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## ENGLISH TEST

45 Minutes—75 Questions

**DIRECTIONS:** In the passages that follow, some words and phrases are underlined and numbered. In the answer column, you will find alternatives for the words and phrases that are underlined. Choose the alternative that you think is best, and fill in the corresponding bubble on your answer sheet. If you think that the original version is best, choose “NO CHANGE,” which will always be either answer choice A or F. You will also find questions about a particular section of the

passage, or about the entire passage. These questions will be identified either by an underlined portion or by a number in a box. Look for the answer that clearly expresses the idea, is consistent with the style and tone of the passage, and makes the correct use of standard written English. Read the passage through once before answering the questions. For some questions, you should read beyond the indicated portion before you answer.

## PASSAGE I

## The Deer Fence

A family emergency took us across the country for several weeks during the spring of that year. We had left our first vegetable garden in the midst of early growing season, a time when careful monitoring of emerging seeds is essential to ensure their vitality. Only a serious family matter would have as an instigation for such a departure.

We arrived home three weeks later to witness an

incredible transformation upon our return. Not only had the broccoli stalks and scarlet radishes come to bear fruit, but

1. A. NO CHANGE  
B. a  
C. this  
D. OMIT the underlined portion.
2. The writer would like to emphasize how critical her direct involvement is to the success of her garden. Given that all the choices are true, which one best accomplishes the writer’s goal?  
F. NO CHANGE  
G. plenty of sunshine for  
H. abundant rainfall for  
J. casual observance of
3. A. NO CHANGE  
B. instigates  
C. instigating  
D. instigated
4. F. NO CHANGE  
G. by witnessing  
H. for the witnessing of  
J. to the witness of
5. A. NO CHANGE  
B. when we got back  
C. after our arrival  
D. OMIT the underlined portion.

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they are the local deer population had decided to make a meal of our freshly sprouted crop. Deer do not use a freshly sharpened kitchen knife to remove delicious morsels from their stems. Rather, the animals gnaw and shred at the plants with their vegetarian teeth, leaving a mess of rejected foliage, hoof prints, and raw vegetable soup. 7

Our four-foot twig garden fence suddenly appeared comical and humorously purely decorative. There was

obviously a lack of real deterring qualities, that needed to be remedied quickly. Even though we were now back home to stand guard, our absence had inadvertently established our kitchen garden as a food plot for the nearby wildlife. Deer are typically night eaters, and we weren't about to change our own sleeping patterns to accommodate them! Stopping the deer would require a concerted, multi-pronged approach.

6. F. NO CHANGE

G. the local deer population, they

H. the local deer population

J. they

7. The writer is considering deleting the phrase "leaving a mess of rejected foliage, hoof prints, and raw vegetable soup" from the preceding sentence. Should the phrase be kept or deleted?

A. Kept, because it emphasizes both the destructiveness of deer and the importance of protecting a garden.

B. Kept, because it is relevant to the essay's focus on the construction of the deer fence.

C. Deleted, because it distracts the reader from the description of the deer fence.

D. Deleted, because this level of detail is not consistent with the essay's discussion of protecting a garden from deer.

8. F. NO CHANGE

G. decorative, yet funny.

H. purely decorative and humorous.

J. purely decorative.

9. A. NO CHANGE

B. deterring qualities, which

C. deterring, qualities, which

D. deterring, qualities that

10. The writer would like to indicate that protecting the garden from future destruction will be time-consuming and must be well planned. Given that all choices are true, which one best accomplishes the writer's goal?

F. NO CHANGE

G. not be easy.

H. take some time.

J. require a team effort.

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Following a tedious journey to the local hardware store, we assembled our army's ammunition: 350 feet of chicken wire; a box of four-inch screws; neon-orange plastic ribbon; and a heavy duty staple gun. Unrolling a 350-foot roll of chicken wire is no easy task. Constructing the bottom tier of the fence was just as daunting; one person unrolled the four-foot wide tube while another person followed behind, stapling the chicken wire to the existing fence posts. Tackling the second row was another story altogether. Since our original posts were a mere four feet high, each post needed a four-foot extension attached to it, followed by another round of chicken wire.

After hours of back-breaking work, we stood back to admire this new fence. The big test would come when darkness fell. Deer can and will leap over an eight-foot barrier if necessary, but our saving grace would be the intimidation factor of our new fence, with its metallic outline glinting in the moonlight and neon-orange tags flapping in the wind. Swift and beautiful leapers, the newness and appearance of the enclosure should nonetheless serve to frighten away our backyard deer.

It has been two months since the transformation of our little twig-fenced garden into a chicken-wired vegetable

prison. Each night we sit down to the likes of delicious sweet corn, baked zucchini, tomato and cucumber salad, and snap beans. No broccoli or radishes this year, but we're already discussing the blueberry bushes and strawberry plants for next year. First, though, we will give some serious thought to the black bears that live in our woods.

11. Which of the following alternatives to the underlined portion would NOT be acceptable?  
 A. After  
 B. Soon after  
 C. Followed by  
 D. Returning from
12. Which of the following alternatives to the underlined portion would NOT be acceptable?  
 F. also daunting  
 G. as daunting a venture  
 H. daunting as well  
 J. just for daunting
13. Given that all the choices are true, which one provides the most specific detail and maintains the style and tone of the essay?  
 A. NO CHANGE  
 B. our newly erected, sturdy fortress.  
 C. the taller enclosure.  
 D. the rectangular area enclosed by a chicken-wire fence attached to posts.
14. F. NO CHANGE  
 G. Swift and beautiful leapers, the deer in our backyard should nonetheless be frightened away by the newness and appearance of the enclosure.  
 H. While they are swift and beautiful leapers, the newness and appearance of the enclosure should nonetheless serve to frighten away the deer in our backyard.  
 J. While they are swift and beautiful leapers, nonetheless the newness and appearance of the enclosure should frighten away the deer in our backyard.
15. A. NO CHANGE  
 B. for the likes of  
 C. by the likes of  
 D. at the likes of

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## PASSAGE II

## A Flute in the Forest

A quiet walk along a forest path during an early spring dusk surprisingly revealed an unexpected gift of nature.

The sound of a flute seemed to float from the tallest trees <sup>16</sup> in the near distance. This flute song was like none ever made by man. Our guide quickly raised his hand in a signal for us to stop and remain still, and then whispered these simple words: "Wood Thrush." Truly, any attempts to describe this spectacular birdsong with words does a grave <sup>17</sup> injustice to its unique vocalizations.

The Wood Thrush is a rather plain, brown, robin-like bird. Its most distinctive features are its white spotted chest and pinkish legs. Viewing these birds can be especially difficult, as they enjoy perching on the tallest <sup>18</sup> branch that is still able to offer seclusion among its leaves and twigs. Binoculars are a must. With each Wood Thrush song, a birdwatcher is able to track the bird's location. Because it is a migratory bird, early spring is generally the first opportunity to observe the Wood Thrush in the United States. <sup>19</sup> A mixed forest is its preferred habitat, one with both deciduous and evergreen trees of varying heights. Interestingly, while the Wood Thrush enjoys singing from

the tallest branches, it's nest is often found much closer to <sup>20</sup> the ground.

16. F. NO CHANGE

G. by chance

H. unwittingly

J. OMIT the underlined portion.

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

A. Really,

B. Precisely,

C. Honestly,

D. Surely,

18. F. NO CHANGE

G. difficult; as

H. difficult as,

J. difficult. As

19. The writer is considering deleting the first part of the preceding sentence, so that the sentence would read:

Early spring is generally the first opportunity to observe the Wood Thrush in the United States.

If the writer were to make this change, the essay would primarily lose:

A. details that indicate to the reader what will eventually happen.

B. the contrast between the appearance of the Wood Thrush and the appearance of other forest birds.

C. an example of one of the features that makes the Wood Thrush such a special bird.

D. an indication of why bird watchers will usually see the Wood Thrush only during certain times of the year.

20. F. NO CHANGE

G. its

H. they're

J. their

GO ON TO THE NEXT PAGE.

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[1] As the birds settle into their spring nesting areas, the <sup>21</sup> race to find a mate starts in earnest. [2] Fortunately for bird lovers, this is when the male Wood Thrush begins perfecting his song as he attempts to attract a willing female. [3] Starting in the late evening, just as dusk begins to encompass the landscape and most other birds have quieted down, the Wood Thrush tentatively begins his symphony of love. [4] His songs come in distinct parts, <sup>22</sup> and he can sometimes even sing two sweet notes simultaneously. [5] His concert generally lasts for a full half hour, and he completes more than 100 songs in that time. [6] With each song, the listener begins to hear this <sup>23</sup> fancy flutist working on new combinations of notes, extending a particular collection of chords, and changing pitch and volume at will. [7] Abruptly, the singing stops,

indicating that  
<sup>24</sup>

the bird's pure exhaustion. [25]

21. Which of the following alternatives to the underlined portion would NOT be acceptable?
- A. While the birds  
B. The birds  
C. Once the birds  
D. When the birds
22. F. NO CHANGE  
G. His songs, come in distinct parts  
H. His songs come, in distinct parts,  
J. His songs, come in, distinct parts,
23. Which of the following alternatives to the underlined portion would NOT be acceptable?
- A. can hear  
B. starts hearing  
C. begins by hearing  
D. hears
24. F. NO CHANGE  
G. indicates  
H. indicating  
J. so indicates
25. Upon reviewing this paragraph and realizing that some information has been left out, the writer composes the following sentence:
- All of these songs play an important role in the male bird's attempt to secure a mate, and the female Wood Thrush hears subtle nuances that escape the human ear.
- This sentence should most logically be placed after Sentence:
- A. 1.  
B. 2.  
C. 6.  
D. 7.

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Following a long rest, the male Wood Thrush awakens  
to begin his quest anew. <sup>26</sup> Early in the morning, before the  
<sub>26</sub>

other forest birds awaken, the Wood Thrush by starting his  
melody all over again, waking the world up to another  
<sub>27</sub>

long and harmonious musical arrangement. It seems  
unimaginable that more than one such display is necessary  
<sup>28</sup>  
to attract an interested partner, but the songs continue for  
the entire spring and even into the summer months. One  
can only determine that the Wood Thrush chosen female  
and subsequent offspring are begging him  
<sub>29</sub>

for to keep singing. As poet Henry David Thoreau wrote,  
the <sup>30</sup> Wood Thrush “alone declares the immortal wealth and  
vigor that is in this forest.”

26. Given that all the choices are true, which one most effectively introduces the information in this paragraph?  
F. NO CHANGE  
G. Subsequently, the male Wood Thrush requires several hours of sleep each night.  
H. By this time, many other forest birds have settled in for the night.  
J. It is hard to believe that the male Wood Thrush attracts only one mate with his beautiful songs.
27. A. NO CHANGE  
B. had started  
C. will have started  
D. will start
28. Which choice provides the most specific and precise information?  
F. NO CHANGE  
G. solitary tune.  
H. beautiful song.  
J. sweet sound.
29. A. NO CHANGE  
B. Thrush chooses  
C. Thrush's chose  
D. Thrush's chosen
30. F. NO CHANGE  
G. to keep singing.  
H. by keeping singing.  
J. in keeping with singing.

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PASSAGE III

The following paragraphs may or may not be in the most logical order. Each paragraph is numbered in brackets, and Question 45 will ask you to choose where Paragraph 4 should most logically be placed.

Sacajawea: Girl Guide

[1]

Probably one of the most well-known members of the Shoshone Indian tribe, Sacajawea may have been Americas<sup>31</sup> first introduction to the plight of the working mother. As depicted in numerous works of art, photos, and statues, Sacajawea is most famous for accompanying Lewis and Clark on their expedition to the Pacific Ocean. From early April<sup>32</sup> of 1805 until the summer of 1806, the 17-year-old Sacajawea and her infant son rode horseback across mountains and rivers from North Dakota to the west coast. She demonstrated a sense of calm and quiet determination throughout the trip, as reflected in their<sup>33</sup> journals kept by the other members of the tireless group.

She was always described as being helpful and unobtrusive, caring for her child while at times aiding the party in obtaining supplies and finding easier pathways through treacherous territory. [34]

- 31. A. NO CHANGE  
B. America  
C. America's  
D. Americas'
- 32. Which of the following alternatives to the underlined portion would NOT be acceptable?  
E. achieved fame for accompanying  
G. being famous for accompanying  
H. became famous for accompanying  
J. is best remembered for accompanying
- 33. A. NO CHANGE  
B. her  
C. those  
D. OMIT the underlined portion.
- 34. At this point, the writer is considering adding the following true statement:  
Clark was primarily responsible for calculating the daily distances traveled by the team. Should the writer add this sentence here?  
E. Yes, because it shows how meticulous Lewis and Clark were in their measurements.  
G. Yes, because it is necessary to understanding the essay as a whole.  
H. No, because it provides information that is included previously in the essay.  
J. No, because it would distract readers from the main topic of the essay.

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[2]

Sacajawea's early life was traumatic; she was stolen as a young girl from her Shoshone home by a rival tribe. Soon after, however, French-Canadian Toussaint Charbonneau bought Sacajawea and made her his wife. At age 16, she gave birth to her son and with her husband, son, and the Lewis and Clark party, her trek began shortly thereafter.

While historians often refer to Sacajawea as an official guide for this expedition, she was only included on it's roster because she was married to Charbonneau, a well-known fur trapper. Along the way, because of her familiarity with her homeland, she was able to serve as both an interpreter and an aid for finding shortcuts and easier routes.

[3]

At one point on this historic journey, Sacajawea is reunited with her Shoshone home and family. Although

she found that most – believe it or not – of her immediate family members had perished, her surviving brother, Cameahwait, had become the chief of the Shoshone tribe. Sacajawea was able to negotiate with her brother for horses and supplies, as well as for a map and guide so that they could press forward with their mission. [41]

35. Which of the following alternatives to the underlined portion would NOT be acceptable?  
 A. traumatic. She  
 B. traumatic, she  
 C. traumatic, in part because she  
 D. traumatic, partly because she
36. Which choice provides the most logical arrangement of the parts of this sentence?  
 F. NO CHANGE  
 G. her trek began shortly thereafter with her husband, son, and the Lewis and Clark party westward.  
 H. began her trek shortly thereafter westward with her husband, son, and the Lewis and Clark party.  
 J. shortly thereafter began her trek westward with her husband, son, and the Lewis and Clark party.
37. A. NO CHANGE  
 B. its roster  
 C. its' roster  
 D. their roster,
38. F. NO CHANGE  
 G. is being reunited  
 H. has been reunited  
 J. was reunited
39. A. NO CHANGE  
 B. most – amazingly enough – of her immediate family  
 C. most of (she could not believe it) her immediate family  
 D. most of her immediate family
40. F. NO CHANGE  
 G. supplies. In addition to  
 H. supplies. As well as  
 J. supplies, in addition to,
41. If the writer were to delete the last part of the preceding sentence (ending the sentence with a period after the word *guide*), the paragraph would primarily lose:  
 A. support for the essay's point about Sacajawea's importance to the continuation of the expedition.  
 B. a direct link to the first paragraph.  
 C. a humorous description of Sacajawea's negotiating skills.  
 D. an extensive digression about Sacajawea's relationship with her brother and other members of her family.

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[4]

Controversy surrounds the end of Sacajawea’s life.

Some historians list the year of 1812 as the year she died at the age of 25. Shoshone history, however, records Sacajawea as living the remainder of her life on the reservation where she was born and dying there at age 97.

[5]

Many of the personal narratives of this momentous trip refer to Sacajawea’s demeanor and the oftentimes subtle role she played in the trip’s success. One such account describes a river crossing in which Sacajawea’s boat nearly capsized during a storm. As the boat tipped onto its side, Sacajawea carefully and calmly began retrieving the many books and precious instruments that fell into them. Fortunately, the items had been wrapped in waterproof material and remained intact. The group was convinced that all would have been lost had it not been for Sacajawea’s methodical and composed actions.

[6]

Despite the questions surrounding her death, there is no question that Sacajawea left her mark on American history.

- 42. F. NO CHANGE
- G. one year of
- H. the time of
- J. OMIT the underlined portion.

- 43. A. NO CHANGE
- B. it.
- C. the water.
- D. OMIT the underlined portion.

- 44. Given that all the choices are true, which one most effectively concludes and summarizes the essay?
- F. NO CHANGE
- G. Expert guide and negotiator, Sacajawea appeared to live a long and prosperous life.
- H. In addition to her navigational skills, Sacajawea was undeniably a great mother.
- J. Despite the drama of her early life, Sacajawea remained calm and collected.

Question 45 asks about the preceding passage as a whole.

- 45. For the sake of the logic and coherence of the essay, Paragraph 4 should be placed:
- A. where it is now.
- B. after Paragraph 1.
- C. after Paragraph 2.
- D. after Paragraph 5.

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## PASSAGE IV

## Puzzling Numbers

The Japanese number game Sudoku has taken the world with storm. While crossword puzzles seem to be the game

of choice, they need only sit in an airport or doctor's office in any city to see how Sudoku is slowly overtaking the popular word game.

In the most common game of Sudoku, the player is faced with a nine-by-nine space grid with a total of 81 spaces. The solution to the puzzle requires a number, one through nine, to be placed in each box. [48] Each number must appear only once in each row and only once in each column. A Sudoku puzzle will begin with a few

digits already in place. The solver's task, is to figure out which numeral belongs in the remaining empty spaces.

While being a math whiz is no requirement for this seemingly simple process, a level of logic and reasoning is necessary in order to choose the correct number for each space. As with most such activities, practice makes perfect with Sudoku. The puzzles that seem impossible at first glance eventual become more manageable.

46. F. NO CHANGE

G. by

H. of

J. OMIT the underlined portion.

47. A. NO CHANGE

B. one needs

C. it needs

D. which need

48. The writer is considering deleting the preceding sentence. Should this sentence be kept or deleted?

F. Kept, because the reader needs to understand the process by which he or she can solve the puzzle.

G. Kept, because it helps the reader visualize the solution to a specific puzzle in a magazine.

H. Deleted, because it is not relevant to the preceding sentence.

J. Deleted, because it is unnecessarily wordy.

49. A. NO CHANGE

B. task; is

C. task is

D. task – is

50. F. NO CHANGE

G. are

H. were

J. is being

51. A. NO CHANGE

B. became eventual

C. eventually becoming

D. eventually become

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The name Sudoku is derived from the phrase *single number* in the Japanese language. Nevertheless, its definition refers to the placement or allotment of a single

number. This puzzle is aptly named, since the misplacement of a single number spells the beginning of an incorrect solution. For this reason, Sudoku

should have been played using a pencil with a good eraser.

It is nearly impossible to discern which number the solver has placed incorrectly once an error is discovered. If you don't have a pencil, use a pen to write the digit as a series of light dots. This way, should you make a mistake, you can retrace your steps to locate and correct the original errant placement.

There are certain strategies involved in solving a Sudoku puzzle, including the process of elimination. For example, if a row of nine spaces already has the number 4, that row cannot contain another 4. This goes for columns as well. The solver can use these clues and a bit of deduction to limit the possible combinations of numbers. By attacking the puzzle using logic, you can turn the process into an amusing challenge rather than an impossible task.

- 52. F. NO CHANGE
- G. Specifically,
- H. Ultimately,
- J. Largely,

- 53. Which of the following alternatives to the underlined portion would be LEAST acceptable?
  - A. named because
  - B. named, as
  - C. named, while
  - D. named;

- 54. F. NO CHANGE
- G. should be
- H. should being
- J. should of been

- 55. A. NO CHANGE
- B. that number
- C. a number
- D. number

- 56. Which choice fits most specifically with the information at the end of this sentence?
  - F. NO CHANGE
  - G. if you want to
  - H. time permitting
  - J. with your pen

- 57. A. NO CHANGE
- B. logic, and
- C. logic, so
- D. logic

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[1] The origin of Sudoku is attributed to Leonhard Euler, the Swiss mathematician who sometimes developed the game Magic Squares in 1783. [2] In fact, Euler's game was actually based on a game derived from Chinese folklore. [3] The primary difference between Magic Squares and Sudoku is that Euler's game has no grid dividing the puzzle and it is somewhat easier to solve, since there are multiple possibilities for a solution. [4] In true Sudoku, each puzzle has only one solution. [5] The puzzle's difficulty varies according to the number of digits that are initially provided. [6] When faced with a puzzle with only one 3 provided, for example, you can be sure that it will be more difficult to solve than a puzzle that already has half of the numbers placed in the correct boxes. [59]

One has only to examine a local newspaper to ascertain the popularity of this addictive brain teaser. Where comics and crossword puzzles reign supreme, it is often easy to locate a grid of spaces and numbers tucked off in a corner, or even sitting boldly next to the time-honored crossword.

58. The best placement for the underlined portion would be:
- F. where it is now.
  - G. before the word *origin*.
  - H. before the word *attributed*.
  - J. before the word *Swiss*.

59. If the writer were to divide the preceding paragraph into two shorter paragraphs in order to differentiate between the origin and evolution of the game and the difficulty of playing the game, the new paragraph should begin with Sentence:
- A. 2.
  - B. 3.
  - C. 4.
  - D. 6.

Question 60 asks about the preceding passage as a whole.

60. If the writer were to delete the final paragraph from the essay, which of the following would be lost?
- F. A detailed description of where to find Sudoku games.
  - G. A comment on the similarities between Sudoku and crossword puzzles.
  - H. A reference to the opening paragraph's mention of Sudoku's popularity.
  - J. A plea to the reader to avoid Sudoku because of its addictive nature.

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## PASSAGE V

## Early Communication

Most new parents find that their biggest problem is determining what their babys cries mean. Sometimes the cries seem to sound alike, and other times they are as different as night and day. Yet, what do they mean? Recent studies have shown that babies do have unique cries to identify their needs, and interpreting a baby's vocalizations is not as difficult as it may seem.

Perhaps the biggest hurdle in making sense of an infant's sounds is the parent's own anxiety and being confused. With a little study and patience, parents can fine-tune their listening skills and sidestep their frustrations.

Movement is another way that infants communicate. For many years, scientists have been able to interpret various messages by filming a sequence of movements and then playing those back in slow motion. Three-month-olds who appear to be flailing their arms around randomly are often reaching for something specific, perhaps a toy or a familiar face. Even the youngest infants will move their heads toward a familiar voice, often producing the first glimmer of a smile, clearly communicating happiness, and, comfort.

As the baby grows, new utterances emerge that often sounds random and nonsensical.

61. A. NO CHANGE  
B. babies cries  
C. baby's cries  
D. babys cry's
62. Which of the following alternatives to the underlined portion would NOT be acceptable?  
F. needs. Interpreting  
G. needs; interpreting  
H. needs, so  
J. needs, interpreting
63. A. NO CHANGE  
B. confusion.  
C. to be confused.  
D. for confusing.
64. F. NO CHANGE  
G. them  
H. the film  
J. that
65. A. NO CHANGE  
B. happiness, and comfort.  
C. happiness and, comfort.  
D. happiness and comfort.
66. F. NO CHANGE  
G. sound  
H. sounding  
J. sounded

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More than likely, however, these noises actually mean something to the baby. An acute observer can often quickly interpret the child's utterances and reinforce the development of language, whereas a parent who does not pay attention could miss an attempt at communication from her baby. It is easy to imagine how much faster language development will come when a one-year-old feels success and positive reinforcement in his attempts to communicate. Conversely, not being understood can easily create frustration and reactive responses, perhaps partially explaining the onset of the "terrible twos."

Many parents find that sign language can be a valuable tool for the emerging orator who is just learning to speak. A nine-month-old seems to have an easier time mimicking less precise hand movements that she observes than vocalizing the complexities of consonants and vowel sounds. A small repertoire of such hand movements can greatly diminish the anxiety-producing challenge of communicating hunger, tiredness, thirst, and the like. Often, as parents demonstrate a sign to their baby, they will vocalize the word for that sign over and over. Eventually, as the child uses the sign successfully, she will begin to mimic the word that seems to go with it, and eventually drop the use of her hands. [71]

67. Which of the following alternatives to the underlined portion would NOT be acceptable?
- A. language, while
  - B. language;
  - C. language, but
  - D. language, being
68. F. NO CHANGE  
G. Therefore,  
H. Consequently,  
J. Likewise,
69. A. NO CHANGE  
B. whose speech is just developing  
C. who is on the verge of speaking  
D. OMIT the underlined portion
70. Given that all the choices are true, which one most specifically and vividly describes the needs of the child?
- F. NO CHANGE
  - G. his needs.
  - H. what he wants.
  - J. his desires to his parents.
71. The writer is considering deleting the following phrase from the preceding sentence (and revising the capitalization accordingly):
- Eventually, as the child uses the sign successfully,
- Should this phrase be kept or deleted?
- A. Kept, because it clarifies how the proper use of signs can reinforce language development.
  - B. Kept, because it provides specific details about the signs that parents use to teach their children to speak.
  - C. Deleted, because it contradicts the preceding paragraph, which makes it clear that children do not use movement to communicate.
  - D. Deleted, because this information is provided later in the paragraph.

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Long before a young distinct child is able to speak words, his ability to understand the speech of others is developing. Before a child can say “mama” or “dada,” he

may easily be able follow a command such as “Give me the ball” or “Get your blanket.” As the toddler learns the names of objects, people, and actions, a vocabulary explosion begins to occur. [74] Most people believe communication begins when the child is able to use

language to express an idea or feeling. By comparison, communication has been going on for much longer. Language development will come sooner and easier if parents respond more consistently to their infant’s communication efforts from day one.

72. The best placement for the underlined portion would be:  
 F. where it is now.  
 G. after the word *speech*.  
 H. after the word *speech*.  
 J. after the word *developing*.

73. A. NO CHANGE  
 B. by following  
 C. to follow  
 D. following

74. The writer is considering deleting the following clause from the preceding sentence (revising the capitalization accordingly):

As the toddler learns the names of objects, people, and actions,

Should this clause be kept or deleted?

- F. Kept, because it clarifies for the readers that toddlers can only learn to speak if they are given commands.  
 G. Kept, because it makes the connection between understanding what others are saying and learning how to speak.  
 H. Deleted, because it contradicts the essay’s main point by implying that toddlers cannot communicate effectively with their parents.  
 J. Deleted, because it misleads the readers into thinking that the paragraph is about baby names rather than language development.
75. A. NO CHANGE  
 B. In truth,  
 C. On the other hand,  
 D. Despite this,

**END OF THE ENGLISH TEST.**

**STOP! IF YOU HAVE TIME LEFT OVER, CHECK YOUR WORK ON THIS SECTION ONLY.**

2



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## MATHEMATICS TEST

60 Minutes—60 Questions

**DIRECTIONS:** Solve each of the problems in the time allowed, then fill in the corresponding bubble on your answer sheet. Do not spend too much time on any one problem; skip the more difficult problems and go back to them later. You may

use a calculator on this test. For this test you should assume that figures are NOT necessarily drawn to scale, that all geometric figures lie in a plane, and that the word *line* is used to indicate a straight line.

1.  $|9 - 5| - |5 - 9| = ?$

- A. -8
- B. -6
- C. -4
- D. 0
- E. 8

2. An editor charges \$30 for each hour he works on a book project, plus a flat \$25 editing fee. How many hours of work are included in a \$190 bill for a book project?

- F.  $3\frac{2}{5}$
- G. 4
- H.  $5\frac{1}{2}$
- J.  $6\frac{1}{3}$
- K. 7

3. Runner A averages 5 miles per hour, and Runner B averages 6 miles per hour. At these rates, how much longer does it take Runner A than Runner B to run 15 miles?

- A. .5 hour
- B. 1 hour
- C. 1.5 hours
- D. 2.5 hours
- E. 3 hours

4.  $x^2 + 60x + 54 - 59x - 82x^2$  is equivalent to:

- F.  $-26x^2$
- G.  $-26x^6$
- H.  $-81x^2 + x + 54$
- J.  $-81x^2 - x + 54$
- K.  $-83x^2 - x - 54$

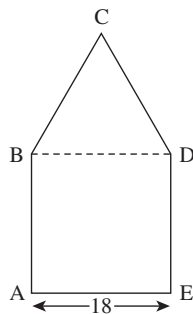
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5. The figure below is composed of square  $ABDE$  and equilateral triangle  $BCD$ . The length of line segment  $AE$  is 18 centimeters. What is the perimeter of  $ABCDE$ , in centimeters?



- A. 48  
 B. 54  
 C. 72  
 D. 90  
 E. 106
6. The expression  $(6n - 5)(n + 4)$  is equivalent to:  
 F.  $6n^2 - 20$   
 G.  $6n^2 - 19n - 20$   
 H.  $6n^2 - 29n - 20$   
 J.  $6n^2 + 19n$   
 K.  $6n^2 + 19n - 20$
7. Blair expects an increase of 3% in her current annual salary of \$42,000. What would her new annual salary be?  
 A. \$42,003  
 B. \$42,126  
 C. \$43,260  
 D. \$45,000  
 E. \$54,600
8. The 6 consecutive integers below add up to 513.

$$n - 2$$

$$n - 1$$

$$n$$

$$n + 1$$

$$n + 2$$

$$n + 3$$

What is the value of  $n$ ?

- F. 48  
 G. 53  
 H. 64  
 J. 85  
 K. 86

**DO YOUR FIGURING HERE.**

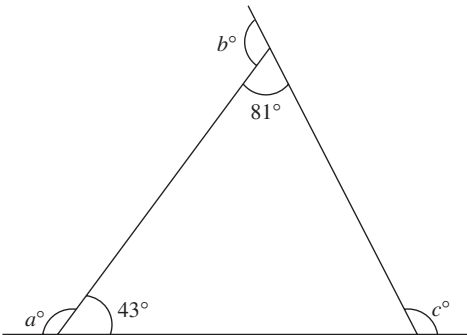
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9. In the standard  $(x,y)$  coordinate plane, point  $B$  with coordinates  $(5,6)$  is the midpoint of  $AC$ , and  $A$  has coordinates  $(6,7)$ . What are the coordinates of  $C$ ?
- A.  $(11,13)$   
 B.  $(7,8)$   
 C.  $(4,5)$   
 D.  $(5.5,6.5)$   
 E.  $(-4,-8)$
10. Rectangle  $PQRS$  lies in the standard  $(x,y)$  coordinate plane so that its sides are not parallel to the axes. What is the product of the slopes of all four sides of rectangle  $PQRS$ ?
- F.  $-2$   
 G.  $-1$   
 H.  $0$   
 J.  $1$   
 K.  $2$
11. If Tom traveled 45 miles in 12 hours and Jim traveled four times as far in one-third the time, what was Jim's average speed, in miles per hour?
- A. 5  
 B. 15  
 C. 30  
 D. 45  
 E. 90

12. Given the triangle shown below with exterior angles that measure  $a^\circ$ ,  $b^\circ$ , and  $c^\circ$  as shown, what is the sum of  $a$ ,  $b$ , and  $c$ ?



- F. 180  
 G. 236  
 H. 261  
 J. 360  
 K. Cannot be determined from the given information

DO YOUR FIGURING HERE.

**2**         **2****DO YOUR FIGURING HERE.**

Use the following information to answer Questions 13 – 15.

A poll of 200 students was taken before Center High School changed the name of its mascot. All 200 students indicated which 1 of the 4 mascot names they would vote for. The results of the poll are given in the table below.

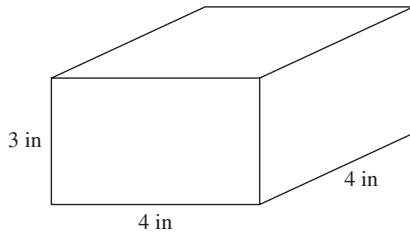
Mascot name	Number of students
Spartans	30
Lions	40
Gophers	80
Knights	50

13. What percent of the students polled chose Spartans in the poll?
- A. 40%
  - B. 30%
  - C. 25%
  - D. 20%
  - E. 15%
14. If the information in the table were converted to a pie chart, then the central angle of the sector for Lions would measure how many degrees?
- F.  $144^\circ$
  - G.  $108^\circ$
  - H.  $72^\circ$
  - J.  $54^\circ$
  - K.  $45^\circ$
15. If the poll is indicative of how the 3,000 students at Center High School will actually vote, which of the following is the best estimate of the number of votes Knights will receive?
- A. 50
  - B. 200
  - C. 525
  - D. 750
  - E. 900

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**2****2**

16. The total surface area of the rectangular solid shown below is the sum of the areas of the 6 sides. What is the solid's total surface area, in square inches?

**DO YOUR FIGURING HERE.**

- F. 18  
G. 36  
H. 48  
J. 80  
K. 96
17. Which of the following is the slope of a line parallel to the line  $y = \frac{2}{5}x + 7$  in the standard  $(x, y)$  coordinate plane?  
A.  $-7$   
B.  $-\frac{5}{2}$   
C.  $\frac{2}{5}$   
D.  $2$   
E.  $\frac{5}{2}$
18. A circular lamp base has a radius of 2.5 inches. When placed on a flat table, approximately how much area does the lamp base cover, in square inches?  
F. 5.00  
G. 6.25  
H. 15.70  
J. 19.63  
K. 25.00
19. What is the largest integer less than  $\sqrt{42}$ ?  
A. 3  
B. 6  
C. 7  
D. 9  
E. 23

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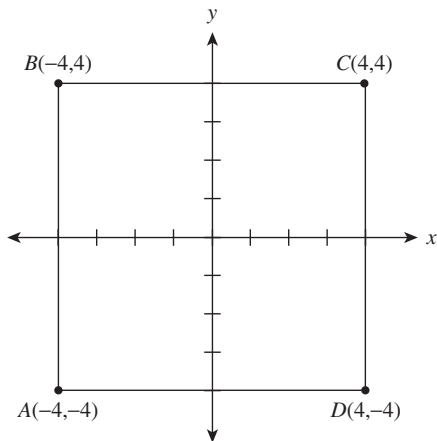
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20. Amanda plans to paint the 4 walls of her bedroom with 1 coat of paint. The walls are rectangular, and each wall measures 12 feet by 14 feet. She will not paint either the 3-foot-by-4-foot rectangular window in her bedroom or the 3-foot-by-7-foot rectangular bedroom door. Amanda knows that each gallon of paint covers between 350 and 400 square feet. If only 1-gallon cans of paint are available, which of the following is the minimum number of cans of paint Amanda needs to buy to paint her bedroom walls?
- F. 1
  - G. 2
  - H. 3
  - J. 4
  - K. 5

**DO YOUR FIGURING HERE.**

21. For all  $x > 0$ , the expression  $\frac{3x^3}{3x^9}$  equals:
- A.  $x^{-6}$
  - B.  $x^3$
  - C.  $x^6$
  - D.  $x^{12}$
  - E.  $x^{27}$
22. What values of  $a$  are solutions for  $a^2 + 2a = 8$ ?
- F. 6 and 8
  - G. 0 and 2
  - H. -2 and 4
  - J. -2 and 0
  - K. -4 and 2

23. In the square graphed below, what is the slope of line segment  $AC$ ?



- A. 4
- B. 2
- C. 1
- D. -1
- E. -4

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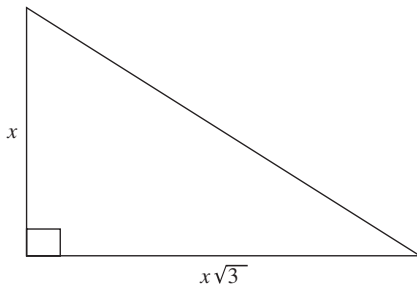


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24. The fixed costs of printing a certain textbook are \$900.00 per week. The variable costs are \$1.50 per textbook. Which of the following expressions can be used to model the cost of printing  $t$  textbooks in 1 week?
- F.  $\$901.50t$   
 G.  $\$150t - \$900.00$   
 H.  $\$900.00t + \$1.50$   
 J.  $\$900.00 - \$1.50t$   
 K.  $\$900.00 + \$1.50t$

DO YOUR FIGURING HERE.

25. In the figure shown below, the perimeter of the triangle is  $15 + 5\sqrt{3}$ . What is the value of  $x$ ?



- A. 2  
 B. 3  
 C. 4  
 D. 5  
 E. 6
26. If  $\frac{4\sqrt{9}}{y\sqrt{11}} = \frac{4\sqrt{9}}{11}$ , then  $y = ?$
- F. 1  
 G.  $\sqrt{11}$   
 H. 11  
 J. 22  
 K. 36
27. Casey has buckets of 3 different sizes. The total capacity of 12 of the buckets is  $g$  gallons, the total capacity of 8 buckets of another size is  $g$  gallons, and the total capacity of 4 buckets of the third size is also  $g$  gallons. In terms of  $g$  when  $g > 0$ , what is the capacity, in gallons, of each of the smallest-sized buckets?
- A.  $\frac{g}{12}$   
 B.  $\frac{g}{8}$   
 C.  $\frac{g}{4}$   
 D.  $12g$   
 E.  $8g$

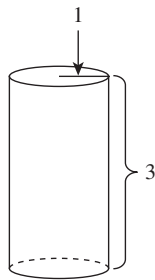
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28. What is the area of a circle that has a circumference of  $.5\pi$ ?
- F.  $0.0625\pi$   
 G.  $0.10\pi$   
 H.  $0.25\pi$   
 J.  $25\pi$   
 K.  $625\pi$
29. Cube  $X$  has an edge length of 2 inches. Cube  $Y$  has an edge length triple that of Cube  $X$ . What is the volume, in cubic inches, of Cube  $Y$ ?
- A. 6  
 B. 12  
 C. 36  
 D. 72  
 E. 216
30. A formula used to compute the current value of an investment account is  $A = P(1 + r)^n$ , where  $A$  is the current value,  $P$  is the amount deposited,  $r$  is the rate of interest for 1 compounding period, expressed as a decimal, and  $n$  is the number of compounding periods. Which of the following is closest to the value of an investment account after 3 years if \$8,000 is deposited at 5% annual interest compounded annually?
- F. \$8,400  
 G. \$9,261  
 H. \$15,730  
 J. \$25,200  
 K. \$33,463

**DO YOUR FIGURING HERE.**

31. A right circular cylinder is shown below, with dimensions given in inches. What is the total surface area of the cylinder, in square inches?  
 (Note: The total surface area of a cylinder is given by  $2\pi r^2 + 2\pi rh$ , where  $r$  is the radius and  $h$  is the height.)



- A.  $3\pi$   
 B.  $5\pi$   
 C.  $6\pi$   
 D.  $8\pi$   
 E.  $11\pi$
32. Given  $f(x) = 3x + 5$  and  $g(x) = x^2 - x + 7$ , which of the following is an expression for  $f(g(x))$ ?
- F.  $3x^2 - 3x + 26$   
 G.  $3x^2 - 3x + 12$   
 H.  $x^2 - x + 12$   
 J.  $9x^2 + 25x + 27$   
 K.  $3x^2 + 21$

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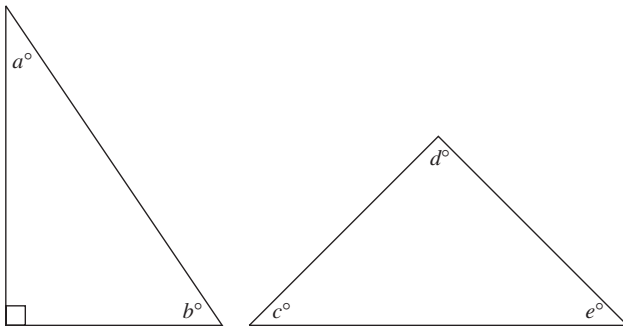


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33. The table below shows the total number of touchdowns scored in each of 16 football games during a regular season. What is the average number of touchdowns scored per game, to the nearest tenth?

Total number of touchdowns in a game	Number of games with this total
0	2
1	3
2	3
3	5
4	2
5	1

- A. 2.6  
 B. 2.3  
 C. 2.0  
 D. 1.5  
 E. 0.9
34. In the triangles shown below, what is the average of angles  $a$ ,  $b$ ,  $c$ ,  $d$ , and  $e$ ?



- F.  $30^\circ$   
 G.  $45^\circ$   
 H.  $54^\circ$   
 J.  $60^\circ$   
 K.  $72^\circ$
35.  $(4x^4)^4$  is equivalent to:  
 A.  $x$   
 B.  $16x^8$   
 C.  $16x^{16}$   
 D.  $256x^8$   
 E.  $256x^{16}$
36. Which of the following is equivalent to the inequality  $3x - 6 > 6x + 9$ ?  
 F.  $x > -5$   
 G.  $x < -5$   
 H.  $x > -2$   
 J.  $x < 3$   
 K.  $x > 3$

DO YOUR FIGURING HERE.



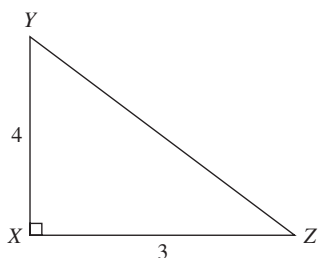
**2****2**

37. In the  $xy$ -coordinate system,  $(\sqrt{5}, s)$  is one of the points of intersection of the graphs  $y = 2x^2 + 6$  and  $y = -4x^2 + m$ , where  $m$  is a constant. What is the value of  $m$ ?

A. 30  
 B. 33  
 C. 36  
 D. 39  
 E. 42

**DO YOUR FIGURING HERE.**

38. For right triangle  $XYZ$  below, what is  $\cos \angle Z$ ?



F.  $\frac{4}{3}$   
 G.  $\frac{5}{4}$   
 H.  $\frac{3}{4}$   
 J.  $\frac{3}{5}$

K. Cannot be determined from the given information

39. Which of the following statements is NOT true about the arithmetic sequence 16, 11, 6, 1, ...?

A. The fifth term is  $-4$ .  
 B. The sum of the first 5 terms is 30.  
 C. The seventh term is  $-12$ .  
 D. The common difference of consecutive integers is  $-5$ .  
 E. The sum of the first 7 terms is 7.

40. If there are  $6 \times 10^{14}$  oxygen molecules in a volume of  $3 \times 10^7$  cubic meters, what is the average number of oxygen molecules per cubic meter?

F.  $2 \times 10^5$   
 G.  $2 \times 10^7$   
 H.  $2 \times 10^{21}$   
 J.  $18 \times 10^7$   
 K.  $18 \times 10^{21}$

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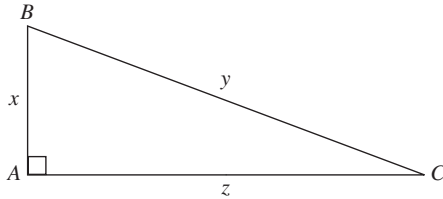
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41. The lengths of the sides of right triangle  $ABC$  are shown in the figure below. What is the cotangent of  $\angle B$ ?

DO YOUR FIGURING HERE.

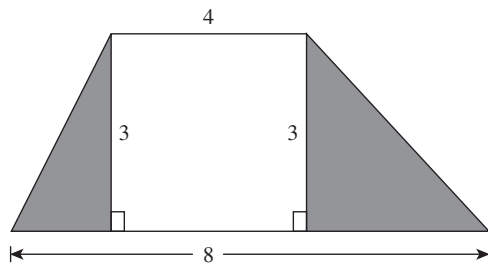


- A.  $\frac{x}{y}$   
 B.  $\frac{x}{z}$   
 C.  $\frac{y}{z}$   
 D.  $\frac{z}{x}$   
 E.  $\frac{z}{y}$
42. What rational number is halfway between  $\frac{1}{6}$  and  $\frac{1}{2}$ ?
- F.  $\frac{1}{8}$   
 G.  $\frac{1}{4}$   
 H.  $\frac{1}{3}$   
 J.  $\frac{2}{3}$   
 K.  $\frac{3}{2}$
43. If  $|6 - 2x| > 9$ , which of the following is a possible value of  $x$ ?
- A.  $-2$   
 B.  $-1$   
 C.  $0$   
 D.  $4$   
 E.  $7$

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**2****2**

44. A square and a regular pentagon have equal perimeters. If the pentagon has sides of length 12, what is the area of the square?
- F. 30  
G. 48  
H. 60  
J. 225  
K. 244
45. A classroom has 10 tables that will seat up to 4 students each. If 20 students are seated at tables, and NO tables are empty, what is the greatest possible number of tables that could be filled with students?
- A. 5  
B. 3  
C. 2  
D. 1  
E. 0
46. If  $x < y$ , then  $|x - y|$  is equivalent to which of the following?
- F.  $x + y$   
G.  $-(x + y)$   
H.  $\sqrt{x} - y$   
J.  $x - y$   
K.  $-(x - y)$
47. The trapezoid below is divided into 2 triangles and 1 rectangle. Lengths are given in centimeters. What is the combined area, in square centimeters, of the 2 shaded triangles?



- A. 18  
B. 12  
C. 9  
D. 6  
E. 4

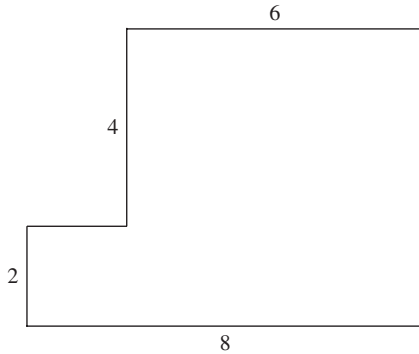
**DO YOUR FIGURING HERE.**

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48. In the figure below, all line segments are either horizontal or vertical, and the dimensions given are in feet. What is the perimeter, in feet, of the figure?



- F. 20  
G. 24  
H. 26  
J. 28  
K. 32
49. If  $c$  is directly proportional to  $s^2$  and  $c = \frac{7}{16}$  when  $s = \frac{1}{4}$ , what is the value of  $s$  when  $c = 175$ ?
- A. 2  
B. 3  
C. 4  
D. 5  
E. 6
50. If the value, to the nearest thousandth, of  $\cos \alpha$  is  $-0.385$ , which of the following could be true about  $\alpha$ ?
- F.  $\frac{2\pi}{3} \leq \alpha \leq \pi$   
G.  $\frac{\pi}{2} \leq \alpha \leq \frac{2\pi}{3}$   
H.  $\frac{\pi}{3} \leq \alpha \leq \frac{\pi}{2}$   
J.  $\frac{\pi}{6} \leq \alpha \leq \frac{\pi}{3}$   
K.  $0 \leq \alpha \leq \frac{\pi}{6}$
51. An integer from 10 through 99, inclusive, is to be chosen at random. What is the probability that the number chosen will have 0 as at least 1 digit?
- A.  $\frac{2}{90}$   
B.  $\frac{1}{10}$   
C.  $\frac{9}{89}$   
D.  $\frac{10}{89}$   
E.  $\frac{9}{100}$

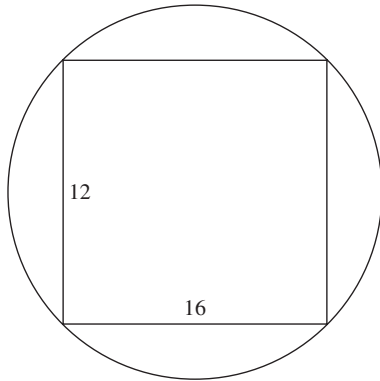
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52. A 12-centimeter-by-16-centimeter rectangle is inscribed in a circle as shown below. What is the area of the circle, in square centimeters?



DO YOUR FIGURING HERE.

- F.  $5\pi$   
 G.  $14\pi$   
 H.  $25\pi$   
 J.  $100\pi$   
 K.  $192\pi$
53. If  $\log_a x = n$  and  $\log_a y = p$ , then  $\log_a(xy)^2 = ?$   
 A.  $np$   
 B.  $2np$   
 C.  $4np$   
 D.  $n + p$   
 E.  $2(n + p)$
54. For every positive 2-digit number,  $a$ , with units digit  $x$  and tens digit  $y$ , let  $b$  be the 2-digit number formed by reversing the digits of  $a$ . Which of the following expressions is equivalent to  $a - b$ ?  
 F. 0  
 G.  $9x - y$   
 H.  $9y - x$   
 J.  $9(x - y)$   
 K.  $9(y - x)$
55. If  $f(a) = a^2 - 2$ , then  $f(a + b) = ?$   
 A.  $a^2 + b^2$   
 B.  $a^2 - 2 + b$   
 C.  $a^2 + b^2 - 2$   
 D.  $a^2 + 2ab + b^2$   
 E.  $a^2 + 2ab + b^2 - 2$
56. In the complex numbers, where  $i^2 = -1$ ,  $\frac{1}{(1+i)} \times \frac{(1-i)}{(1-i)} = ?$   
 F.  $i - 1$   
 G.  $1 + i$   
 H.  $1 - i$   
 J.  $\frac{(1-i)}{2}$   
 K.  $\frac{(1+i)}{2}$

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**2****2**

57. Amy's best marathon time decreased by 10% from 2005 to 2006 and by 20% from 2006 to 2007. By what percent did her best marathon time decrease from 2005 to 2007?

A. 28%  
B. 30%  
C. 50%  
D. 72%  
E. 10%

**DO YOUR FIGURING HERE.**

58. The sum of an infinite geometric sequence series with first term  $x$  and common ratio  $y < 1$  is given by  $\frac{x}{(1-y)}$ .

The sum of a given infinite geometric series is 200, and the common ratio is 0.15. What is the second term of this series?

F. 199.85  
G. 170  
H. 169.85  
J. 30  
K. 25.5

59. How many different integer values of  $a$  satisfy the inequality  $\frac{1}{11} < \frac{2}{a} < \frac{1}{8}$ ?

A. 1  
B. 2  
C. 3  
D. 4  
E. 5

60. In 3 fair coin tosses, where the 2 outcomes, heads and tails, are equally likely, what is the probability of obtaining exactly 2 heads?

F.  $\frac{1}{3}$   
G.  $\frac{3}{8}$   
H.  $\frac{1}{2}$   
J.  $\frac{2}{3}$   
K.  $\frac{7}{8}$

**END OF THE MATHEMATICS TEST.  
STOP! IF YOU HAVE TIME LEFT OVER, CHECK YOUR WORK ON THIS SECTION ONLY.**

3

3

## READING TEST

35 Minutes—40 Questions

**DIRECTIONS:** This test includes four passages, each followed by ten questions. Read the passages and choose the best answer to each question. After you have selected your answer, fill in the corresponding bubble on your answer sheet. You should refer to the passages as often as necessary when answering the questions.

## PASSAGE I

**PROSE FICTION:** *Silence: A Story of Courage and Healing*

Some say that silence is a great healer. If you'd said that to me two years ago, I wouldn't have agreed. "Silence," I would have argued, "is anything but healing. There is nothing therapeutic about keeping your feelings inside, never talking about what's going on in your life." I now believe that silence is the reward you get from great healing, in addition to being the healer itself. But I didn't know that then.

I had never understood the value of silence. I didn't have to. My family was loud and happy. And why not? Nothing serious ever went wrong—not that we knew about. Sure, my siblings and I always fought noisily until our mom yelled at us to stop. Then we'd shout and complain about injustice, but always, eventually, hug and make-up. Within the parameters of my innocent world, I knew silence as a lack of something: a lack of noise, a lack of discussion, a lack of feeling, a lack of love. Maybe I was even a little afraid of the emptiness it created—the aural darkness where forgiveness never happened. I thought I knew ... I was very wrong.

Jaime entered my life without much fanfare about two years ago. I'll never forget the day I met him. My university required a community service stint to graduate, and I wanted to get it out of the way. I'd heard that the local YMCA was a good resource, and I liked working with little kids. I thought maybe they'd let me teach swimming. So, on a cool October day in the fall of my sophomore year, I made my way to the YMCA looking for easy credits.

I didn't have a car at school until my junior year of college, so if I needed to go anywhere, I would generally catch a ride with a friend or walk. On that particular day, no friend was available and the ten-mile walk was far beyond my dedication to public service. Consequently, I was at the mercy of public transportation. Thankfully, I'd heard the local bus system was pretty reliable. With the help of the CITA bus line map, I climbed onto Bus Route 3, paid my fifty cents, and scanned for a seat. Buses often have their own

unique demographic: each crowd is unlike any other. On this bus, most everyone was either asleep or totally oblivious. Except for one kid. He wasn't all that big—maybe thirteen years old—and he was seated by himself, farther apart from the other riders than seemed possible in such a crowded space. Unlike the others, his eyes were alert. And they were glued on me.

Normally, I ignore people with such awkward habits. But for some reason, I couldn't stop staring back. Odder still, instead of avoiding him, I found myself passing an empty seat to sit down on the bench beside him. Once I did, he turned to look out the window. That's when the strangeness of it all hit me, and I started to feel a little awkward. I wanted to get back in control of the situation. Trying to be subtle, I looked him over. I noticed some scarring on his hands, and a small gash on his cheek. Suddenly, he turned and looked me in the eye. Expecting him to say something, I just waited, watching. He said nothing. After about fifteen seconds, I couldn't take the silence anymore.

"Hi," I said, trying not to appear as nervous as I felt.

No response. He just kept staring.  
"I'm Katie." I added a smile. Again, I received no response. I gave it one more try.

"I've never used the bus system before. It seems pretty reliable. Do you use it a lot?" Silence. My cheery voice sounded out of place. Other people were starting to stare at me. This time I gave up and turned my head toward the front of the bus, trying to ignore the thirteen-year-old staring me down... again. I opened my cell phone to check the time and saw that only two minutes had passed. This was going to be the longest bus ride ever.

Then a thin voice cut through the silence.  
"I'm Jaime."

My heart skipped a beat. Could it be that my silence was the catalyst for this small victory? By allowing Jaime the room that silence allows to make his own decision about talking to me, I had made a connection. Suddenly, I knew that my long held opinion of silence was forever changed.

GO ON TO THE NEXT PAGE.

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1. Which of the following best describes the structure of the passage?
  - A. A dialogue between two people in which both relate their reasons for travel in an almost equal amount of detail.
  - B. An account of the narrator's perspective of meeting a life-changing new person for the first time.
  - C. A character sketch of two people as related by a narrator who knows both of them and their thoughts.
  - D. A detailed narration the narrator's community service projects accompanied by a description one of the people she helped.
2. Based on the passage, which of the following statements best describes the overall attitude of the narrator towards the boy?
  - F. The boy's quiet, composed behavior challenges the narrator and makes her initially uncomfortable.
  - G. The boy's aggressive behavior frightens the narrator and makes her angry.
  - H. The boy's friendly demeanor relaxes the narrator and makes her more thoughtful.
  - J. The boy's apathy provokes the narrator and makes her wistful, longing for the quiet days of her youth.
3. It can reasonably be inferred from the passage that the narrator had been raised with which of the following attitudes towards silence?
  - A. It is pleasant and calming.
  - B. It is positive and reaffirming.
  - C. It is dangerous and threatening.
  - D. It is empty and ominous.
4. According to the narrator, silence is usually characterized by:
  - F. forgiveness.
  - G. absence.
  - H. injustice.
  - J. innocence.
5. In relation to the first paragraph's earlier description of silence, the narrator's comments in lines 6–8 primarily serve to:
  - A. reveal how silence heals a person.
  - B. explain how silence can actually be a positive force.
  - C. clarify why the narrator distrusts silence.
  - D. suggest that silence is quite overrated.
6. Which of the following statements about the people on the bus is best supported by the passage?
  - F. The bus is filled with fascinating people, most of whom you see on every bus ride.
  - G. People who ride the bus are always quiet.
  - H. You might never see the same people on any given bus ride.
  - J. People who take the bus are dull and uninteresting.
7. According to the passage, the main reason the narrator decided to go to the YMCA was that:
  - A. her university required community service credits.
  - B. she liked to swim.
  - C. she was looking for a new job working with children.
  - D. she was exploring her new town.
8. Based on the narrator's account, the boy, Jaime, is best described as:
  - F. sleepy, yet hostile.
  - G. bored and antagonistic.
  - H. outgoing and friendly.
  - J. aware, yet shy.
9. As it is used in line 15, the word *parameters* most nearly means:
  - A. requirements.
  - B. variables.
  - C. limitations.
  - D. attributes.
10. In the passage, the narrator describes her cheery voice as sounding out of place most likely because:
  - F. the bus was silent; most of the other passengers were asleep or lost in their own thoughts.
  - G. the bus was noisy; most of the other passengers were loudly talking to their neighbors.
  - H. the bus was noisy; most of the other passengers were arguing with their neighbors.
  - J. the bus was silent; most of the other passengers were watching a scene on the street.



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## PASSAGE II

**SOCIAL SCIENCE:** *Julius Caesar and the Fall of the Roman Republic*

Caius Julius Caesar is popularly considered the founder of the Roman Empire, though it would be more accurate to consider his political rise as marking the end of the Roman Republic. The distinction, which some would call insignificant, is more than mere semantics. The founding of the Empire rightly belongs to Caesar's great-nephew, Augustus Caesar, who was adopted by his uncle as his heir. The Republic had been under considerable stress for several years before Caius Julius was born, thus he did not create the fissures that led to the collapse of the Roman Republic, though he did capitalize on them brilliantly. Caius Julius' singular success as a politician and general has guaranteed him a place among the most influential persons in world history.

Rome's social troubles began in a land crisis. Roman armies were traditionally made up of small landholders—farmers who, by law, had to own a minimum number of acres to join the military service. Unfortunately, a series of wars in the late-third and early-second centuries B.C. kept these farmers away from their land, frequently leading to bankruptcy. The small farm plots were taken over by the wealthy upper class, who farmed the plots with slaves won in foreign wars. With no more land to farm, the returning soldiers settled in Rome, where they added to the unemployment dole and increased political instability. Adding to the problem, once the soldiers were landless, they could no longer enlist in the army. This led to a significant problem for military recruitment.

The first notable Romans to address both issues were the reformers known as the Gracchi Brothers. Starting around 133 B.C., the older brother, Tiberius Gracchus, tried to reform the system by proposing to confiscate, or take, public land to distribute to returning soldiers. He hoped this would solve the unemployment crisis and increase the number of men eligible for the army. Unfortunately, the land had been leased, often at very low rates, to wealthy members of the Roman Senate. At this time, Rome was governed by two political bodies: the Senate and the Assembly. The Senate was made up of wealthy landed nobility and was often in conflict with the more populist Assembly. Not surprisingly, the senators bitterly fought government seizure of the land, which they considered their own property. In the end, Tiberius Gracchus was murdered, though the Roman Senate passed a modified version of the Gracchan land laws to quell public outrage. When the younger brother, Gaius Gracchus, began his reforms 10 years later, he was able to extend political rights to the lower classes and reduce opportunities for bribery and corruption among the upper classes. He, too, was murdered for pushing the system too far.

The reforms of the Gracchi brothers were soon apparently championed by a new political leader, Gaius Marius, although Marius' real fame came from his military genius—especially after he brutally halted the invasion of German tribes into Italy. He successfully reorganized the Roman military, in the process doing

away with the land requirement. Marius also challenged the traditional structure of the army where nobility were regularly given authority over lower-class officers with more experience and ability. Julius Caesar later exploited this reform, promoting officers based on ability not class, to tremendous success in Gaul and elsewhere.

Marius' role as champion of the lower classes was solidified when he opposed the Roman general, Cornelius Sulla. Sulla was allied with the Roman Senate, who feared Marius' ambition and influence with the masses. Sulla believed in strengthening the power of the Senate against the popular Assembly. To this end, he marched his armies against Rome, defeating Marius and establishing himself as Dictator. While Sulla eventually resigned the dictatorship peacefully, he had exiled or killed thousands of political opponents during his reign. Some critics say the real end of the Roman Republic occurred during the struggle between Marius and Sulla.

Julius Caesar was related by marriage to both Marius and Sulla. Despite this patrician background, he chose to promote his connections to Marius. Like the Gracchi brothers, Julius Caesar supported the redistribution of public lands to the poor and protected the grain supply (a large part of the unemployment dole). In his armies, he promoted ability before social rank. He was also widely seen to support the middle and lower classes against the privileges of the aristocracy, namely the Senate. The senators saw him as a traitor to their class and, therefore, to the Republic itself. When Julius Caesar was eventually assassinated by a group of senators, the outcry from the general population was completely unanticipated. The resulting political chaos ultimately led to the rise of Augustus Caesar as emperor, effectively ending the Roman Republic forever.

11. The author most nearly characterizes the role Julius Caesar plays in the fall of the Roman Republic as one that:
- A. takes advantage of past conflicts to promote his own ideals.
  - B. contradicts the efforts of the Gracchi brothers.
  - C. supports the Republic despite its faults.
  - D. idealizes the position of the wealthy landed nobility.
12. The main idea of the first paragraph is that the Julius Caesar:
- F. was the founder of the Roman Empire.
  - G. was the grand-uncle of Augustus Caesar, who founded the Roman Empire.
  - H. exploited the political problems at the end of the Roman Republic for his own gain.
  - J. was the most successful Roman politician and general.

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13. The author uses the remark “farmers who, by law, had to own a minimum number of acres to join the military service” (lines 18–19) primarily as an example of:
- A. the kind of useless requirements made by the Roman military.
  - B. the ancient Romans’ preoccupation with farming.
  - C. the clash between ancient Roman agricultural society and the wealthy elite.
  - D. the close traditional relationship between farming and military service.
14. The author indicates the common factor leading to the murders of the Gracchus Brothers was:
- F. aristocratic fear of political reform.
  - G. mob violence due to political corruption.
  - H. aristocratic desire to reform the political system.
  - J. the inability of Roman senators to rent cheap land.
15. By his statement in lines 60–63, the author most nearly means that, unlike in past armies, in Marius’ army:
- A. soldiers tried to set a precedent for Julius Caesar.
  - B. ability meant more than social class.
  - C. nobility were often put in charge of lower-class soldiers.
  - D. rank was based only on popularity.
16. The author cites all of the following as actions of Cornelius Sulla EXCEPT:
- F. strengthening the power of the Senate against the Assembly.
  - G. establishing himself as Dictator.
  - H. peacefully resigning his dictatorship.
  - J. successfully uniting his allies and opponents during his dictatorship.
17. The author uses the events listed in lines 81–85 primarily to:
- A. show Julius Caesar as a true political reformer, despite his family connections to the aristocracy.
  - B. imply that Julius Caesar exploited his political connections for his own gain.
  - C. imply that Julius Caesar had no choice but to support his uncle, Marius.
  - D. show that the grain supply was an important basis of power in the Roman Republic.
18. The author implies that prominent Roman politicians who tried to limit the aristocratic power of the senators often were:
- F. eventually assassinated.
  - B. promoted to Dictator.
  - G. exiled to foreign countries.
  - H. generals in the Roman army.
19. Which of the following is NOT listed in the passage as a political reform in the Roman Republic?
- A. Redistributing public land to retired soldiers.
  - B. Protecting the grain supply for the unemployment dole.
  - C. Extending political rights to the lower classes.
  - D. Eliminating slavery in the Republic.
20. The author calls which of the following a result of political chaos?
- F. The murder of the Gracchus Brothers.
  - G. The rise of Cornelius Sulla as Dictator of Rome.
  - H. The rise of Augustus Caesar as Emperor of Rome.
  - J. The need for retired soldiers to receive unemployment payments.

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## PASSAGE III

HUMANITIES: *The Táin Bó Culainge: Early Irish Epic*

Ireland has the oldest vernacular literature in Europe. Where other early European authors wrote their literary works in Latin, the Irish began writing down their stories in their own language starting at least as early as the 6th century A.D. and continuing to the modern day. While much of the earliest Irish writing has been lost or destroyed, several manuscripts survive from the late medieval period (12th through 16th centuries). These books usually contain collections of stories, many of which are much older than the books themselves.

One of the most famous of these collections is the epic cycle, *The Táin Bó Culainge*, which in translation means “The Cattle Raid of Cooley.” It’s often abbreviated to simply *The Táin*. In its narrowest sense, the raid refers to a series of battles fought by the northern Irish province of Connacht to steal a magic bull from the neighboring province of Ulster. However, the cycle includes many other legends that together tell the national story of the people of Ulster, especially during the reign of the great Ulster king, Conchobor mac Nessa.

According to *The Táin*, Queen Medb of Connacht orders the raid because there are only two magic bulls in all of Ireland, and, as her husband, Aillil, has the first, she determines to acquire the second. Her determination makes more sense when one considers the laws of the time. Wives were considered legal equals to men if they came into their marriage with as much or more property than their husbands. If she had less, the wife would be a legal dependent of her husband and, like a child, would have limited rights of her own. Irish queens were used to having their own political autonomy and making their own political deals. Medb’s insistence on equaling the property of her husband was for reasons far more serious than vanity.

During the cattle raid, Medb’s forces are joined by Fergus, the former king of Ulster, and his men. The bull is defended by the current king, Conchobor, and the young warrior, Cú Chulainn. The middle of the story tells of how Cú Chulainn single-handedly fends off Medb’s army while Conchobor’s men struggle against an ancient curse. In the end, many warriors die, both bulls are killed, and peace is re-established between Connacht and Ulster.

Of course, this is merely plot. Thematically, the work explores several great issues that would occupy medieval authors for over six hundred years. One of the most important was the lovers’ triangle between the king, the queen, and the warrior hero. Think of the romances of King Arthur, Queen Guinevere, and Sir Lancelot, or those of Tristan, Isolde, and her husband, King Mark. In *The Táin*, Queen Medb takes up with the warrior Fergus, with the approval of her husband, in order to guarantee Fergus’ allegiance during the war. Of course, in the early Irish versions, the message is far more subtle than an extramarital affair. According to Irish mythology, Medb was a demigoddess—the personification of power itself. As she herself notes, power never goes long without a suitor. Still, even

Medb’s daughter, Finnabair, is tied linguistically to the Arthurian legend: Finnabair and Guinevere are different spellings of the same name.

At least as interesting as the raid itself are the *remscéla* (literally, the “before stories”) that tell how the situation for the raid came to be. The *remscéla* tell how the bulls were originally two pig-keepers who knew magic; the stories explain how the Ulstermen came to be cursed with debilitating pain whenever their country was in danger. They explain who Cú Chulainn was and how he got his name. And, most poignantly, the *remscéla* tell how Fergus lost his crown and why he agreed to fight against his countrymen. This last story, told in the tragic legend of Deirdre and the Sons of Usnech, is one of the most striking of all the Irish myths.

Over twelve hundred years old, *The Táin* is certainly an epic work—but epic doesn’t necessarily mean “dead.” If the images meet a cultural need, they can come back to life as living artistic works. During the English occupation of Ireland and continuing through the Irish Revolution, many artists plumbed the depths of Irish mythology to create what they saw as an image of Ireland free of English cultural repression. Writers still call on *The Táin* for inspiration, just as ancient Irish bards once called on the ghost of Fergus to tell them the true story of the Cattle Raid of Cooley.

21. Which of the following statements best expresses the main idea of the passage?
  - A. *The Táin* tells the story of Queen Medb and the magic bull of Ulster.
  - B. Stories told in the vernacular are much better than stories told in Latin.
  - C. *The Táin* is an epic, one of the great national stories of Ireland, which has inspired writers for hundreds of years.
  - D. *The Táin* provides an image of Ireland in the late medieval period, before the English occupation.
22. Which of the following questions is NOT answered in the passage?
  - F. What is “vernacular literature?”
  - G. Why did Queen Medb want the magic bull of Ulster?
  - H. What does “*The Táin Bó Culainge*” mean?
  - J. How did the warrior, Cú Chulainn, get his name?
23. The passage suggests that one of *The Táin*’s most important contributions to Irish literature is that:
  - A. it provides an inspirational image of Ireland free of English cultural repression.
  - B. it illustrates the political power of women in early European countries.
  - C. it personifies the ancient Irish demigods, incorporating them into one literary figure.
  - D. it collects several important mythological stories into one book, making them less significant.

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24. The main function of the second paragraph (lines 12–22) is to:
- F. give a brief description of *The Táin Bó Culainge*.
  - G. introduce the Ulster king, Conchobor mac Nessa.
  - H. describe Ireland's agrarian society in the early middle ages.
  - J. define an "epic cycle."
25. All of the following details are used in the passage to show the range of content in *The Táin* EXCEPT:
- A. the bulls were originally pig-keepers who knew magic.
  - B. the Ulstermen were cursed with debilitating pain whenever their country was attacked.
  - C. Fergus was once a king of Ulster who lost his crown and subsequently agreed to fight against his old country.
  - D. Deirdre was originally promised in marriage to King Conchobor.
26. The last paragraph establishes all of the following about *The Táin* EXCEPT:
- F. *The Táin* is over twelve hundred years old.
  - G. once a literary work is dead, it ceases to have any cultural significance.
  - H. modern writers use *The Táin* as a source of artistic inspiration.
  - J. Irish bards once called on the ghost of Fergus to tell them the true story of *The Táin*.
27. One of the main points in the third paragraph (lines 23–36) is that, under medieval Irish law:
- A. bulls were important instruments of attaining political power.
  - B. a king was defined as the local man who had the most cattle.
  - C. children had limited legal rights.
  - D. women had legal rights equal to men, but only under certain conditions.
28. According to the passage, literary lovers' triangles have included all of the following EXCEPT:
- F. Queen Medb, King Aillil, and Fergus.
  - G. Queen Isolde, King Mark, and Sir Tristram.
  - H. Queen Guinevere, King Arthur, and Sir Lancelot.
  - J. Queen Medb, King Mark, and King Arthur.
29. The author most likely includes the information in lines 60–63 ("Still even Medb's daughter, Finnabair, ... same name") to suggest that:
- A. some thematic similarities between the King Arthur story and *The Táin* are very strong.
  - B. medieval authors knew that Finnabair and Guinevere were originally the same person.
  - C. the King Arthur story is an English version of *The Táin*.
  - D. no medieval kings could fully trust their best warriors.
30. Which of the following phrases best describe best describes why Medb wanted the magic bull of Ulster?
- F. Spiteful vanity.
  - G. Marital jealousy.
  - H. Serious ambition.
  - J. Childish determination.

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## PASSAGE IV

NATURAL SCIENCE: *A Short History of Homeopathy*

Homeopathy is a system for treating physical disease and other ailments using the theory of treating “like with like.” In practice, homeopathic medicine seeks substances that mimic an ailment’s symptoms; this sameness is considered “likeness.” The substance is then diluted to infinitesimal amounts and administered to the patient in order to cure the problem. Homeopathic treatment is currently in use for everything from cancer to colds and flu, though many scientists remain heavily skeptical about its efficacy.

Homeopathy was developed in the late 18th century by the German medical doctor Samuel Hahnemann. Despite being a physician himself, Hahnemann was deeply skeptical of the medical practices of his time. In general, 18th century medicine was founded on the theory of the four temperaments, or “humors”: Choleric, Melancholic, Sanguine, and Phlegmatic. These temperaments were based on the various possible combinations of hot and cold and wet and dry. A choleric, or angry, disposition meant that a person had a constitution that was essentially hot and dry. Phlegmatic, or unemotional, persons were thought to be cold and wet. Melancholy was caused by an excess of cold and dry, whereas Sanguine, or passionate, persons were hot and wet.

Humors theory was first developed by the Greek physician Hippocrates, the founder of western medicine, and later expanded upon by Galen. When a person became ill, doctors believed it was because one or more of the humors had come out of balance. Some of the best treatments were thought to be bloodletting and purgation—the assumption being that these treatments would effectively drain off the excess humors. Other popular treatments included blistering plasters and emetics. Often the treatment proved worse than the disease. Many patients died from excessive blood-loss or were poisoned by unregulated medications. In this environment, Hahnemann’s skepticism was well warranted.

Hahnemann first stumbled upon his theory when he was investigating a common treatment for malaria, cinchona bark. Modern scientists now know that cinchona bark contains quinine—a substance still used to treat malaria—but at the time, no one knew why the bark was effective. Hahnemann chose to implement the concept of treating “like with like” by testing an undiluted dose of the bark on himself. Finding that he had symptoms similar to those of malaria sufferers, Hahnemann concluded that effective drugs must produce symptoms in healthy people that are similar to those produced by the diseases that the drugs would be expected to treat. Hahnemann further hypothesized that, while undiluted substances would only worsen symptoms in the sick, heavily diluted substances could be effective for a cure. The doctor and his colleagues then proceeded to test a variety of substances to see what symptoms they induced, in the hopes of finding cures for diseases with similar symptoms. Perhaps not surprisingly, Hahnemann’s new field of homeopathy (i.e. “similar suffering”) was met with considerable

resistance from doctors comfortable with their usual practices.

In fact, Hahnemann’s methodology for scientifically testing potential treatments was remarkably modern. Nevertheless, his conclusions remain extraordinarily controversial. One of the main points of contention involves the standard homeopathic practice of heavy dilution to create the appropriate dose of a substance. Dilution of homeopathic substances happens in stages. Hahnemann had hypothesized that shaking the solution after each dilution would imprint the molecular “memory” of the original substance into the solution, which would allow the diluted dose to be effective without the possibility of overdose or adverse side effects.

Modern scientists have been unable to find any evidence to support the theory of molecular memory. In fact, the idea that diluting a substance makes it stronger runs against the principles of chemistry and physics. Moreover, scientists point to a lack of standardized clinical data on homeopathic treatment. Clinical studies that do show effectiveness indicate that homeopathic cure rates are generally equal to those of placebos.

Today, many conventional medical practitioners generally disregard homeopathy. Homeopathic practitioners are frequently termed quacks by conventional scientists. Nevertheless, homeopathy remains extremely popular both in the United States and abroad. In European countries such as France and England, conventional doctors frequently prescribe homeopathic treatments for common illnesses such as colds and flu. Pharmacists who are trained to answer questions about the homeopathic treatments’ use and desired effects then fill the prescriptions.

31. The passage mentions all of the following about the use of homeopathy to treat disease EXCEPT that:
- A. it is used to treat everything from cancer to colds and flu.
  - B. it is based on the theory of treating “like with like.”
  - C. its doses are administered in infinitesimal amounts.
  - D. it is scientifically proven to be effective.
32. According to the fifth paragraph (lines 63–75), Hahnemann hypothesized that heavily diluted substances remained effective because:
- F. shaking each dilution imprinted the molecular “memory” of the original substance into the solution.
  - G. substances that were too strong often had no effect on the patient.
  - H. dilution made the substance more similar to the original disease.
  - J. he used modern methodology for testing potential treatments, foregoing any information learned in the past.

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33. Hahnemann believed cinchona bark was an effective treatment for malaria because it caused similar symptoms when taken by a healthy person. According to the fourth paragraph, what reason would a modern scientist likely give for using cinchona bark to treat malaria?
- A. Recent clinical studies show that traditional medicines can sometimes be as effective as modern medicines.
  - B. Clinical studies show cinchona bark is an effective treatment for malaria, but only in undiluted doses.
  - C. Cinchona bark contains quinine, and quinine is known to be an effective treatment for malaria.
  - D. No modern scientist would recommend using cinchona bark to treat malaria.
34. According to the passage, one of the reasons modern scientists are unable to find evidence to support homeopathic treatment is because:
- F. homeopathic cure rates are superior to those of placebos.
  - G. there is a substantial amount of standardized clinical data on homeopathic treatment.
  - H. the theory of molecular memory is well-documented.
  - J. the idea that diluting a substance makes it stronger runs against the principles of chemistry and physics.
35. Information in the last paragraph indicates that:
- A. homeopathy should only be used to treat colds and flu.
  - B. based on clinical studies, conventional scientists are unnecessarily harsh in their judgment of homeopathy.
  - C. despite a lack of clinical data, homeopathy remains a popular form of treatment, even with doctors and pharmacists.
  - D. pharmacies are the safest places to buy homeopathic treatments.
36. The passage indicates that, in the Middle Ages, illness was thought to be caused by an imbalance in the “humors” that was best treated by:
- F. conditioning exercises to improve balance.
  - G. sitting in a sauna or steam room.
  - H. draining off the excess humors.
  - J. tilting the patient’s bed to improve blood flow.
37. According to the passage, a person with a *sanguine* disposition would most likely be which of the following?
- A. Hot and dry.
  - B. Hot and wet.
  - C. Cold and wet.
  - D. Cold and dry.
38. As it is used in line 62, the word *practices* most nearly means:
- F. exercises.
  - G. habits.
  - H. medical offices.
  - J. methods of treatment.
39. According to the passage, why did Hahnemann use heavily diluted substances to treat patients?
- A. Undiluted substances were frequently too expensive for all but the richest patients.
  - B. He believed undiluted substances would only worsen the patient’s symptoms.
  - C. He believed a patient’s memory of treatment was more important than the treatment itself.
  - D. It allowed him to use several different treatments on a single patient.
40. In the last paragraph, the author expresses which of the following beliefs about homeopathy?
- F. Homeopathy is medically unproven and thus practiced only by quacks.
  - G. Homeopathy is a necessary form of treatment that should be widely used to help the sick.
  - H. Homeopathy is a controversial form of medical treatment that is frequently used, despite a lack of supporting evidence.
  - J. Doctors in Europe are in agreement about the effectiveness of homeopathy.

**END OF THE READING TEST.**

**STOP! IF YOU HAVE TIME LEFT OVER, CHECK YOUR WORK ON THIS SECTION ONLY.**

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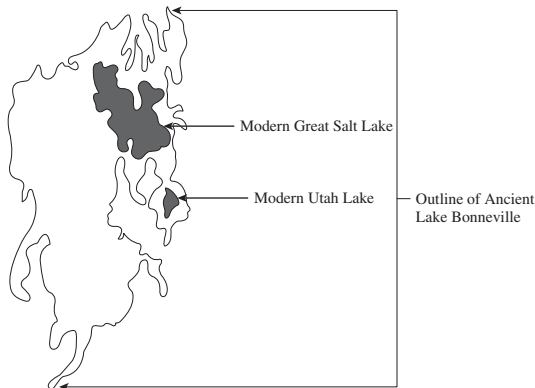
**SCIENCE REASONING TEST**

35 Minutes—40 Questions

**DIRECTIONS:** This test includes seven passages, each followed by several questions. Read the passage and choose the best answer to each question. After you have selected your answer, fill in the corresponding bubble on your answer sheet. You should refer to the passages as often as necessary when answering the questions. You may NOT use a calculator on this test.

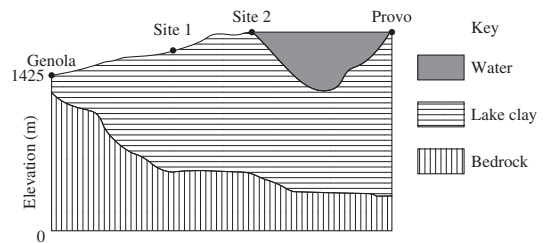
**PASSAGE I**

A *pluvial* lake is an ancient lake with high water levels, generally associated with times of high precipitation. Lake Bonneville was a prehistoric pluvial lake that covered much of North America’s Great Basin region during the last ice age (see Figure 1). Most of the territory it covered was in present-day Utah, though parts of the lake extended into present-day Idaho and Nevada. Formed about 32,000 years ago, it existed until about 16,800 years ago, when most of the contents of the lake were released through the Red Rock Pass in Idaho.



**Figure 1**

At more than 1,000 feet (305 m) deep and more than 19,691 square miles (50,999.5 km<sup>2</sup>) in area, Lake Bonneville was nearly as large as Lake Michigan and significantly deeper. Over time, increasing temperatures in North America caused the lake to begin drying up, leaving Great Salt Lake, Utah Lake, Sevier Lake, Rush Lake, and Little Salt Lake as remnants. While each of these lakes is considered a freshwater lake, the salinity levels are higher than normal. Figure 2 shows a cross-section of part of Utah Lake and its sediment and bedrock, with measurements taken at the cities of Genola and Provo and two test sites in between.



**Figure 2**

- According to Figure 2, the lake clay deposit is thinnest at which of the following locations?
  - A. Genola
  - B. Test Site 1
  - C. Test Site 2
  - D. Provo
  
- According to the passage, Lake Bonneville existed in its entirety for approximately how many years?
  - F. 32,000
  - G. 16,800
  - H. 15,200
  - J. Cannot be determined from the given information
  
- According to Figure 2, as the thickness of the lake clay increases from Genola to Site 2, the thickness of the bedrock beneath it:
  - A. increases.
  - B. remains the same.
  - C. first increases and then decreases.
  - D. decreases.

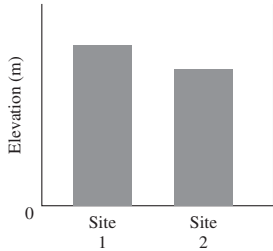
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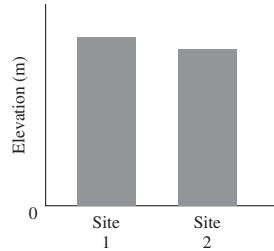
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4. According to Figure 2, which of the following graphs best represents the elevations, in meters above sea level, of the top of the lake clay layer at Test Sites 1 and 2?

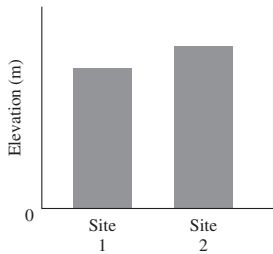
F.



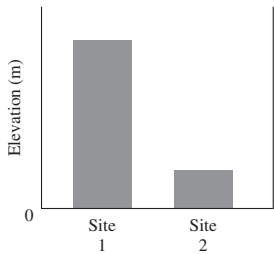
H.



G.



J.



5. Great Salt Lake is fed mainly by 3 tributary rivers that deposit large amounts of minerals into its waters. The lake is salty because it has no outflow for water other than evaporation, which is predominately mineral-free. If local temperatures were to decrease significantly, while freshwater rain were to increase significantly, what would be the likely resulting change to the salinity of the Great Salt Lake?

- A. Salinity would decrease.
- B. Salinity would increase.
- C. Salinity would remain the same.
- D. Salinity cannot be predicted.



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## PASSAGE II

The order *Lepidoptera* includes butterflies and moths. Table 1 is a key for identifying some *Lepidoptera* in North America.

Table 1			
Step	Trait	Appearance	Result
1	Body	Slim	Go to Step 2
		Fuzzy	Go to Step 3
2	Upper side of wings	Orange with black markings	<i>Agraulis vanillae</i>
		Yellow with markings	Go to Step 4
3	Upper side of wings	Brown	Go to Step 5
		Yellow	Go to Step 7
4	Underside of wings	Silver markings	Go to Step 6
		Green marbling	<i>Anthocharis cethura</i>
5	Hindwings*	Pronounced spot on wings	Go to Step 8
		No pronounced markings	<i>Citheronia sepulcralis</i>
6	Silver markings	Round and elongated	<i>Speyeria coronis</i>
		Triangular	<i>Speyeria zerene</i>
7	Underside of body	No prominent markings	<i>Eacles imperialis</i>
		Prominent brown bands	<i>Eacles oslari</i>
8	Wingspan	5–8 cm	<i>Automeris io</i>
		10–15 cm	<i>Antheraea polyphemus</i>

\*The hindwings are the pair of wings farthest from the head of the butterfly or moth.

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Table 2 describes 4 Lepidoptera that were seen in North America.

Table 2	
Lepidoptera	Traits
W	<ul style="list-style-type: none"> <li>• Fuzzy body</li> <li>• Upper side of wings yellow</li> <li>• Prominent brown bands on the underside</li> </ul>
X	<ul style="list-style-type: none"> <li>• Slim body</li> <li>• Upper side of wings orange with black markings</li> <li>• 7.2 cm</li> </ul>
Y	<ul style="list-style-type: none"> <li>• Slim body</li> <li>• Upper side of wings yellow with markings</li> <li>• Silver, triangular-shaped markings on the underside of wings</li> </ul>
Z	<ul style="list-style-type: none"> <li>• Fuzzy body</li> <li>• Upper side of wings yellow</li> <li>• No prominent markings on the underside of body</li> <li>• 9.7 cm</li> </ul>

6. Table 1 is used to identify animals that belong to which of the following groups?
- Birds
  - Reptiles
  - Insects
  - Mammals
7. Based on the information provided, the Lepidoptera listed in Table 1 that is most closely related to *Agraulis vanillae* most likely has which of the following characteristics?
- Fuzzy body.
  - Wings are orange with black markings.
  - Hindwings have pronounced spots.
  - Green marbling on underside of wings.
8. Based on Table 1, which of the following traits of Lepidoptera Y indicates that it is NOT a *Speyeria coronis*?
- Slim body.
  - Yellow upper side of wings, with markings.
  - Triangular, silver markings on the underside of wings.
  - Round, elongated silver markings on the underside of wings.
9. The results from Table 1 for Lepidoptera W and Lepidoptera Z first diverge at which of the following steps?
- Step 1.
  - Step 3.
  - Step 7.
  - Step 8.
10. According to Table 1, *Automeris io* and *Antheraea polyphemus* both have which of the following traits?
- Pronounced spot on hindwings.
  - Round markings on the underside of body.
  - A wingspan of 5–8 cm.
  - Slim bodies.

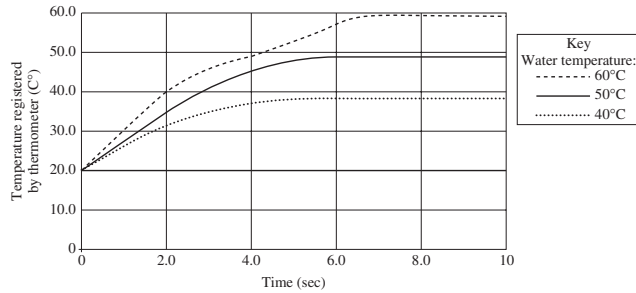
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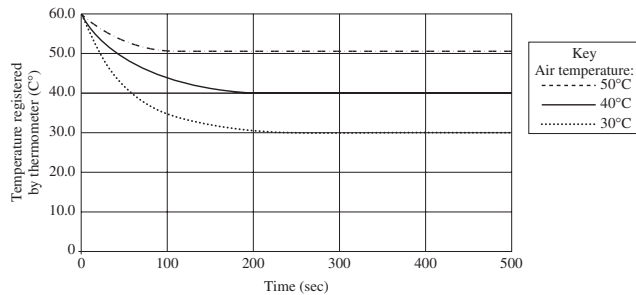
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**PASSAGE III**

A mercury thermometer, at an initial temperature of 20°C, was placed in 40°C water, and the temperature registered by the thermometer was recorded over time. This procedure was repeated using water samples at 50°C and 60°C (see Figure 1). Next, the same thermometer, at an initial temperature of 60°C, was placed in an air sample at 50°C, and the temperature registered by the thermometer was recorded over time. This procedure was repeated using air samples at 30°C and 40°C (see Figure 2).



**Figure 1**



**Figure 2**

(Note: Assume that the temperatures of the water and air samples did not change during the measurements.)

11. Based on Figure 1, at 3.0 sec, the thermometer reading in the 40°C water most likely was closest to which of the following?
  - A. 47°C.
  - B. 42°C.
  - C. 36°C.
  - D. 31°C.
  
12. According to Figure 2, for an air temperature of 30°C, over which of the following time intervals was the thermometer reading changing most rapidly?
  - F. 0–100 sec.
  - G. 100–200 sec.
  - H. 200–300 sec.
  - J. 300–400 sec.
  
13. When the thermometer was in the 40°C water, in the time interval between 0 sec and 2 sec, approximately how rapidly, in °C/sec, was the temperature registered by the thermometer changing?
  - A. 1°C/sec.
  - B. 5°C/sec.
  - C. 10°C/sec.
  - D. 40°C/sec.
  
14. Based on Figure 2, if the thermometer, at an initial temperature of 60°C, had been placed in an air sample at 20°C, how long would it most likely have taken the thermometer reading to reach 20°C?
  - F. Less than 10 sec.
  - G. Between 10 and 50 sec.
  - H. Between 50 and 100 sec.
  - J. Greater than 100 sec.
  
15. According to the passage, at which of the following did the thermometer register the highest reading?
  - A. Water temperature 60°, 4.0 sec.
  - B. Water temperature 60°, 2.0 sec.
  - C. Water temperature 50°, 4.0 sec.
  - D. Water temperature 50°, 2.0 sec.

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**PASSAGE IV**

Clinical research has become an important element in the development of modern medicine. Perhaps one of the most widely-debated issues in today's clinical research is the use of *placebos*, treatments believed to be biologically ineffective but used anyway for psychological or experimental purposes; an example of a placebo is a sugar pill, which contains no medication. In the realm of clinical research, placebos are used to establish a control group within the pool of research participants. A certain percentage of research patients are administered the test treatment, and another percentage is administered a placebo treatment. Patients are not informed of which percentage they are a part.

For various reasons, the use of placebos in clinical research is a controversial issue. Two scientists debate whether the use of placebos is a good or bad practice in research.

*Scientist 1*

Placebos are an important aspect of clinical research for many reasons. Not only do they establish a control group for the test treatment in question, but they also help address the issue of mind over matter, which is an important issue when working towards treatment for a particular illness. The body is a powerful life force, with natural recuperative abilities. A placebo encourages such recuperation.

Placebos also address the psychological aspect of illness. Because patients are unaware of whether they are receiving treatment or a placebo, the possibility of receiving treatment often provides patients with a psychological boost. The use of placebos addresses the question of whether a person's positive attitude may be important in recovery from illness. As a result, the placebo effect—a change in the patient's condition due to the idea of treatment, rather than its biological effectiveness—may be a measurable change in behavior as a result of the belief in treatment.

For both their physical and psychological benefits, placebos should be used in clinical research.

*Scientist 2*

There are many reasons why placebos shouldn't be used in clinical research. For example, placebos encourage deception in the doctor-patient relationship. Because this relationship is crucial to the confidence of both the doctor and the patient, and therefore the overall success of the patient's involvement in a study, placebos not only deceive patients, but can also have an adverse affect on research results. Placebos also violate patients' autonomy, or their right to choose treatment. While they can choose to be involved in a study, patients are unable to select their own course of treatment because it chosen for them.

Some argue that the placebo is worth its implementation in order to evaluate for the occurrence of the placebo effect. However, such action may skew the results of the study. For example, placebo-related changes could be over-estimated. Different illnesses, by definition, will react differently to the placebo. For example, in the instance of chronic pain or mood disorders, it's possible for patients to show spontaneous improvement. The placebo effect can also result from

contact with doctors or a respected professional. Patients are vulnerable to their environment, which significantly affects the psychological results of the placebo.

Due to its capability to skew research results, the placebo shouldn't be used in clinical research.

16. Which of the following is most consistent with the reasons supporting the use of placebos in clinical research? Many patients administered a placebo during a study:
- F. found it very difficult to trust their various medical professionals.
  - G. found it much easier to deal with their illness due to the support of their doctors and medical team.
  - H. experienced a heightening in their overall confidence and willingness to beat their illnesses.
  - J. enjoyed no physical improvements while participating in the study.
17. According to Scientist 1's viewpoint, the placebo effect often reveals in the patient:
- A. a negative change in behavior leading to a worsening of the patient's condition.
  - B. a positive change in behavior leading to recovery from the illness.
  - C. a negative change in behavior leading to a loss of faith in doctors.
  - D. no discernable change in behavior.
18. According to the passage, both Scientists agree that:
- F. the implementation of the placebo is worthwhile for the evaluation of the placebo effect.
  - G. the use of placebos can cause the placebo effect in patients.
  - H. few patients experience any sort of a response to placebos.
  - J. placebos are valuable for both their physical and psychological effects on the body.
19. According to Scientist 2's viewpoint, which of the following observations provides the strongest argument against using placebos in clinical research?
- A. The fact that patients sometimes deceive researchers
  - B. The danger of adverse reactions to sugar pills
  - C. The potential to skew the results of the research
  - D. The possibility that patients might choose ineffective treatments

**GO ON TO THE NEXT PAGE.**

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20. An evaluation of several placebo-using studies found that those patients who were involved were not only very trusting of their doctors and medical teams, but they were also more willing to communicate the various effects the treatment was having on them. This finding contradicts evidence stated in which viewpoint?
- F. Scientist 1's viewpoint, because the patients had a positive relationship with their doctors.
  - G. Scientist 1's viewpoint, because use of the placebo discouraged the medical team from obtaining accurate results.
  - H. Scientist 2's viewpoint, because placebos are a critical component in any clinical study.
  - J. Scientist 2's viewpoint, because the placebo studies encouraged rather than discouraged communication between doctors and patients.
21. Scientist 1's viewpoint implies that Scientist 2's viewpoint would be *weakened* by which of the following observations?
- A. All patients in a control group recover less quickly than the patients receiving medical treatment.
  - B. Some patients seem to benefit from choosing their own treatments.
  - C. A patient who learns that she has been given a placebo becomes ill.
  - D. A patient who is given a sugar pill develops new symptoms due to an allergic reaction to the pill.
22. Which of the following assumptions about the use of placebos is implicit in Scientist 1's viewpoint?
- F. Placebos are more cost-effective than other research tools.
  - G. Placebos are significantly more difficult to administer than real medications.
  - H. Real experimental medications are often dangerous to patients.
  - J. The use of placebos is safe for most patients.

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**PASSAGE V**

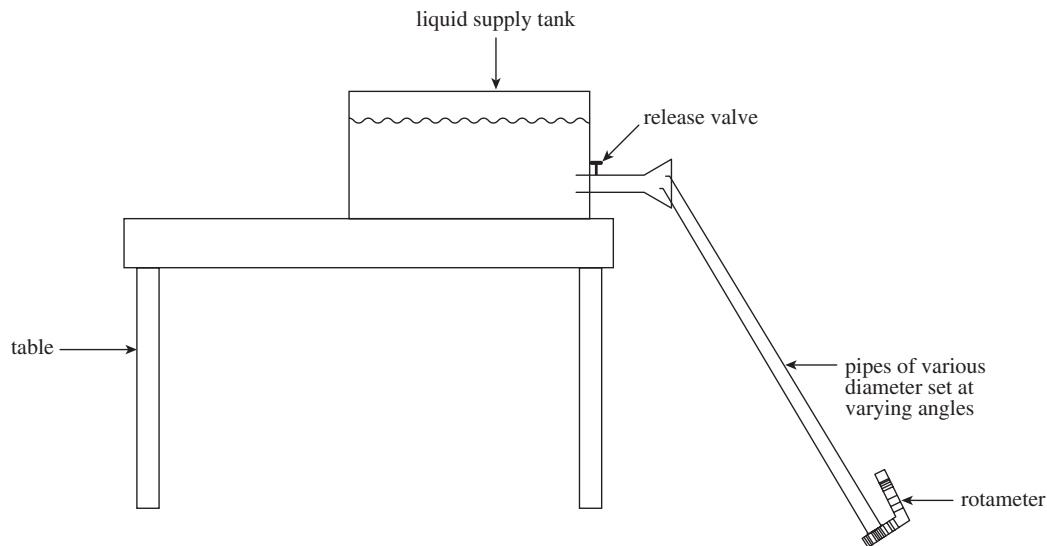
Near the end of the 19th century, British engineer Osborne Reynolds ran a set of experiments to observe and predict the transition between *laminar* (steady) and turbulent flow of a liquid through a pipe. In Reynolds' experiments, dye was forced through a liquid to show visually when the flow changed from laminar to turbulent. Laminar flow is common only in cases in which the flow channel is relatively small, the fluid is moving slowly, and its *viscosity* (the degree to which a fluid resists flow under an applied force) is relatively high. In turbulent flow, the speed of the fluid at any given point is continuously undergoing changes in both magnitude and direction. Reynolds demonstrated that the transition from laminar to turbulent flow in a pipe depends upon the value of a mathematical quantity equal to the velocity of flow ( $V$ ) times the diameter of the tube ( $D$ ) times the mass density ( $\rho$ ) of the fluid divided by its absolute viscosity ( $\mu$ ). The "Reynolds number," as it is called, is determined by the following equation:

$$R = \frac{\rho VD}{\mu}$$

Several students designed similar experiments to observe flow rates of different liquids. To conduct the experiments, the students were given the following apparatus:

- Liquid supply tank with clear test section tube and 'bell mouth' entrance
- 1 Rotameter to measure the velocity of flow (flow rate)
- Tap water
- Motor oil
- 4, 10-ft long smooth pipes of various diameters: 0.25-inch, 0.50-inch, 0.75-inch, 1.0-inch

Figure 1 illustrates an approximation of the set-up of each experiment.



**Figure 1**

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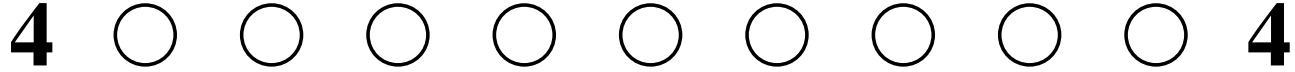


Figure 2 shows approximate viscosities of the water and motor oils used in the experiments.

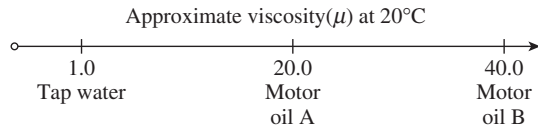


Figure 2

*Experiment 1*

In Experiment 1, students began with a pipe of diameter 0.25 inches. The pipe was set first at a 15° angle and tap water was released steadily from the tank into the pipe. The velocity of flow (*V*) was measured. The pipe was then set at a 30° angle, a 45° angle, and a 60° angle, water was released steadily from the tank into the pipe, and the velocity of flow was measured. The process was then repeated for each diameter of pipe using the same amount of water each time. All data were recorded in Table 1. Temperature of the water was held constant at 20°C.

Table 1		
<i>D</i> (in)	Angle of pipe	<i>V</i> (ft/s)
0.25	15°	2.0
	30°	4.0
	45°	6.5
	60°	8.0
0.50	15°	5.0
	30°	9.0
	45°	12.5
	60°	15.0
0.75	15°	8.0
	30°	12.5
	45°	16.0
	60°	20.0
1.00	15°	10.5
	30°	15.0
	45°	18.5
	60°	25.0

*Experiment 2*

In the second experiment, the tap water was replaced by Motor Oil A and the processes were repeated. The results are given in Table 2.

Table 2		
<i>D</i> (in)	Angle of pipe	<i>V</i> (ft/s)
0.25	15°	1.0
	30°	2.5
	45°	4.0
	60°	6.5
0.50	15°	3.0
	30°	5.5
	45°	7.0
	60°	9.5
0.75	15°	5.0
	30°	7.5
	45°	9.0
	60°	12.5
1.00	15°	7.0
	30°	10.5
	45°	12.0
	60°	18.5

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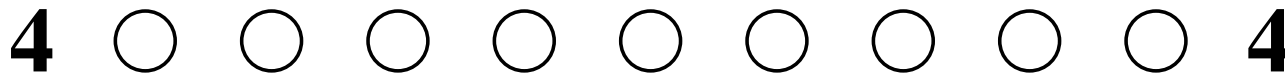
*Experiment 3*

In a third experiment, the tap water was replaced by Motor Oil B and the processes were repeated.

<i>D</i> (in)	Angle of pipe	<i>V</i> (ft/s)
0.25	15°	.50
	30°	.75
	45°	1.0
	60°	3.0
0.50	15°	1.0
	30°	2.0
	45°	3.5
	60°	5.0
0.75	15°	2.5
	30°	4.0
	45°	6.5
	60°	10.5
1.00	15°	3.0
	30°	5.5
	45°	8.0
	60°	12.5

23. Information in the passage and the results of the experiments indicate which of the following? Compared to tap water, Motor Oil A:
- has a lower viscosity.
  - has a higher viscosity.
  - has an overall higher flow rate.
  - does not exhibit laminar flow.
24. Based on Experiment 1, the relationship between the angle of the pipe and the velocity of flow:
- is indirect.
  - is direct.
  - varies, but with no general trend.
  - cannot be determined.
25. According to the passage, laminar flow was *most* likely to be observed under which of the following conditions?
- Experiment 1, pipe diameter of 0.50 in, pipe angle of 45°.
  - Experiment 3, pipe diameter of 0.50 in, pipe angle of 15°.
  - Experiment 1, pipe diameter of 1.0 in, pipe angle of 30°.
  - Experiment 3, pipe diameter of 1.0 in, pipe angle of 60°.
26. Which of the following conclusions is best supported by information in the passage? As viscosity increases:
- laminar flow decreases.
  - velocity of flow increases.
  - velocity of flow decreases.
  - laminar flow cannot be measured.
27. In Experiment 1, at a 30° angle, flow rate would most likely have been approximately 6.0 ft/s for which new pipe diameter?
- 0.4 in
  - 0.6 in
  - 0.8 in
  - 1.2 in
28. All of the experimental factors were identical EXCEPT:
- the length of the pipes.
  - the amount of liquid released into each pipe.
  - the type of liquid used.
  - the apparatus used to measure flow rate.





**PASSAGE VI**

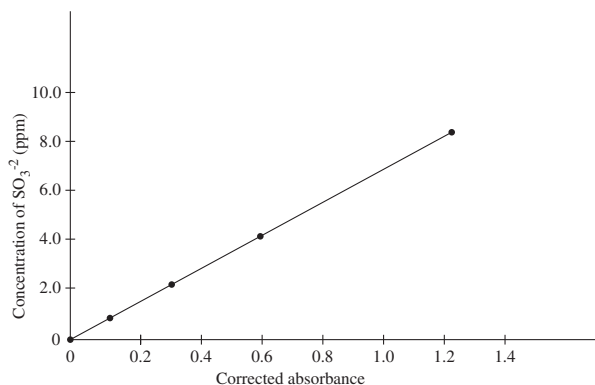
Certain preservatives known as *sulfites* are often added to fruit products to keep the fruit fresher longer. Use of sulfites is controversial because studies have linked sulfites to severe reactions in some asthmatics. Students performed 2 experiments to measure sulfite levels.

*Experiment 1*

Four solutions, each containing a different amount of sulfite dissolved in H<sub>2</sub>O were prepared. A coloring agent was added that binds with sulfite to form a red compound that strongly absorbs light of a specific wavelength, and each solution was diluted to 100 mL. A *blank* solution was prepared in the same manner, but no sulfite was added. A *colorimeter* (a device that measures how much light of a selected wavelength is absorbed by a sample) was used to measure the *absorbance* of each solution. The absorbances were corrected by subtracting the absorbance of the blank solution from each reading (see Table 1 and Figure 1).

Concentration of SO <sub>3</sub> <sup>-2</sup> (ppm*)	Measured absorbance	Corrected absorbance
0.0	0.130	0.000
1.0	0.283	0.153
2.0	0.432	0.302
4.0	0.730	0.600
8.0	1.350	1.220

\*ppm is parts per million



**Figure 1**

*Experiment 2*

A 100 g fruit sample was ground in a food processor with 50 mL of H<sub>2</sub>O and the mixture was filtered. The food processor and remaining fruit were then washed with H<sub>2</sub>O, these washings were filtered, and the liquid was added to the sample solution. The coloring agent was added and the solution was diluted to 100 mL. The procedure was repeated for several fruits, and the absorbances were measured (see Table 2).

Fruit	Corrected absorbance	Concentration of SO <sub>3</sub> <sup>-2</sup> (ppm)
craisins	0.668	4.4
prunes	0.562	3.7
banana chips	0.031	0.2
raisins	0.941	6.2
dried apricots	0.774	5.1

29. Based on the results of Experiment 1, if the concentration of sulfite in a solution is doubled, then the corrected absorbance of the solution will approximately:
  - A. remain the same.
  - B. halve.
  - C. double.
  - D. quadruple.
  
30. A sample of dried pineapple was also measured in Experiment 2 and its corrected absorbance was determined to be 0.603. Which of the following correctly lists prunes, apricots, and dried pineapple in *decreasing* order of sulfite concentration?
  - F. Prunes, dried apricots, dried pineapple.
  - G. Dried pineapple, apricots, prunes.
  - H. Prunes, dried pineapple, dried apricots.
  - J. Dried apricots, dried pineapple, prunes.
  
31. Based on the results of Experiment 1, if a solution with a concentration of 1.5 ppm sulfite had been tested, the corrected absorbance would have been closest to which of the following values?
  - A. 0.160
  - B. 0.240
  - C. 0.300
  - D. 0.360

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32. If Experiments 1 and 2 were repeated using a different coloring agent that produces a different color when it binds with sulfite, which of the following changes in procedure would be necessary?
- F. The new coloring agent should be added to the blank solution, but not to the sample solutions.
  - G. Both of the coloring agents should be added to the blank solution and to all of the samples.
  - H. The absorbance of the blank solution made with the new coloring agent should be added to the measured absorbances.
  - J. The colorimeter should be set to measure at a different wavelength of light.
33. Based on the results of Experiments 1 and 2, if the measured absorbances for the fruits tested in Experiment 2 were compared with their corrected absorbances, the measured absorbances would be:
- A. higher for all of the fruits tested.
  - B. lower for all of the fruits tested.
  - C. lower for some of the fruits tested, higher for others.
  - D. the same for all of the fruits tested.
34. If some of the water-soluble contents found in all of the fruits tested in Experiment 2 absorbed light of the same wavelength as the compound formed with sulfite and the coloring agent, how would the measurements have been affected? Compared to the actual sulfite concentrations, the sulfite concentrations apparently measured would be:
- F. higher.
  - G. lower.
  - H. the same.
  - J. higher for some of the fruits, lower for others.

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**PASSAGE VII**

The molar heat of fusion is the amount of heat necessary to melt (or freeze) 1.00 mole of a substance at its melting point at a constant pressure. The molar heat of fusion for water is 6.02 kilojoules per mole (kJ/mol).

The equation for molar heat of fusion is:

$$q = \Delta H_{\text{fus}}(\text{mass/molar mass})$$

In this equation,  $q$  is the total amount of heat involved,  $\Delta H_{\text{fus}}$  represents the molar heat of fusion (this value is a constant for a given substance), and (mass/molar mass) represents the number of moles of a given substance.

The following table lists molar heats of fusion, boiling points, and melting points for several elements.

Element	Melting point (°C)	Boiling point (°C)	$\Delta H_{\text{fus}}$ (kJ/mol)
Calcium	839.00	1,484.00	8.54
Silver	961.92	2,212.00	11.30
Iron	1,535.00	2,750.00	13.80
Nickel	1,453.00	2,732.00	17.46

Note: measured at a pressure of 1 atmosphere (atm).

35. According to the passage,  $\Delta H_{\text{fus}}$  of water:
- is less than  $\Delta H_{\text{fus}}$  of calcium.
  - is greater than  $\Delta H_{\text{fus}}$  of calcium.
  - is greater than  $\Delta H_{\text{fus}}$  of nickel.
  - cannot be determined.
36. The energy required to melt 1.00 mole of iron at 1,535°C and constant pressure of 1 atm is:
- 6.02 kJ.
  - 8.54 kJ.
  - 13.80 kJ.
  - 2,750.00 kJ.
37. According to the table, as the energy required to melt 1 mole of the given elements increases, the melting points:
- increase only.
  - decrease only.
  - increase then decrease.
  - neither increase nor decrease.
38. The boiling point of potassium is 759.90°C. If potassium follows the general pattern of the other elements in the table, its heat of fusion would be:
- below 8 kJ/mol.
  - between 8 and 11 kJ/mol.
  - between 11 and 14 kJ/mol.
  - between 14 and 18 kJ/mol.
39. Molar heat of fusion is directly related to the strength of the forces that hold molecules together; strong forces make it difficult for molecules to break away into the liquid or gaseous phase. Data in the table support the conclusion that those forces are stronger in:
- calcium than in silver.
  - silver than in nickel.
  - iron than in calcium.
  - iron than in nickel.
40. It was hypothesized that the heat of fusion will increase as the boiling point increases. Based on the data in the table, which of the following pairs of elements support(s) this hypothesis?
- Nickel and iron
  - Water and calcium
  - Silver and iron
- I only
  - III only
  - II and III only
  - I, II, and III

**END OF THE SCIENCE REASONING TEST.**

**STOP! IF YOU HAVE TIME LEFT OVER, CHECK YOUR WORK ON THIS SECTION ONLY.**

**WRITING TEST PROMPT**

**DIRECTIONS:** This test is designed to assess your writing skills. You have 30 minutes to plan and write an essay based on the stimulus provided. Be sure to take a position on the issue and support your position using logical reasoning and relevant examples. Organize your ideas in a focused and logical way, and use the English language to clearly and effectively express your position.

When you have finished writing, refer to the Scoring Rubrics discussed in the Introduction (page 4) to estimate your score.

Some public high schools have started to offer single-sex education, meaning that boys and girls are taught separately in classes such as chemistry and mathematics. Those in favor believe that, as long as the educational opportunities are equal, separation of the sexes is the best method because there are fewer distractions. They argue that, in separated classes, students are less likely to act out gender stereotypes. Those opposed reply that separate is never equal. They believe that single-sex education is a recipe for gender discrimination. In your opinion, should public high schools offer single-sex education?

In your essay, take a position on this question. You may write about either one of the two points of view given, or you may present a different point of view on this question. Use specific reasons and examples to support your position.

**ANSWER KEY****English Test**

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1. C	21. B	41. A	61. C
2. F	22. F	42. J	62. J
3. D	23. C	43. C	63. B
4. F	24. H	44. F	64. H
5. D	25. C	45. D	65. D
6. H	26. F	46. G	66. G
7. A	27. D	47. B	67. D
8. J	28. F	48. F	68. F
9. B	29. D	49. C	69. D
10. F	30. G	50. F	70. F
11. C	31. C	51. D	71. A
12. J	32. G	52. G	72. G
13. B	33. D	53. C	73. C
14. G	34. J	54. G	74. G
15. A	35. B	55. A	75. B
16. J	36. J	56. F	
17. B	37. B	57. A	
18. F	38. J	58. H	
19. D	39. D	59. C	
20. G	40. F	60. H	

**Mathematics Test**

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1. D	21. A	41. B
2. H	22. K	42. H
3. A	23. C	43. A
4. H	24. K	44. J
5. D	25. D	45. B
6. K	26. G	46. K
7. C	27. A	47. D
8. J	28. F	48. J
9. C	29. E	49. D
10. J	30. G	50. G
11. D	31. D	51. B
12. J	32. F	52. J
13. E	33. B	53. E
14. H	34. H	54. J
15. D	35. E	55. E
16. J	36. G	56. J
17. C	37. C	57. A
18. J	38. J	58. K
19. B	39. C	59. D
20. G	40. G	60. G

**Reading Test**

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

**Science Reasoning Test**

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