READING

QUESTIONS 21-50

DIRECTIONS: Read each passage below and answer the questions following it. Base your answers **only on information contained in the passage.** You may reread a passage if you need to. Mark the **best** answer for each question.

Wolves communicate with one another in a variety of ways, including scent marking, posture, and body movements. For centuries, however, it has been the howling of wolves that has stirred the emotions and imaginations of people. Researchers have spent years trying to understand why wolves howl, occasionally simulating wolf howls themselves to determine how the wolves will respond.

Howling apparently serves several purposes. Wolves howl to keep track of one another's location or to reestablish contact, especially when roaming in unfamiliar territory. Howling also serves to reinforce the cohesion of the pack. Wolves howl to assemble the members before a hunt and to celebrate success after a hunt. In addition, howling may be a way to mark the boundaries of a pack's territory, in the same way that some birds use birdsong to warn other birds away.

A group howling session may continue for as long as an hour, and an individual howl may last up to 20 seconds, followed by a pause. Each wolf, like each human being, has a distinctive voice, and each wolf in a pack recognizes the howls of the other members. Like people, young wolves have higher-pitched voices than their elders. They are less likely to initiate a howling session, but they join in quickly when another wolf begins to howl. When wolves howl in chorus, they do not howl in unison; rather, each wolf joins in on another note.

The image of the lone wolf howling at the moon may fascinate, but it is the exception, not the rule. A lone wolf will sometimes howl, perhaps looking for a mate or other wolves to begin a new pack, but howling is predominantly a social activity. Much howling, therefore, may be an expression of celebration, fellowship, or sheer good spirits. The evidence suggests that wolves howl, at least in part, because they enjoy it.

However, theories about the motivations for animal behavior must carefully consider the evidence. For example, some observers have claimed that wolves fake their howling in order to fool other wolves. They maintain that a young wolf can bluff its way out of trouble by lowering the pitch of its voice to sound like an older animal. Or, a chorus of four wolves can sound like nearly a dozen and thus intimidate potential enemies. But no independent evidence has been found to support these notions. Such behaviors, if they occurred, might indeed fool people, but wolf hearing is so discriminating that it is unlikely that wolves themselves would be fooled. Besides, wolves learn early that silence is often the best defense in times of danger.

21. Which of the following best tells what this passage is about?

A. people's reactions to wolf howls
B. how wolves fake their howls
C. animal behavior in the wild
D. how young wolves learn to howl
E. purposes of wolf howling

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22. Which of the following statements is **not** supported by the passage?

F. Howling communicates territorial boundaries.
G. Wolves communicate only within their own pack.
H. Howling sessions sometimes last up to an hour.
J. Wolves sometimes celebrate by howling.
K. Wolves howl both before and after a hunt.

23. According to the passage, how is birdsong similar to howling?

A. It can be used to track another animal's location.
B. It may be used to find a mate.
C. It may be used to indicate the boundaries of a territory.
D. It can be used to advertise the location of food.
E. It is often an expression of communal good feelings.

24. According to the passage, which of the following is the most likely reason that wolves howl in chorus?

F. to celebrate a successful hunt
G. to begin a new pack
H. to obscure their specific location
J. to attract members of the opposite sex
K. to keep other wolves away from their food

25. The examples in the last paragraph are given by some observers to suggest that wolves can deceive their enemies about their

A. vulnerability.
B. territorial boundaries.
C. specific location.
D. lack of a mate.
E. search for a new pack.

26. Why do some researchers doubt that wolves can fake their howling in order to fool other wolves in time of danger?

F. A chorus of four wolves can sound like many more.
G. Wolves can fool people, so they can also fool other wolves.
H. A young wolf can lower its voice to sound like an older animal.
J. Wolves always howl when they are in danger.
K. Wolf hearing is too keen to confuse the voices of other wolves.

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Imagine living in a society where ordinary people could be punished for what they choose to read and write. For much of the twentieth century, such a closed society existed in Russia and the rest of the Soviet Union. The Soviet government tried to dominate its citizens' activities and ideas by controlling the information that they received. Government censors examined books, films, and newscasts and banned anything they considered objectionable. They censored criticism of the Soviet government, news from the outside world, and anything that complimented Soviet enemies.

The Soviet government's strict censorship made life tremendously difficult for writers. Most worried that they were being watched by the government's secret police. Despite the harsh laws, small groups of writers dodged state censorship through an underground, or secret, publishing network that produced works called *samizdat*. The name samizdat came from the Russian words for "self" and "publish." For many writers, samizdat offered the only outlet for their intellectual and creative expression. To produce samizdat, an author passed a typed or handwritten text to a second person, who made a handwritten or typed copy. The original was returned to the author, while the copies were passed to other members of the network. The works were unsigned or signed with false names.

At first, samizdat focused mainly on literature, such as poetry and novels. By the late 1950s, samizdat circles were distributing political material, such as letters to the government, political essays, and trial transcripts. By the mid-1960s, the samizdat network produced sophisticated political news, debate, and analysis.

The great Russian novelist Boris Pasternak had his work published as samizdat. Like other writers, he feared that an appearance of disloyalty to the Soviet state would bring a knock at his door in the middle of the night. His classic novel, *Doctor Zhivago*, was smuggled out of the Soviet Union for publication in Western countries in 1956; in Russia, it appeared only as samizdat. Pasternak won the Nobel Prize in Literature in 1958, but the government forced him to refuse the prize. Soviet authorities also blocked publication of the work of Anna Akhmatova, one of Russia's greatest poets. Her work was banned until 1952 because censors felt she did not sufficiently praise the Soviet government. Akhmatova was kept out of public life and the official Writers' Union. She composed her poetry in private, and her works were available only as samizdat.

Through the 1960s and '70s, Russian writers used samizdat networks to circulate banned or politically risky material. By the late 1980s, computers became available in scientific research facilities, and underground writers began using the computers to store and circulate texts. Censorship was officially abolished in 1989, shortly before the breakup of the Soviet Union, leading to a publishing boom. Works by previously banned authors were published, and the samizdat networks quickly faded into history.

27. Which of the following best tells what this passage is about?

- **A.** two Russian authors, Boris Pasternak and Anna Akhmatova
- **B.** the poetry published in the Soviet Union during the twentieth century
- **C.** the role of a free press in a free society
- **D.** censorship in the Soviet Union and the underground system that arose in response
- **E.** the reasons for banning authors who criticized the Soviet government

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28. Which of the following is most likely an example of material circulated in the earliest phase of samizdat?

F. a letter protesting a writer's imprisonment
G. a true account of life in the secret police
H. a short story
J. a list of political prisoners
K. an article from a foreign newspaper

29. The phrase "a knock at his door in the middle of the night" (lines 47-48) most likely refers to a visit by

A. Boris Pasternak.
B. the secret police.
C. a member of the Nobel Prize committee.
D. a participant in the samizdat network.
E. a political exile.

30. According to the passage, how did the use of computers influence samizdat publishing?

F. The content of samizdat materials became exclusively technical.
G. Scientific research was published through samizdat networks.
H. Computers gave underground writers access to Russian stores.
J. Computers made the distribution of samizdat material more efficient.
K. Computers made identification of samizdat authors easier for the secret police.

31. What is the most likely reason that samizdat materials were unsigned or signed with false names?

A. to allow the materials to be smuggled outside the Soviet Union
B. to protect the writer from punishment
C. to shield the identities of members of the secret police
D. to undermine the trustworthiness of the materials
E. to prevent the materials from being copied

32. After 1989, "samizdat networks quickly faded" (lines 75-76) for which of the following reasons?

F. The networks were no longer necessary after censorship was abolished.
G. The works produced by the networks could not compete with works published in Western countries.
H. Samizdat was successfully banned by government censors.
J. The networks were replaced by the use of computers.
K. Opposition to the government went deeper underground than before.

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If you have ever watched someone fall on the ice, you've seen slipperiness at work. But have you wondered what makes ice slippery, or why skates or skis glide across ice so easily? The answer might seem obvious: ice is smooth. Yet smoothness in itself does not explain slipperiness. Imagine, for example, skating on a smooth surface of glass or sheet metal.

Surprisingly, scientists do not fully understand why ice is slippery. Past explanations of slipperiness have focused on friction and pressure. According to the friction theory, a skate blade rubs across the ice, causing friction. The friction produces heat, melting the ice and creating a slippery, microscopically thin layer of water for the skate to glide on. The friction theory, however, cannot explain why ice is slippery even when someone stands completely motionless, creating no friction.

The pressure theory claims that pressure from a skate blade melts the ice surface, creating a slippery layer of water. The water refreezes when the pressure is lifted. Science textbooks typically cite this explanation, but many scientists disagree, claiming that the pressure effect is not great enough to melt the ice. Nor can the pressure theory explain why someone wearing flat-bottomed shoes—which have a greater surface area than skate blades and thus exert less pressure per square inch—can glide across the ice or even go sprawling.

During the 1990s, another theory found acceptance: the thin top layer of ice is liquid, or "liquid-like," regardless of friction or pressure. This notion was first proposed more than 150 years ago by physicist Michael Faraday. Faraday's simple experiment illustrates this property: two ice cubes held against each other will fuse together. This happens, Faraday explained, because liquid on the cubes' surfaces froze solid when the surfaces made contact.

Faraday's hypothesis was overlooked, in part because scientists did not have the means to detect molecular structures. However, technological advances during recent decades allow scientists to measure the thin layer on the surface of the ice. For example, in 1996, a chemist at Lawrence Berkeley Laboratory shot electrons at an ice surface and recorded how they rebounded. The data suggested that the ice surface remained "liquid-like," even at temperatures far below freezing. Scientists speculate that water molecules on the ice surface are always in motion because there is nothing above them to hold them in place. The vibration creates a slippery layer of molecules. According to this interpretation of the Lawrence Berkeley Laboratory experiments, the molecules move only up and down; if they also moved side to side, they would constitute a true liquid. Thus it could be said that people are skating on wildly vibrating molecules!

The phenomenon of a slippery liquid-like surface is not limited to ice, although ice is the most common example. Lead crystals and even diamond crystals, made of carbon, also show this property under certain temperature and pressure conditions.

33. Which of the following best tells what this passage is about?

A. theories about how people learn to skate
B. how ice changes from a solid to a liquid
C. answers to the question of what makes ice slippery
D. the discoveries of Michael Faraday
E. the processes of freezing and melting

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34. What is the most likely reason that the author mentioned lead and diamond crystals in the last paragraph?

- **F.** to point out that solids other than ice have slippery surfaces
- **G.** to suggest that ice, lead, and diamonds are composed of the same materials
- **H.** to cast doubt on Faraday's theory of slipperiness
- **J.** to suggest that scientists shoot electrons at lead and diamond surfaces
- **K.** to suggest new uses for slippery substances

35. According to Faraday, why do two ice cubes fuse when held together?

- **A.** Friction causes the ice to melt and refreeze.
- **B.** The warmer ice cube melts the colder ice cube.
- **C.** The liquid layers on their surfaces freeze.
- **D.** The vibrations of the molecules on their surfaces increase.
- **E.** Their surface areas are perfectly smooth.

36. What is the most likely reason that the author mentioned the 1996 experiment at Lawrence Berkeley Laboratory?

- **F.** to provide evidence about the surface of ice
- **G.** to illustrate the weaknesses of scientific technology
- **H.** to show how Faraday tested his theory
- **J.** to suggest that the ice surface was solid, not liquid
- **K.** to explain why ice cubes freeze together

37. According to researchers at the Lawrence Berkeley Laboratory, why is the surface of ice "liquid-like" rather than "liquid"?

- **A.** because electrons rebound from the ice surface
- **B.** because the molecules vibrate only up and down
- **C.** because the ice surface is wet
- **D.** because the ice surface is slipperier than a liquid surface
- **E.** because the ice surface is frozen solid

38. According to the passage, which of the following undermines the friction theory of slipperiness?

- **F.** a person wearing flat-bottomed shoes gliding across the ice
- **G.** two ice cubes fused together
- **H.** electrons bouncing off an ice surface
- **J.** a person trying to skate on a sheet of glass or sheet metal
- **K.** a person slipping while standing immobile on ice

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The African country of Zimbabwe took its name from the Shona word meaning "stone enclosures" or "venerated houses." In fact, dozens of stone ruins are today scattered throughout Zimbabwe and other areas in southeastern Africa. One of these ruins, known as "Great Zimbabwe," was once a fabled city that inspired tales that circulated throughout Europe. Where was this remarkable city, and who had built it? For centuries the mystery occupied the minds of explorers and treasure-seekers.

The first reports to Europeans of Great Zimbabwe were spread a thousand years ago by Arab traders sailing between the Middle East and the east coast of Africa. They told of the fabulous wealth of a mysterious stone city in the African interior. In their tales, that city became associated with their understanding of Middle Eastern history—with the Queen of Sheba, King Solomon, and his legendary gold mines, long since lost to the world. By the sixteenth century, Portuguese explorers regularly visited East Africa, searching for "King Solomon's gold," but they never found Great Zimbabwe. In 1552, a Portuguese historian, João de Barros, recorded a story told by the Arabs about a city with a "square fortress of masonry within and without, built of stones of marvelous size, and there appears to be no mortar joining them."

In fact, Great Zimbabwe **was** a marvel. In one area, a massive wall, over thirty feet high and twenty feet thick, created a great enclosure. Another area contained a fortress-like series of walls, corridors, and steps built into the bluff above. Throughout the city, each stone was precisely fitted to the others without the use of mortar.

In the 1870s, a German geologist, Karl Mauch, was the first European to see Great Zimbabwe, by then in ruins. Mauch realized that he had "rediscovered" the fabled city from de Barros's story. He jumped to the conclusion that Great Zimbabwe had been built by the Queen of Sheba. British authorities sent a British journalist, Richard Hall, to Great Zimbabwe to investigate Mauch's report. Archaeology was still in its infancy, and Hall, convinced that the structures had been built by ancient people from the Middle East, dug up and discarded archaeological deposits that would have revealed much about the true history of Great Zimbabwe. Later European excavations destroyed even more valuable evidence.

In the twentieth century, after excavating areas that had not been disturbed, David Randall-MacIver, a Scottish Egyptologist, and Gertrude Caton-Thompson, an English archaeologist, concluded that the ruins were unmistakably African in origin. Great Zimbabwe was most likely built during the fourteenth or fifteenth century by the ancestors of the present-day Shona people. Recent carbon-14 dating supports their conclusion. Great Zimbabwe was once home to an estimated 20,000 people, the center of a great Shona kingdom. Wealthy Shona kings traded their ivory and gold in coastal towns for other goods, thus accounting for the discovery of beads and other foreign wares in the ruins.

One mystery of Great Zimbabwe had been solved. Another mystery remains: why was the settlement at Great Zimbabwe abandoned, leaving the magnificent stone architecture to fall into ruins?

39. Which of the following best tells what this passage is about?

- **A.** a brief history of the nation of Zimbabwe
- **B.** inaccuracies in the recording of African history
- **C.** a comparison of Great Zimbabwe with other African archaeological sites
- **D.** the true story of the Great Zimbabwe ruins
- **E.** how Karl Mauch discovered Great Zimbabwe

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40. With which of the following statements about Richard Hall's opinion regarding Great Zimbabwe would the author most likely agree?

F. First impressions are generally accurate.
G. Preconceptions can cloud a person's judgment.
H. The history of a people can best be judged by looking at its present culture.
J. Advanced cultures developed first in the Middle East, then spread to the rest of the world.
K. Much of Middle Eastern culture was derived from the culture of the Shona people.

41. What was "one mystery of Great Zimbabwe" (line 77) that had been solved?

A. why foreign wares were found in the ruins
B. why the settlement was abandoned
C. the source of the ivory and gold
D. why it was not discovered by Europeans until the 1870s
E. who had built it and when

42. Which of the following statements about the Shona people is best supported by the passage?

F. They no longer exist as a distinct group.
G. They live along Africa's East Coast.
H. They are descendents of the people who built Great Zimbabwe.
J. They lived in the Middle East before settling in Africa.
K. They were once ruled by King Solomon and the Queen of Sheba.

43. Which of the following best illustrates the statement that "Archaeology was still in its infancy" (lines 51-52)?

A. the stone buildings built without mortar
B. the abandonment of Great Zimbabwe
C. the conclusions of David Randall-MacIver and Gertrude Caton-Thompson
D. the discovery of beads and other foreign materials at Great Zimbabwe
E. the excavations conducted by Richard Hall

44. Which of the following best describes the relationship of Portuguese explorers to Great Zimbabwe?

F. They searched for it but never found it.
G. They told Arab traders where to find it.
H. They found King Solomon's mines but didn't realize it.
J. They destroyed archaeological evidence about its history.
K. They were responsible for its abandonment.

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In 1903, Dr. H. Nelson Jackson, a Vermont doctor, was enjoying a vacation in California when he made a historic bet with a few friends. Jackson claimed that, though he was not a professional driver, he could cross the country by automobile. While driving cross-country is commonplace today, at the turn of the last century such a trip was unprecedented. Automobile routes in the northeastern United States were well maintained, and the number of highway miles was increasing rapidly. Most roads in the western states, however, were little more than rough wagon tracks.

Refusing any assistance from automobile manufacturers, Jackson and his driving partner, Sewell Crockett, left San Francisco and headed east, somewhat ironically reversing the earlier routes of the pioneers. Like those rugged settlers, the two men spent much of their time traveling on muddy trails over hazardous and rough terrain. Though their automobile, a 1903 Winston, performed well, they often encountered unexpected delays. No one had ever attempted a cross-country automobile trip before, and maps were quite unreliable. Often their trip was held up by an unanticipated canyon or a surging river that they had thought would be miles away.

Residents of some small towns had never seen an automobile, and when the Winston approached, many of them trembled in fear. The modern machine attracted so much attention that Jackson's bulldog Bud was given the responsibility of guarding the car from people who, enchanted by its novelty, were tempted to steal a shiny piece as a souvenir. In Idaho, after sinking embarrassingly into a shallow quicksand pit, Dr. Jackson had to ask for help from a farmer who pulled the "state-of-the-art" automobile out of the muck, using the team of horses from his wagon.

On July 26, Jackson and Crockett reached their destination, New York City, and drove down Fifth Avenue in Manhattan. They had completed their trip in sixty-three days, traveling between 4,200 and 4,500 miles. Their cross-continental record was short-lived, however. By 1910, other drivers, benefitting from better driving conditions, had shortened the transcontinental crossing time to ten days. It may be that Jackson and Crockett played as much of a role in "opening up" the continent as did their predecessors who traveled in covered wagons.

45. Which of the following best tells what this passage is about?

- **A.** the reactions of people when they saw an automobile for the first time
- **B.** a comparison of highways in the eastern and western United States
- **C.** the hazards of travel in the early twentieth century
- **D.** a history of automobile travel in the United States
- **E.** a historic automobile trip by twentieth-century pioneers

46. Why did Jackson's automobile attract so much attention (lines 34-35)?

- **F.** An automobile was an uncommon sight in many areas.
- **G.** It was the first automobile custom-built for long-distance travel.
- **H.** People had never seen a pet dog traveling in an automobile.
- **J.** Jackson was the first person to drive an automobile in the United States.
- **K.** People had heard about the automobile sinking into the quicksand.

47. In line 37, the phrase "its novelty" refers to the novelty of the

- **A.** bulldog.
- **B.** car.
- **C.** small town.
- **D.** residents.
- **E.** journey.

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48. What does the incident with the farmer and his horses show?

F. The automobile would soon be the best method of transportation.
G. Jackson and Crockett occasionally needed help from others.
H. The theft of auto parts had caused the automobile to become stuck in the quicksand.
J. There were many quicksand pits in the West.
K. Older methods of transportation had many dangers.

49. What is the most likely reason that a cross-country automobile trip was shortened so dramatically by 1910?

A. Jackson's hand-drawn maps showed how to make the journey.
B. The drivers in 1910 did not get stuck in quicksand.
C. The intervening seven years were a time of rapid progress in highway development.
D. Travelers in 1910 were more adventurous than Jackson.
E. Unlike Jackson, the drivers in 1910 were sponsored by automobile companies.

50. In the last sentence, the phrase "their predecessors" refers to

F. the early settlers.
G. the first auto makers.
H. cross-country drivers in 1910.
J. the curious townspeople.
K. the friends of Jackson and Crockett.

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PART 2 — MATHEMATICS

Suggested Time — 75 Minutes

50 QUESTIONS

GENERAL INSTRUCTIONS

Solve each problem. Select the **best** answer from the choices given. Mark the letter of your answer on the answer sheet. You can do your figuring in the test booklet or on paper provided by the proctor. **DO NOT MAKE ANY MARKS ON YOUR ANSWER SHEET OTHER THAN FILLING IN YOUR ANSWER CHOICES.**

IMPORTANT NOTES:

(1) Formulas and definitions of mathematical terms and symbols are **not** provided.

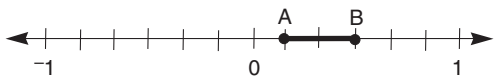
(2) Diagrams other than graphs are **not** necessarily drawn to scale. Do not assume any relationship in a diagram unless it is specifically stated or can be figured out from the information given.

(3) Assume that a diagram is in one plane unless the problem specifically states that it is not.

(4) Graphs are drawn to scale. Unless stated otherwise, you can assume relationships according to appearance. For example, (on a graph) lines that appear to be parallel can be assumed to be parallel; likewise for concurrent lines, straight lines, collinear points, right angles, etc.

(5) Reduce all fractions to lowest terms.

51.



On the number line above, intervals are equally spaced, and point x lies in the interval AB. What are the lower and upper limits of all possible values of x?

A. $\frac{1}{6}, \frac{1}{2}$

B. $\frac{1}{2}, \frac{5}{6}$

C. $\frac{1}{6}, \frac{5}{6}$

D. $-\frac{5}{6}, -\frac{1}{2}$

E. $-\frac{2}{3}, -\frac{1}{3}$

52. Ms. Garcia determines math grades on the basis of 5 tests, each worth 100 points. An average of at least 80 points is needed for a grade of B. On the first 4 tests, Hilary scored 91, 72, 69, and 83. What is the lowest score she may receive on the final test and still earn a B?

F. 80
G. 82
H. 84
J. 85
K. 86

53. Three chains, each 14 feet in length, are linked end to end. Two longer chains of equal length are added to make a total length of 100 feet. What is the length of **one** of the longer chains?

A. 29 ft
B. 36 ft
C. 42 ft
D. 58 ft
E. 72 ft

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54. Suppose that the age of the earth is 5.2×10^9 years, and the age of a particular artifact is 1.3×10^7 years. How many times older than the artifact is the earth?

F. 4.0×10^{12}
G. 4.0×10^6
H. 2.5×10^6
J. 2.5×10^3
K. 4.0×10^2

55. $$\frac{7 + n}{43 + n} = \frac{1}{3}$$

What is the value of n in the equation above?

A. 9
B. 11
C. 12
D. 16
E. 25

56. What is the prime factorization of 1,200?

F. $2^2 \times 3 \times 5^2$
G. $2^3 \times 3 \times 5^2$
H. $2^4 \times 3 \times 5^2$
J. $2^4 \times 3^2 \times 5^2$
K. $2^4 \times 3^2 \times 5$

57. If $x = y - 7$, what is the value of $3x - 3$ in terms of y?

A. $3y - 18$
B. $3y - 24$
C. $2y - 4$
D. $2y - 10$
E. $y - 10$

58. Laura rode her bicycle at 15 miles per hour for 2 hours, and then at 12 miles per hour for 1 hour. What was her average speed for the entire ride?

F. 12 mph
G. 13.5 mph
H. 14 mph
J. 15 mph
K. 42 mph

59. Four friends are going to sit in a row on a bench to have their picture taken. In how many different orders can the four friends sit?

A. 4
B. 6
C. 8
D. 12
E. 24

60. For what value of m is $\frac{5m - 3}{2 + m} = 4$?
(Note: $m \neq -2$.)

F. 14
G. 11
H. 8
J. 7
K. 5

61. What is the value of $4x^2 + 5x - 8$, if $x = -3$?

A. -59
B. -35
C. 1
D. 13
E. 43

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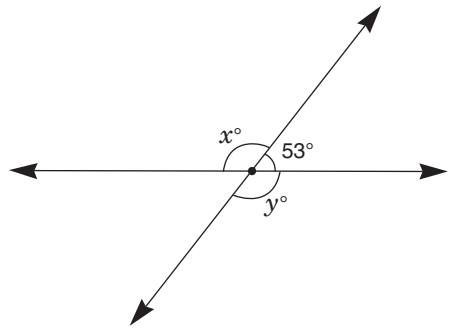
62. If a rectangular room is 3 times as long as it is wide, and if the width is 8 feet, how many square feet of carpet are needed to cover the floor?

F. 24 sq ft
G. 32 sq ft
H. 72 sq ft
J. 88 sq ft
K. 192 sq ft

63. Jodi's class has between 30 and 41 students. Exactly 75% of the students in her class have red book bags, and exactly $\frac{1}{6}$ of the students in her class do not have a book bag at all. How many students are in Jodi's class?

A. 32
B. 34
C. 36
D. 38
E. 40

64.



The figure above shows two intersecting lines. What is the sum of x and y?

F. 53
G. 74
H. 106
J. 127
K. 254

65. N, M, and T are integers.
N + M is an odd number.
M + T is an odd number.

Which of the following **must** be true?

A. N × T is even.
B. N × T is odd.
C. N + T is odd.
D. N + T is even.
E. N − T is odd.

66. $\frac{4.5}{0.1} \times 0.22 =$

F. 0.99
G. 1.99
H. 9.9
J. 99
K. 990

67. $(8 - 16) \div (^{-}8 + 6)$

If the parentheses are removed from the above expression, how will the value of the expression change?

A. no change
B. increase of 3
C. increase of 7
D. increase of 12
E. increase of 16

68. If $2x + 2y - 6 = 14$, what is the value of x in terms of y?

F. $10 - y$
G. $10 - 2y$
H. $8 - y$
J. $8 - 2y$
K. $4 - y$

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69. A merry-go-round has 25 horses. Each horse is labeled consecutively with a letter from A to Y—the first horse is labeled A, the second horse is labeled B, and so on. A child walks around the merry-go-round, starting at horse A and continuing in alphabetical order, counting as she goes. She stops at the 337^{th} horse. What is the letter of that horse?

A. A
B. J
C. K
D. L
E. M

70. A 5-ounce bag of candies sells for \$1.50. At this rate, what would be the price of a 1-pound bag of candies? (Note: 1 lb = 16 oz.)

F. \$0.30
G. \$3.00
H. \$3.60
J. \$4.50
K. \$4.80

71. In a salsa dance class, the ratio of women to men is 3:2. What percent of the students are women?

A. 40%
B. 60%
C. $66\frac{2}{3}\%$
D. 75%
E. 150%

72. How many integers between 75 and 105 have a remainder of 2 when divided by 15?

F. 0
G. 1
H. 2
J. 3
K. 5

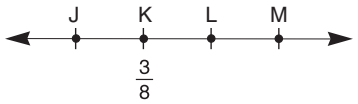
73. For what value of x is $\frac{2(x+1)}{3} = 1$?

A. 0
B. $\frac{1}{2}$
C. 1
D. 2
E. $\frac{5}{2}$

74. A taxi company charges \$2.00 per ride plus \$0.30 for each $\frac{1}{5}$ of a mile ridden. If a taxi ride costs \$20.00, how many miles long was the ride?

F. $6\frac{2}{3}$ mi
G. 12 mi
H. $13\frac{1}{3}$ mi
J. 20 mi
K. 60 mi

75.



On the number line above, JK = $3\frac{1}{2}$, JM = $9\frac{3}{4}$, and LM = $1\frac{1}{8}$. What is the position of point L?

A. $5\frac{1}{8}$
B. $5\frac{1}{2}$
C. $6\frac{1}{4}$
D. $6\frac{5}{8}$
E. $8\frac{1}{4}$

CONTINUE ON TO THE NEXT PAGE ▶

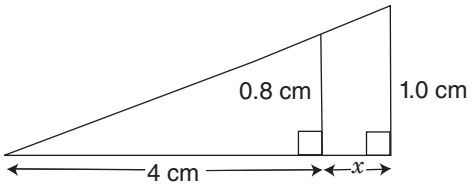
76. Shelby's rent is $800 per month. Since she could not pay this month's rent when due, her landlord agreed to accept 40% of the rent on the first day of the month, another 25% of the original rent on the tenth, and the rest on the twentieth. How much rent must Shelby pay on the twentieth day?

F. $80
G. $280
H. $300
J. $360
K. $520

77. If $x = -2$ and $y = 3$, what is the value of $5x - 2xy$?

A. -22
B. -2
C. 0
D. 2
E. 22

78.



In the figure above, what is the value of x?

F. 1 cm
G. 1.2 cm
H. 3.2 cm
J. 4 cm
K. 5 cm

79. A nation has five types of coins: sinds, dalts, lorgs, harps, and plunks. A sind is worth four lorgs. Two plunks equal five dalts. Three harps are worth one plunk. Five sinds are worth two harps. Which coin is most valuable?

A. sind
B. dalt
C. lorg
D. harp
E. plunk

80. Raoul is x years old now, and Phil is 8 years older than Raoul. In 2 years, Phil will be exactly twice as old as Raoul is then. How old is Raoul now?

F. 3
G. 5
H. 6
J. 8
K. 10

81. If 1 quart of paint covers 100 square feet of wall, what is the **least** number of 1-quart cans of paint needed to completely cover two rectangular walls measuring 12 feet by 9 feet plus two additional rectangular walls measuring 10 feet by 9 feet?

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

82. If $60 \div n = 24m$, what is the value of nm?

F. 0.4
G. 2.5
H. 5.2
J. 36
K. 1,440

83. When positive integer p is divided by 7, the remainder is 3. When p is divided by 5, the remainder is 2. What is the **least** possible value of p?

A. 10
B. 12
C. 17
D. 38
E. 52

CONTINUE ON TO THE NEXT PAGE ▶

84. The mean of twenty numbers is 42. If four of the twenty numbers have a mean of 50, what is the mean of the other sixteen numbers?

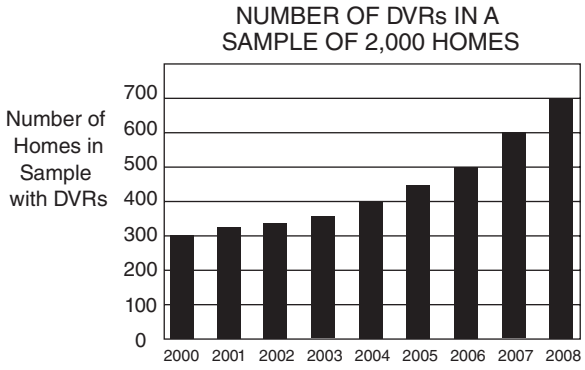
F. 32
G. 36
H. 40
J. 46
K. 65

85. $$50 < x^2 < 65$$
$$17 < y^2 < 32$$

If x and y are positive integers, what is the value of xy?

A. 13
B. 28
C. 35
D. 40
E. 45

86.



Based on the graph above, what was the first year in which at least 25 percent of the homes in the sample of 2,000 had DVRs?

F. 2000
G. 2001
H. 2004
J. 2006
K. 2008

87. At a hotel, Jahmir exchanged 300 dollars and received 192 nobles. Based on that information, how many nobles are equal to 1 dollar? (Assume that there are no exchange fees.)

A. $\frac{3}{5}$
B. $\frac{16}{25}$
C. $\frac{4}{5}$
D. $\frac{16}{15}$
E. $\frac{25}{16}$

88. How many positive integers are between $\frac{28}{3}$ and $\frac{83}{5}$?

F. 6
G. 7
H. 16
J. 54
K. 55

89. On a number line, points K and T are 12 units apart. Point M is the midpoint of $\overline{KT}$. Point W is the midpoint of $\overline{MT}$ and is located at 5 on the number line. Which number below is a possible midpoint of $\overline{KW}$?

A. -1
B. -0.5
C. 0.5
D. 1
E. 4.5

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90.

DISTANCE AND ALTITUDE OF TWO PLANES

	Distance of Plane from Airport at Time t	Altitude of Plane at Time t
Plane M	$(310 - 2t)$ miles	$(32{,}800 - 20t)$ feet
Plane N	$(3t + 235)$ miles	$(31{,}600 + 40t)$ feet

For the mid-flight time (t) in minutes between 0 and 100, the altitudes of two planes and their distances from the airport are indicated in the table above. At the minute the planes are at the same distance from the airport, what is the difference between their altitudes?

F. 25 ft
G. 180 ft
H. 300 ft
J. 420 ft
K. 3,300 ft

91. $A_1A_2 + A_2A_3 + A_3A_4 + A_4A_5 + A_5A_6$

If $A_k = \frac{1}{k}$ for any positive value of k, and k is a positive integer, what is the value of the expression above?

A. $\frac{1}{70}$
B. $\frac{1}{14}$
C. $\frac{5}{6}$
D. 1
E. $\frac{29}{20}$

92. In a certain city there are 50,000 licensed drivers. If 40,000 of the licensed drivers wear glasses and 30,000 of the licensed drivers are over 30 years old, what is the smallest possible number of licensed drivers who **both** wear glasses and are over 30?

F. 10,000
G. 20,000
H. 24,000
J. 30,000
K. 35,000

93. $V = \frac{1}{3}\pi r^2 h$

In the volume formula shown above, if r is divided by 2 and h is doubled, what is the ratio of the new volume to the original volume?

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

94. If $w < 0$ and if $z > 0$, which expression **must** be positive?

F. $w - z^2$
G. $z + w^2$
H. $z^2 \div w$
J. $z - w^2$
K. $w + z^2$

95. $\frac{2x + 5}{x - 2}$

If $0 \leq x \leq 5$, how many integer values of x will make the above expression an integer?

A. 0
B. 1
C. 2
D. 3
E. 4

96. On a coordinate system, the line segment joining the points (6, 8) and (12, 10) has the same midpoint as the line segment joining the points (8, 11) and (x, 7). What is the value of x?

F. 4
G. 5
H. 6
J. 9
K. 10

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97. Let GCF (x, y) represent the greatest common factor of x and y. If p is a positive **even** integer less than 11, for what value of p does GCF $(p^2, 81)$ have the **greatest** value?

A. 2
B. 4
C. 6
D. 8
E. 10

98. A regular dodecagon has 12 equal sides and 12 equal angles. How many degrees are in each interior angle of a regular dodecagon?

F. 30°
G. 150°
H. 154°
J. 168°
K. 216°

99. If the mean of w, x, y, and z is 60, and the mean of v, x, y, and z is 62, what is the value of $v - w$?

A. 2
B. 4
C. 6
D. 8
E. 10

100. A goat is tied by a 6 meter rope to the outside corner of a square shed measuring 8 meters by 8 meters. What is the area of the surrounding grass on which the goat can graze?

F. 6π sq m
G. 8π sq m
H. 27π sq m
J. 36π sq m
K. 48π sq m

THIS IS THE END OF THE TEST. IF TIME REMAINS, YOU MAY CHECK YOUR ANSWERS TO PART 2 AND PART 1. BE SURE THAT THERE ARE NO STRAY MARKS, PARTIALLY FILLED ANSWER CIRCLES, OR INCOMPLETE ERASURES ON YOUR ANSWER SHEET. ■