came to an abrupt close in October 1992, when the *Pioneer Venus Orbiter* burned up like a meteor in the thick Venusian atmosphere. The craft’s demise marked the end of an era for the U.S. space program; in the present climate of fiscal austerity, there is no telling when humans will next get a good look at the earth’s nearest planetary neighbor.

The information gleaned by *Pioneer Venus* complements the well-publicized radar images recently sent back by the *Magellan* spacecraft. *Magellan* concentrated on studies of Venus’s surface geology and interior structure. *Pioneer Venus*, in comparison, gathered data on the composition and dynamics of the planet’s atmosphere and interplanetary surroundings. These findings illustrate how seemingly small differences in physical conditions have sent Venus and the Earth hurtling down very different evolutionary paths. Such knowledge will help scientists intelligently evaluate how human activity may be changing the environment on the Earth.

Well before the arrival of *Pioneer Venus*, astronomers had learned that Venus does not live up to its image as Earth’s near-twin. Whereas Earth maintains conditions ideal for liquid water and life, Venus’s surface temperature of 450 degrees Celsius is hotter than the melting point of lead. Atmospheric pressure at the ground is some 93 times that at sea level on Earth.

Even aside from the heat and the pressure, the air on Venus would be utterly unbreathable to humans. The Earth’s atmosphere is about 78 percent nitrogen and 21 percent oxygen. Venus’s much thicker atmosphere, in contrast, is composed almost entirely of carbon dioxide. Nitrogen, the next most abundant gas makes up only about 3.5 percent of the gas molecules. Both planets possess about the same amount of gaseous nitrogen, but Venus’s atmosphere contains some 30,000 times as much carbon dioxide as does Earth’s. In fact, Earth does hold a quantity of carbon dioxide comparable to that in the Venusian atmosphere. On Earth, however, the carbon dioxide is locked away in carbonate rocks, not in gaseous form in the air. The crucial distinction is responsible for many of the drastic environmental differences that exist between the two planets.

The large *Pioneer Venus* atmospheric probe carried a mass spectrometer and gas chromatograph, devices that measured the exact composition of the atmosphere of Venus. One of the most stunning aspects of the Venusian atmosphere is that it is extremely dry. It possesses only a hundred thousandth as much water as Earth has in its oceans. If all of Venus’s water could somehow be condensed onto the surface, it would make a global puddle only a couple of centimeters deep.

Unlike the Earth, Venus harbors little if any molecular oxygen in its lower atmosphere. The abundant oxygen in the earth’s atmosphere is a by-product of photosynthesis by plants; if not for the activity of living things, Earth’s atmosphere also would be oxygen poor. The atmosphere of Venus is far richer than the earth’s in sulfur-containing gases, primarily sulfur dioxide. On Earth, rain efficiently removes similar sulfur gases from the atmosphere.

Pioneer Venus revealed other ways in which Venus is more primordial than Earth. Venus’s atmosphere contains higher concentrations of inert, or noble, gases—especially neon and isotopes of argon—that have been present since the time the planets were born. This difference suggests that Venus has held on to a far greater fraction of its earliest atmosphere. Much of Earth’s primitive atmosphere may have been stripped away and lost into space when our world was struck by a Mars-size body. Many planetary scientists now think the moon formed out of the cloud of debris that resulted from such a gigantic impact.

31. With regard to the possibility of returning to the planet Venus, information presented in the passage makes it clear that the author is:
 - A. cheerful and optimistic.
 - B. sarcastic and contentious.
 - C. doubtful and pragmatic.
 - D. uncertain and withdrawn.
32. Which of the following statements most accurately summarizes how the passage characterizes the state of scientific knowledge about Venus before the *Pioneer* mission?
 - F. The scientific community was hesitant to return to Venus after an earlier mission had ended in disaster.
 - G. Scientists saw Earth and Venus as near polar opposites in atmospheric conditions.
 - H. The common belief that Earth and Venus were “twins” had been eroding under the weight of scientific evidence.
 - J. Scientists knew little about the planet Venus because they were more interested in other planets.

33. Based on the passage, discoveries made in which two areas of study have caused scientists to re-evaluate their theories about Earth and Venus?
- A. Water content and bedrock composition
 - B. Sulfuric gases and photosynthesis
 - C. Carbon dioxide and climate change
 - D. Atmosphere and surface temperature
34. The main point of the second paragraph (lines 17–27) is to:
- F. account for the failure of the *Magellan* mission and to show the superiority of the *Pioneer* mission.
 - G. suggest that information from both the *Magellan* and *Pioneer* missions can bring the scientific community to a deeper understanding of Venus.
 - H. show that the *Magellan* had sent back information regarding the physical characteristics while the *Pioneer* had not.
 - J. hypothesize that the findings of the *Pioneer* mission will help scientists to approach problems more intelligently.
35. The passage indicates that if humans were to attempt to live on the planet Venus, survival would not be possible because:
- A. of the mistaken belief that Venus and Earth are “twin” planets.
 - B. carbon dioxide is locked away in bicarbonate rocks, not in gaseous form.
 - C. the atmospheric pressure, heat, and air are not suitable for human life.
 - D. all of the water on Venus is condensed onto the surface.
36. According to the passage, some evidence gained before the *Pioneer Venus* mission suggesting that Earth and Venus are not near-twins stated that:
- F. Venus produces no lead on or underneath its surface.
 - G. Earth was found to be much farther from the sun than was previously thought.
 - H. the atmosphere of Venus contains 78 percent nitrogen and 21 percent oxygen.
 - J. the surface temperature of Venus is 450 degrees Celsius and thus unlivable for humans.
37. As it is used in line 56, the word *harbors* most nearly means:
- A. sails.
 - B. hides.
 - C. holds.
 - D. soaks.
38. According to the passage, “primordial” describes planets that:
- F. are oxygen-poor due to a lack of activity by living things.
 - G. are not hospitable to humans because they have thick atmospheres and high surface temperatures.
 - H. have preserved many of the characteristics present when the planets were formed.
 - J. have been struck by large bodies which have altered the planets’ atmospheres.
39. It can reasonably be inferred that the “activity of living things” described in line 59 directly refers to organisms on Earth that:
- A. produce oxygen by their own natural processes and influence the contents of Earth’s atmosphere.
 - B. remove sulfur gases from the atmosphere during heavy rainfall.
 - C. lock away carbon dioxide in carbonate rocks and maintain a reserve of the gas.
 - D. could easily live in oppressive atmospheres similar to the atmosphere of Venus.
40. According to the passage, the *Pioneer Venus* mission to Venus involved investigating details relating to the planet’s:
- F. surface geology and interior structure.
 - G. atmosphere as it has been changed by the influence of photosynthesis.
 - H. similarities to the planet Earth.
 - J. atmospheric contents.

END OF TEST 3

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



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 I

Metallic *alloys*, solid mixtures of metal, are useful for coin production when they contain a high percentage of zinc. When electric current is applied to zinc in the presence of precious metal solutions of *silver nitrate*, *copper sulfate*, and *potassium gold cyanide*, the precious metals *plate* (form a coating) on the zinc surface.

- Silver nitrate, formed when silver dissolves in *nitric acid*, reacts with zinc to form solid silver and *zinc nitrate*.
- Copper sulfate, formed when copper dissolves in *sulfuric acid*, reacts with zinc to form solid copper and *zinc sulfate*.
- Potassium gold cyanide contains reactive gold ions.

A chemist performed experiments on precious metal plating.

Experiment 1

The chemist obtained 4 coin-like samples of a high percentage zinc alloy. All samples were circular, had a radius of 1 cm, and had the same thickness. The mass of each coin was recorded. Each coin was wired via a battery to a strip of either pure silver or copper metal. Coins wired to silver were placed in dilute nitric acid and coins wired to copper were placed in dilute sulfuric acid. Electric current of either 1,000 milliamperes (mA) or 2,000 mA was applied for 30 minutes to each sample. The coins were removed and the increase in mass from precious metal plating was recorded in milligrams. Results of the experiment are shown in Table 1.

Table 1			
Coin sample	Precious metal solution		Increased mass from plating (mg)
	identity	electric current (mA)	
I	silver nitrate	1,000	2.0
II	silver nitrate	2,000	4.0
III	copper sulfate	1,000	1.2
IV	copper sulfate	2,000	2.4

Experiment 2

The chemist completely dissolved equal amounts of pure silver in 4 beakers of nitric acid. He then placed equivalent coin-like samples of zinc into the beakers for different lengths of time measured in minutes (mins). The coin surfaces developed a silver metal coating without any electric current applied. The concentrations of silver coating on the coin and zinc nitrate in the surrounding solution were determined in parts per billion (ppb) and recorded in Table 2.

Table 2			
Coin sample	Time (mins)	Silver coating concentration (ppb)	Zinc nitrate concentration (ppb)
V	5	75	30
VI	15	125	55
VII	30	200	75
VIII	60	500	85

1. A comparison of the results for coin samples II and IV supports the hypothesis that zinc is plated more extensively when exposed to:
 - A. silver nitrate and a current of 1,000 mA than silver nitrate and a current of 2,000 mA.
 - B. copper sulfate and a current of 1,000 mA than copper sulfate and a current of 2,000 mA.
 - C. silver nitrate than when exposed to copper sulfate.
 - D. copper sulfate than when exposed to silver nitrate.



2. If the chemist were to repeat Experiment 1, but compress each coin sample to a radius of 0.5 cm to decrease the surface area exposed to the surrounding solution, how would the mass of precious metal plated most likely be affected?
- F. The mass of precious metal plated would decrease for all coin samples.
G. The mass of precious meal plated would decrease for coin samples I and III and increase for coin samples II and IV.
H. The mass of precious metal plated would remain constant for all coin samples.
J. The mass of precious metal plated would increase for all coin samples.
3. According to the information in the passage, a zinc alloy coin sample exposed to which of the following conditions would result in the greatest concentration of zinc nitrate?
- A. 10 minutes in a solution with a high initial concentration of silver nitrate
B. 10 minutes in a solution with a low initial concentration of silver nitrate
C. 6 minutes in a solution with a high initial concentration of silver nitrate
D. 6 minutes in a solution with a low initial concentration of silver nitrate
4. In Experiment 1, if the chemist had applied 1,580 mA to a 1 cm radius zinc alloy coin sample in a copper sulfate solution, approximately how much copper would have plated after 30 minutes?
- F. 0.6 mg
G. 1.1 mg
H. 1.9 mg
J. 4.6 mg
5. In Experiment 1, which of the following variables was the same for all 4 zinc alloy coin sample trials?
- A. Change in mass from plating
B. Electric current applied
C. Type of precious metal solution used
D. Initial radius of the sample
6. According to the passage, if a chemist wants to study the effect of plating zinc alloys with silver, the chemist should monitor the concentration of which of the following substances in the surrounding solution?
- F. Potassium gold cyanide
G. Zinc nitrate
H. Copper sulfate
J. Sulfuric acid



#



Table 2

Carbons in the chain	Melting point (K)		
	alkane	alcohol	aldehyde
4	135	183	174
5	143	194	213
6	178	221	217
7	182	239	231
8	216	257	285

Table 3

Carbons in the chain	Viscosity (cP)		
	alkane	alcohol	aldehyde
4	0.01	3.0	0.4
5	0.24	5.1	0.5
6	0.29	5.4	0.8
7	0.39	5.8	1.0
8	0.54	8.4	1.2

7. Which organic compounds in Table 2 are solids at 215 K ?
- All alkanes, alcohols, and aldehydes with 5 carbons or fewer
 - Alcohols and aldehydes with 6 or more carbons and octane
 - The 4- and 5-carbon alcohols and aldehydes, and all alkanes with 7 or fewer carbons
 - The 5-carbon pentane and pentanol compounds and the 4-carbon butane, butanol, and butanaldehyde.
8. According to Tables 1 and 3, which organic compound has the highest viscosity?
- Octanol
 - Octanaldehyde
 - Hexanol
 - Butane
9. According to Table 3, how do the different types of 5-carbon molecules differ with respect to their viscosity?
- The alkane has a higher viscosity than the aldehyde and the aldehyde has a higher viscosity than the alcohol.
 - The alkane has a higher viscosity than the alcohol and the alcohol has a higher viscosity than the aldehyde.
 - The alcohol has a higher viscosity than the alkane and the alkane has a higher viscosity than the aldehyde.
 - The alcohol has a higher viscosity than the aldehyde and the aldehyde has a higher viscosity than the alkane.
10. For each type of organic compound, what is the relationship between the length of the carbon chain to the melting point and viscosity? As the number of carbons in the chain increases, the melting point:
- decreases and the viscosity decreases.
 - increases and the viscosity increases.
 - increases but the viscosity decreases.
 - decreases but the viscosity increases.
11. According to Table 2, the difference in melting point between an alkane and an alcohol with the same number of carbons is approximately how much?
- 25 K
 - 35 K
 - 45 K
 - 65 K

**Passage III**

A mass suspended by a lightweight thread and swinging back and forth approximates the motion of a *simple gravity pendulum*, a system in which gravity is the only force acting on the mass, causing an acceleration of 9.8 m/sec^2 . The time to complete one cycle of swinging back and forth is the *period* and is inversely related to gravitational acceleration.

Using the same type and length of thread, 2 cubes were suspended, lifted to the same starting angle, and let go. The amount of time required for each pendulum to complete one swinging cycle (1 period) was recorded with a timer capable of reading to the nearest 0.01 sec. The measured times were used to calculate acceleration.

Experiment 1

A cube of lead (11.3 grams) and a cube of tin (7.4 grams) were suspended from a 0.5 m length of thread. Both cubes had the same length. (Note: A cube's volume is proportional to its length cubed; its surface area is proportional to its length squared.) The cubes were set in motion from a fixed starting angle and the period for each was recorded.

Table 1		
Trial	Measured period (sec)	
	lead cube	tin cube
1	1.48	1.51
2	1.45	1.47
3	1.46	1.42
4	1.49	1.45
5	1.39	1.53

The average periods were 1.46 sec and 1.48 sec for the lead and tin cubes respectively. The average accelerations were 9.3 m/sec^2 for lead and 9.1 m/sec^2 for tin.

Experiment 2

The same procedures used in Experiment 1 were repeated using a thread length of 1.0 m and the same fixed starting angle. Results were recorded in Table 2.

Table 2		
Trial	Measured period (sec)	
	lead cube	tin cube
6	2.10	2.12
7	2.04	2.06
8	2.05	2.07
9	2.12	2.11
10	2.00	2.10

The average periods were 2.06 sec and 2.09 sec for the lead and tin cubes respectively. The average accelerations were 9.3 m/sec^2 for lead and 9.0 m/sec^2 for tin.

Experiment 3

Given the results of the first 2 experiments, the accuracy of the timer was tested. The procedures of Experiment 1 were repeated using only the lead cube. The trials were recorded on digital video at 100 frames per second. The video was then reviewed to obtain precise measurements of the period for each trial and results are shown in Table 3.

Table 3	
Trial	Measured period (sec)
11	1.47
12	1.42
13	1.49
14	1.50
15	1.46

The average period recorded in Table 3 was 1.47 sec.

12. To demonstrate that a pendulum's acceleration is reduced by drag force from air resistance, which additional experiment can be performed in addition to those in the passage?
- F. The cubes are suspended by 0.5 m and 1 m springs and set in motion by extending the spring 9.8 cm and letting go in a vacuum chamber with no air pressure.
 - G. The cubes are suspended by 0.5 m and 1 m threads and set in motion from the same starting angle in a vacuum chamber with no air pressure.
 - H. The cubes are suspended by 0.5 m and 1 m springs and set in motion by extending the spring 9.8 cm and letting go in a vacuum chamber at 1 atmosphere of pressure.
 - J. The cubes are suspended by 0.5 m and 1 m threads and set in motion from the same starting angle in a vacuum chamber at 1 atmosphere of pressure.
13. In Experiment 1, could a timer that reads to the nearest second be used to obtain similar results, and why?
- A. No, because the period of both pendulums was between 1 and 2 seconds.
 - B. No, because the pendulums would have traveled farther in 1 second than they did in 1 period.
 - C. Yes, because the period of both pendulums was approximately 1.5 seconds.
 - D. Yes, because the pendulums would not have traveled as far in 1 second as they did in 1 period.



14. The results of the experiments indicate that forces other than gravity are acting on the pendulums because the calculated values of acceleration were:
- F. the same for pendulums of different lengths.
 - G. the same for cubes of different mass.
 - H. lower than the expected 9.8 m/sec^2 from gravity alone.
 - J. greater than the expected 9.8 m/sec^2 from gravity alone.
15. Based on the passage, if a tin cube is suspended from a 2.0 m thread and set in motion multiple times from the same starting angle, the average measured period will most likely be:
- A. less than 1.48 sec.
 - B. approximately 1.48 sec.
 - C. approximately 2.09 sec.
 - D. greater than 2.09 sec.
16. In Experiment 2, if an additional trial were conducted using the lead cube, the cube's measured period would most likely be nearest:
- F. 1.90 sec.
 - G. 2.05 sec.
 - H. 2.15 sec.
 - J. 2.20 sec.
17. Experiments 1 and 2 were conducted using lead and tin cubes most likely to determine if a pendulum's period was altered by the material attached to the string and the cube's:
- A. length.
 - B. surface area.
 - C. starting angle.
 - D. mass.



Passage IV

Accepted classification systems of life do not include *viruses*. Although viruses possess certain features of cellular organisms, including genetic material that codes for making new viral particles, they cannot *replicate* (make copies of) themselves without first infecting a living cell. Biologists agree that viruses originated from genetic material called *nucleic acid*, but it is difficult to prove any single theory regarding how this occurred. Three hypotheses of viral origin are presented here.

Coevolution Hypothesis

Some biologists argue that viruses evolved alongside other organisms over billions of years. They suggest that simple molecules of *ribonucleic acid* (RNA), a *nucleotide* that forms the genetic code for proteins, joined to form more complex sequences. These RNA sequences developed enzyme-like abilities including the ability to self-replicate and insert themselves into other nucleotide sequences. While some RNA sequences became incorporated into membrane-bound cells, others were packaged inside proteins as the first viral particles that could replicate after infecting cellular organisms (see Figure 1).

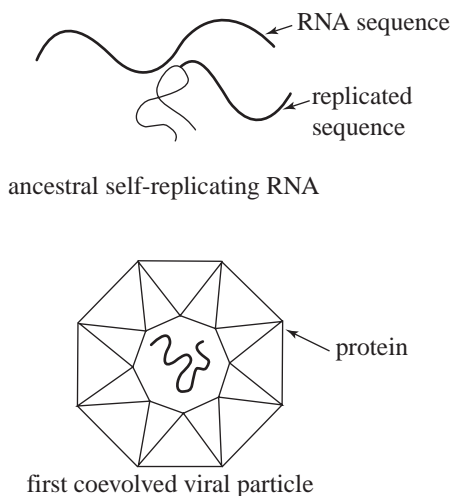


Figure 1

Cellular Origin Hypothesis

Some biologists claim that nucleotide sequences within *prokaryotic* (non-nucleated) and *eukaryotic* (nucleated) cellular organisms incorporated into a protein coating and escaped from the cell as a viral particle. Initially, DNA or RNA nucleotide sequences gained the code required for other cells to replicate them. Next, these sequences associated with proteins to form an outer *capsid*. Finally, the *virion* (viral particle) became capable of passing through the cell membrane and infecting other cells where it could be replicated. After the initial escape, viruses evolved independently from their initial host and ultimately could infect either prokaryotic or eukaryotic cells.

Regressive Evolution Hypothesis

An alternative explanation of viral origin is that viruses evolved from cellular organisms. Some cellular organisms, particularly certain bacteria, are *obligate intracellular parasites* because they must infect a host cell in order to reproduce. Regressive evolution suggests that some bacterial parasites gradually lost the structures required for survival outside of a cell. The result was a virus particle containing only nucleotides, a capsid (protein coating), and at times an outer membrane or envelope. This would account readily for viruses that contain complex *deoxyribonucleic acid* (DNA) similar to that found in bacteria and other cellular organisms (see Figure 2).

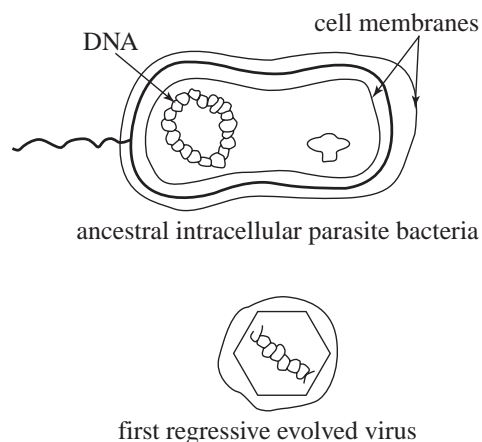


Figure 2

18. The development of which of the following is addressed in the passage by the Coevolution Hypothesis, but NOT by the Regressive Evolution Hypothesis?
 - F. Self-replication
 - G. Capsid
 - H. Deoxyribonucleic acid
 - J. Cell membrane transit
19. Supporters of all of the theories presented in the passage would agree with the conclusion that the first viruses:
 - A. evolved from bacteria.
 - B. could self-replicate outside a cell.
 - C. were enclosed within a membrane.
 - D. contained nucleic acid.
20. The Coevolution Hypothesis does NOT provide an explanation for the earliest virus particles possessing:
 - F. protein.
 - G. enzyme-like activity.
 - H. nucleotides.
 - J. DNA.



21. If the Cellular Origin Hypothesis is correct, which of the following conclusions can be made about modern T4 DNA viruses, which infect *Escherichia coli* bacteria, and modern PP7 RNA viruses, which infect *Pseudomonas aeruginosa* bacteria?
- A. T4 and PP7 are more closely related to each other than to bacteria genetically.
 - B. T4 and PP7 are only distantly related genetically through a cellular organism.
 - C. T4 and PP7 both evolved from prokaryotic organisms.
 - D. T4 and PP7 both evolved from eukaryotic organisms.
22. The discovery of which of the following living organisms would provide the most support for the Regressive Evolution Hypothesis?
- F. Extracellular parasites with DNA resembling a known virus
 - G. Extracellular parasites with unique RNA nucleotide sequences
 - H. Intracellular parasites with DNA resembling a known virus
 - J. Intracellular parasites with unique RNA nucleotide sequences
23. Supporters of all the theories presented would agree with which of the following conclusions about the origin of viruses?
- A. Viral capsids contain a protein structure similar to the cell walls of modern bacteria.
 - B. The first viruses did not originate before the first cellular organisms.
 - C. RNA viruses are more advanced than DNA viruses.
 - D. The first virus contained DNA and was surrounded by an envelope similar to a cell membrane.
24. Which of the following questions is raised by the Coevolution Hypothesis, but is NOT answered in the passage?
- F. Why were some RNA sequences packaged into protein structures and others incorporated into cell structures?
 - G. Why did obligate intracellular parasites lose their ability to survive outside of cells?
 - H. How could two different types of cellular organisms account for the origin of viruses?
 - J. How did virions develop the ability to pass through the cell membrane out of the cell?

**Passage V**

Wind causes *topsoil deflation*, a type of erosion that is affected by plant and organic cover as well as water content of the soil. Scientists performed 2 experiments using equal-sized fields containing the same volume of soil. The soil samples were primarily a mixture of sand and silt, but differed in the percentage of clay they contained. Soil X was composed of 5% clay and soil Y was composed of 40% clay. Large fans were used to simulate wind. Topsoil deflation was measured in kilograms per hectare (kg/ha) following 10 hours of wind.

Experiment 1

A mixture of compost and straw was used to represent plant and organic cover. The percentage of soil covered with the mixture was considered to approximate an equivalent percentage of natural vegetative cover. One field remained uncovered, and the other fields were covered with different percentages of compost and straw. The topsoil deflation from each field was recorded in Table 1.

Table 1				
Soil	Topsoil deflation (kg/ha) by percentage of organic cover			
	0%	25%	50%	75%
X	105,000	68,000	46,000	20,000
Y	65,000	42,000	28,500	12,000

Experiment 2

Rainfall was simulated using a sprinkler system. Sprinklers were turned on for either 4 hours or 8 hours for fields of each kind of soil. Two additional fields composed of each type of soil were left unwatered. Afterward, soil samples were taken from all of the fields to determine their water content percentage, which was recorded in Table 2. Wind was applied as in Experiment 1 and topsoil deflation for all fields was recorded in Table 3.

Table 2			
Soil	Water content of soil following various sprinkler times		
	0 hours	4 hours	8 hours
X	10%	13%	16%
Y	10%	14%	22%

Table 3			
Soil	Topsoil deflation (kg/ha) following various sprinkler times		
	0 hours	4 hours	8 hours
X	89,250	66,000	14,000
Y	53,400	40,100	10,300



25. According to the results of Experiments 1 and 2, topsoil deflation will be minimized by:
- A. decreased organic cover, increased amount of rainfall, and the use of either soil X or Y as topsoil.
 - B. decreased organic cover, decreased amount of rainfall, and the use of soil Y as topsoil.
 - C. increased organic cover, increased amount of rainfall, and the use of soil Y as topsoil.
 - D. increased organic cover, increased amount of rainfall, and the use of soil X as topsoil.
26. If Experiment 1 were repeated using a soil containing 10% clay with 0% organic cover, which of the following would be the most likely topsoil deflation amount?
- F. 110,200 kg/ha
 - G. 99,800 kg/ha
 - H. 70,700 kg/ha
 - J. 60,200 kg/ha
27. To further investigate the effect of water content on erosion from topsoil deflation, the scientists should repeat Experiment:
- A. 1, using a different type of topsoil.
 - B. 1, using plastic covers over the fields.
 - C. 2, using no sprinklers.
 - D. 2, using fields exposed to various amounts of rainfall.
28. What assumption in experimental design is most important to consider when applying the findings of Experiment 1 to a practical situation?
- F. The quantity of topsoil deflation is independent of the percentage of clay present in the soil.
 - G. The presence of straw on the soil does not accurately simulate vegetation and organic cover.
 - H. Air movement from fans provides an accurate simulation of the wind responsible for topsoil deflation.
 - J. Compost is more effective than water content in the prevention of topsoil erosion.
29. In Experiment 2, the water content in the two soil types was similar after 4 hours of sprinkling, yet the topsoil deflation was significantly different. Which of the following statements provides the best explanation for these findings?
- A. Topsoil erosion is independent of the water content found in the soil.
 - B. Fields are susceptible to topsoil deflation only when water completely evaporates from the topsoil.
 - C. Soil with a lower percentage of clay is more prone to erosion from topsoil deflation than one with a higher percentage of clay.
 - D. Water is trapped in the topsoil by wind and this increases the rate of topsoil deflation.
30. If Experiment 2 were repeated with soil containing 10% clay, which of the following values would be expected for water content and topsoil deflation in a field following 8 hours of water sprinkling?
- F. water content of 17%; topsoil deflation of 13,400 kg/ha
 - G. water content of 21%; topsoil deflation of 9,700 kg/ha
 - H. water content of 15%; topsoil deflation of 10,900 kg/ha
 - J. water content of 14%; topsoil deflation of 101,000 kg/ha

Passage VI

The oceans of Earth are exposed to various climates and consequently have different physical properties. Deep oceans can be divided into zones based on temperature gradient and penetration of sunlight. Figure 1 shows the zones of a typical deep-water ocean, the depth of the zone boundaries in meters (m), and the overall pressure at those depths in kilopascals (kPa). Figure 2 shows the water temperature in degrees Celsius (°C) in warmer tropical oceans and cooler temperate oceans at varying depths. Sound waves are used to measure water temperature at depth, and readings from two different ocean regions are recorded in Table 1.

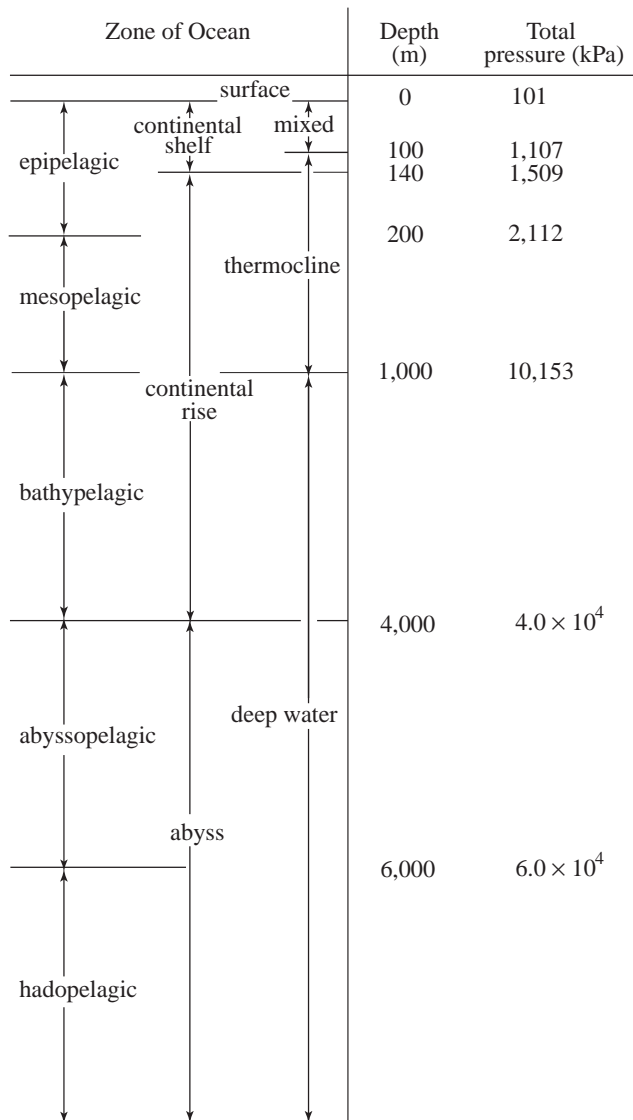


Figure 1

(Note: Figure is NOT drawn to scale)

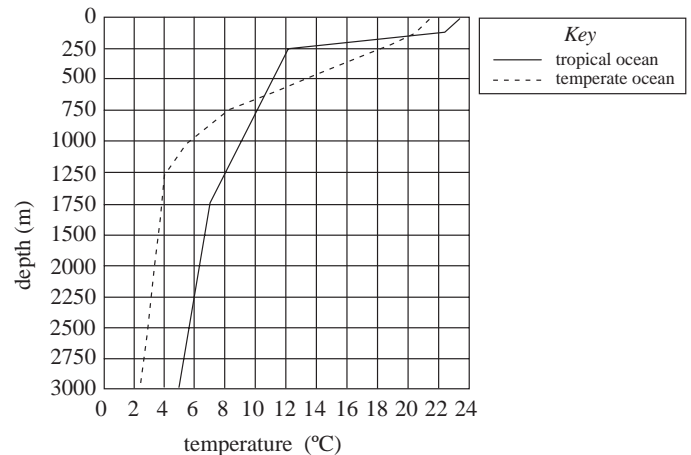


Figure 2

Table 1			
Total pressure (kPa)	Depth (m)	Ocean temperature (°C)	
		Region 1	Region 2
101	0	24	21
200	9.8	22	20
300	19.8	14	11
400	29.7	11	9
500	39.7	10	8
600	49.6	9	8
700	59.6	7	6
800	69.5	5	3
900	79.5	4	2

31. According to Figure 1, the regions of several ocean zones overlap. Which of the following pairs of ocean zones share part of a common depth range?

- A. Bathypelagic and mesopelagic
- B. Bathypelagic and epipelagic
- C. Epipelagic and thermocline
- D. Epipelagic and mesopelagic



32. According to Figure 1, an oceanographic reading taken at a total pressure of 1,200 kPa is most likely from which of the following zones?
- F. Abyss
 - G. Continental rise
 - H. Mixed
 - J. Continental shelf
33. According to Figure 2, a sonographic measurement of temperature would be unable to distinguish the difference between tropical and temperate oceans at which of the following depths?
- A. 250 m
 - B. 500 m
 - C. 625 m
 - D. 750 m
34. According to Table 1, the relationship between depth and ocean temperature is best described by which of the following statements?
- F. The water temperature increased with increasing depth in Region 1 only.
 - G. The water temperature decreased with increasing depth in Region 1 only.
 - H. The water temperature increased with increasing depth in Region 2 only.
 - J. The water temperature decreased with increasing depth in Region 2 only.
35. According to Figure 1 and Table 1, if water temperature measurements were taken at depths greater than 79.5, the total pressure at those depths would most likely:
- A. decrease to less than 101 kPa.
 - B. increase to more than 900 kPa.
 - C. stay at 900 kPa.
 - D. increase to 101 kPa.



Passage VII

Although many forms of bacteria are helpful for human health, they can also cause illness and even death from severe infections. *Antibiotics* are a class of medicines used to combat bacterial infections. *Bacteriostatic* activity inhibits bacteria cell division and *bactericidal* activity kills bacterial cells. Both actions eliminate populations of bacteria over time. Several classes of bacteriostatic and bactericidal antibiotics are described in Table 1.

Table 1				
Class	Example	Active against	Mechanism	Common uses
β -lactams	ampicillin	some gram-positive and gram-negative bacteria	disrupt cell wall synthesis; bactericidal	respiratory and skin infections
Tetracyclines	doxycycline	atypical gram-indeterminate bacteria	disrupt bacterial mRNA synthesis; mostly bacteriostatic	respiratory and genitourinary infections
Macrolides	azithromycin	gram-positive and atypical bacteria	disrupts bacterial protein synthesis; mostly bacteriostatic	atypical and respiratory infections
Aminoglycosides	gentamicin, streptomycin	gram-negative bacteria	disrupt bacterial protein synthesis; bactericidal	severe systemic infections
Quinolones	ofloxacin, gatifloxacin	broad spectrum of bacteria	disrupt bacterial DNA replication; bactericidal	respiratory, genitourinary, and gastrointestinal infections
Antifolates	sulfamethoxazole, trimethoprim	some gram-positive and gram-negative bacteria	disrupt bacterial DNA and RNA synthesis; mostly bacteriostatic	genitourinary and skin infections

The effectiveness of several antibiotics against a bacterium known to cause common skin infections was tested. Drugs were introduced to the bacterial culture by themselves or in combination with sulfamethoxazole (forming SMX compounds). The effectiveness of these antibiotics at eliminating the responsible bacterium is shown in Figure 1.

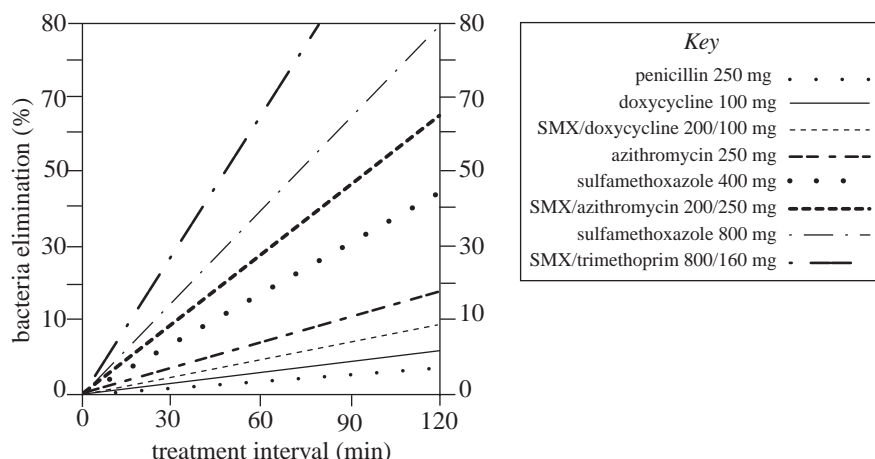


Figure 1

36. According to the information in Table 1 and Figure 1, what can be concluded about the use of sulfamethoxazole as an antibiotic for common skin infections?
- F. Using sulfamethoxazole 800 mg is ineffective as an antibiotic.
 - G. Increasing the dosage of sulfamethoxazole decreases its overall effectiveness as an antibiotic.
 - H. As an antibiotic, the mechanism of action of sulfamethoxazole is unknown.
 - J. Compounding antibiotics with sulfamethoxazole increases their effectiveness against common skin infections.
37. According to Figure 1, if an investigator administered a sulfamethoxazole dose of 600 mg, 20% of the original bacteria would remain after a treatment interval:
- A. greater than 120 min.
 - B. between 90 to 120 min.
 - C. between 60 to 90 min.
 - D. between 30 to 60 min.
38. After treatment of a bacterial culture similar to that in the passage with 250 mg of penicillin for 2 hours, the culture will probably contain:
- F. less bacteria overall, but most will have survived.
 - G. less bacteria overall, and most will have been killed.
 - H. the same amount of bacteria overall, and most will have survived.
 - J. the same amount of bacteria overall, and most will have been killed.
39. Is the statement “antibiotics compounded with sulfamethoxazole are more effective against common skin infections than when administered alone” supported by the information shown in Figure 1, and why?
- A. No, because penicillin is more effective against a common skin infection bacterium than sulfamethoxazole 400 mg.
 - B. No, because azithromycin is more effective against a common skin infection bacterium than SMX/azithromycin.
 - C. Yes, because sulfamethoxazole 800 mg is more effective against a common skin infection bacterium than SMX/azithromycin.
 - D. Yes, because SMX/doxycycline is more effective against a common skin infection bacterium than doxycycline.
40. According to the passage, the most effective antibiotic against bacteria is one that results in the:
- F. lowest percentage of bacterial elimination in the shortest treatment interval.
 - G. lowest percentage of bacterial elimination in the longest treatment interval.
 - H. greatest percentage of bacterial elimination in the shortest treatment interval.
 - J. greatest percentage of bacterial elimination in the longest treatment interval.

END OF TEST 4

STOP!

College Athletics

College athletics is a multi-billion dollar industry in the United States. College sports teams generate enormous amounts of revenue for their schools but are also extremely expensive to maintain. Part of that cost comes from the athletic scholarships offered to recruit good players. It is extremely common for colleges to take on a significant portion, if not all, of the cost of a student's tuition in order to encourage him or her to play for that college's team. Should colleges offer scholarships to talented athletes? Given the ever-rising cost of college, it is important to examine the issues surrounding college athletic scholarships.

Read and carefully consider these perspectives. Each suggests a particular way of thinking about college athletic scholarships.

Perspective One

For many, an athletic scholarship is the only way to pay for college. Limiting or prohibiting athletic scholarships might alleviate the financial burden to be borne by other students, but it also deprives the less fortunate of an opportunity for education.

Perspective Two

Universities are educational institutions above all else. Any amount of money spent on attracting athletes is unacceptable and should instead be spent on educational purposes, such as hiring teachers, purchasing books, or alleviating costs for students in need.

Perspective Three

One of the ways athletic scholarships are funded is by raising tuition on the rest of the students. However, other students do not choose whether their money should go towards helping attract athletes. Forcing students to bear an athlete's financial burden is unjust.

Essay Task

Write a unified, coherent essay in which you evaluate multiple perspectives on the question of college athletics. In your essay, be sure to:

- analyze and evaluate the perspectives given
- state and develop your own perspective on the issue
- explain the relationship between your perspective and those given

Your perspective may be in full agreement with any of the others, in partial agreement, or wholly different. Whatever the case, support your ideas with logical reasoning and detailed, persuasive examples.

Planning Your Essay

Your work on these prewriting pages will not be scored.

Use the space below and on the back cover to generate ideas and plan your essay. You may wish to consider the following as you think critically about the task:

Strengths and weaknesses of the three given perspectives

- What insights do they offer, and what do they fail to consider?
- Why might they be persuasive to others, or why might they fail to persuade?

Your own knowledge, experience, and values

- What is your perspective on this issue, and what are its strengths and weaknesses?
- How will you support your perspective in your essay?

