READING

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.

Sir Arthur Conan Doyle's detective, Sherlock Holmes, is one of the most popular fictional characters of all time. The four novels and 56 short stories in which he appears have been the subject of more than 12,000 books by other authors. Many of these latter books refer to "the game," an intellectual exercise in which the players assume that Holmes was a real person. An important part of the game is analyzing the settings, characters, and plots of the stories as though they were historical fact rather than fiction. Complicating the game is the fact that Conan Doyle himself cared little for consistency and accuracy. Narrated in the first person by Watson, Holmes's friend, Conan Doyle's stories are full of contradictory details.

For example, in one story Watson claims he was shot in the shoulder, while in another the wound is in the leg. Because the unwritten rules of the game require that his every word be considered true, many writers have come up with clever theories explaining this inconsistency. Some claim that one bullet struck Watson in the shoulder and then passed into his leg. Others suggest he may have suffered as many as three separate wounds over the course of seven years.

The game has become ever more complex. Most of the players like to pretend that Conan Doyle's role was simply one of finding and publishing Watson's manuscripts. For example, the actual manuscript of Conan Doyle's *The Adventure of the Second Stain* contains about 1,200 words of handwriting known not to be his own. Actually, the handwriting is that of Conan Doyle's wife, but the players maintain that it is Watson's handwriting.

One scholar has even gone so far as to publish a guidebook that locates the real world counterparts to every place mentioned in the stories. This required some ingenuity, since many places are fictitious. Other game players have placed plaques in various locations to commemorate fictional events. Some recent participants have become so caught up in the search for realistic detail that they occasionally undermine the enjoyment of a story. True believers, however, take pleasure in imagining that Holmes is still living on Baker Street in nineteenth-century London.

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

- **A.** More than 12,000 books have been written about Sherlock Holmes.
- **B.** Some people believe that Arthur Conan Doyle did not really write the Sherlock Holmes stories.
- **C.** Some Sherlock Holmes readers enjoy pretending that Sherlock Holmes was a real person.
- **D.** The Sherlock Holmes game has become more complex.
- **E.** The Sherlock Holmes stories contain many contradictions.

22. If a new Sherlock Holmes story were discovered, what would be the most likely effect?

F. Scholars would lose interest in the game.
G. More would be known about the life of Arthur Conan Doyle.
H. The issue of Watson's bullet wound would be settled.
J. Game players would integrate details from the new story into the game.
K. New players would be discouraged from participating in the game.

23. The passage suggests that, in order to play the game, a player must

A. be able to create believable characters.
B. travel frequently around England.
C. understand Arthur Conan Doyle's intentions in writing the Sherlock Holmes stories.
D. be willing to pretend that Conan Doyle's fictional detective was real.
E. be able to locate all of the fictional locations in the Sherlock Holmes stories.

24. Which of the following does the passage give as an example of the inconsistencies in the Sherlock Holmes stories?

F. the discovery that Watson was a real person, while Sherlock Holmes was not
G. Watson's bullet wounds
H. a manuscript with handwriting that is not Conan Doyle's
J. the fictional locations
K. the plaques commemorating fictional events

25. Which of the following would **not** be consistent with the rules of the game?

A. trying to prove that Conan Doyle's wife actually wrote the stories
B. looking for fictional places mentioned in the stories
C. assuming that Sherlock Holmes was a real person
D. demonstrating that a story's plot actually occurred
E. suggesting that Watson actually wrote the stories

26. Which of the following would most likely be an activity of the game?

F. discovering more about the relationship between Conan Doyle and his wife
G. trying to prove that Holmes's solutions to baffling cases were often incorrect
H. determining how many copies of the Sherlock Holmes short stories and novels have been sold
J. reading other detective stories written at the same time as the Sherlock Holmes stories
K. figuring out where Watson lived

The legendary Bedouin tribes of Saudi Arabia, a country made wealthy by the oil industry, still live the nomadic life of desert herdsmen. A deeply religious people, the Bedouin (pronounced beʹ-doo-in) value the laws and customs handed down to them through many generations. Year in and year out their lives follow the simple, rigorous calendar of the desert. In autumn, a tribe's migration begins. Every few days, after its herds of camels and sheep have grazed and watered, the tribe moves to a new place. This cycle ends only in the severe heat of the following summer, when the herds are settled near a town to wait once again for autumn.

To people from other regions, the desert seems forbidding and lonely, but the Bedouin feel at home on its sands. They are skilled in recognizing subtle differences in the landscape and easily distinguish between different kinds of sand. Perhaps it is due to the desert's vastness that the Bedouin cherish family and community. They welcome visitors and are known for their willingness to share what they have. Large family groups often gather together in a tent to tell stories and discuss the details and events of each other's day.

The Bedouin are extremely skilled in tracking, and their talents are often in demand by the Saudi police. In one famous criminal case, a Bedouin elder was asked to examine the footprint left by a killer. A year later, while visiting a mosque, the elder recognized the culprit's footprint in the sand. The police soon arrested the unlucky murderer as he left the mosque.

The Bedouin's time-honored ways result from centuries of coping with their inhospitable environment. Occasionally they adopt new ways, but only when change helps them deal with the hardships of desert life. For example, they use pick-up trucks to move their belongings and families and to carry water, but they continue in their work as desert herdsmen. Bedouin people often say they would not be Bedouin without sheep and camels to provide milk, meat, cloth, and hides.

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

A. the rhythms of desert life
B. storytellers of the desert
C. how to survive in the desert
D. legendary tracking ability of the Bedouin
E. the modern life of a nomadic people

28. When does the yearly migration of the tribes begin?

F. in the severe heat of summer
G. after summer is over
H. when the tribe has finished doing business in town
J. when summer begins
K. when the Bedouin have enough water

29. The Bedouin have allowed certain modernizations when those changes

A. help them cope with their harsh existence.
B. are required by their religion.
C. will shorten the length of their migration.
D. do not replace something traditional.
E. make it possible to avoid desert travel.

30. Which of the following facts most clearly suggests that the Bedouin have recently shared some of the wealth of Saudi Arabia?

F. They spend their summers near a town.
G. They own herds of camels and sheep.
H. They are generous to visitors.
J. They own pick-up trucks.
K. They travel wherever they wish.

31. Which of the following has had the **least** influence on the Bedouin lifestyle?

A. the desert
B. their herds
C. their religious beliefs
D. their nomadic travels
E. the oil industry

32. The story of the Bedouin elder who recognized a criminal's footprint was included in order to illustrate

  F. the Bedouins' deep religious beliefs.
  G. the closeness of the Bedouin community.
  H. the cooperation between the Bedouins and their elders.
  J. the Bedouins' tracking ability.
  K. how Bedouins have adopted new ways yet kept many old traditions.

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Nearly all green plants on earth make their own food using sunlight, water, and nutrients drawn from the soil through their roots. One of the most important nutrients is nitrogen compounds, derived from decomposing organic matter. However, some plants live in wet, marshy areas where such compounds have been washed out of the soil. Without them, these plants could not produce their own food and would quickly die.

How do these plants survive? Some plant species have developed ways to trap small animals—usually fleas, flies, and spiders, but occasionally mice or frogs—whose bodies contain nitrogen compounds. Because they can digest living animals, these plants are called "carnivorous" plants, although none of them actually has a mouth or teeth. Instead, the trapped animals are digested by juices secreted by the leaves of the plants.

Most carnivorous plants use a "passive" trap, which means that they employ no moving parts to capture their prey. Passive trappers include the pitcher plant, the sundew, and the butterwort. Pitcher plants are so called because their leaves curl to form a pitcher or hollow reservoir in which rainwater collects. Many are brightly colored to lure insects inside the pitcher to sip nectar. The walls of the reservoir are slippery, and eventually the insect slips into the pool of water and drowns. The leaves of the sundew and the butterwort are also covered with sticky, sweet nectar. Once an insect alights on a leaf, the nectar acts as flypaper, holding the insect fast as the leaves secrete their digestive juices.

The best-known "active" trapper species is the Venus flytrap, native to the swamps of North and South Carolina. Its leaves are brightly colored and produce a sweet-smelling nectar. Each leaf consists of two lobes joined by a hinge, like a clamshell, and each lobe is edged with stiff bristles called cilia. Inside each lobe are three trigger hairs. When the trigger hairs are brushed by an insect, the bristles come together to form the bars of a cage, and the insect is trapped. Within about ten days the insect becomes a nitrogen-rich soup of nutrients that is absorbed by the plant. Then the trap opens again, ready to attract its next victim. One flytrap may capture and digest three "meals" per month.

Perhaps the most unusual active trapper is the bladderwort. The bladderwort floats below the surface of the water and extends a network of leaves, which are like little airbags or bladders only half a centimeter long. Like the leaves of a Venus flytrap, the bladders are equipped with trigger hairs at the opening of a trapdoor that opens in only one direction—inward. While awaiting its prey, the bladder lies limp and empty. When a small animal brushes the trigger hairs, the trapdoor springs open, allowing water to rush in. The prey is sucked inside, the trapdoor closes, and the bladderwort obtains the nutrients it needs to survive.

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

   A. the adaptations that carnivorous plants have made to get nutrients
   B. the superiority of the bladderwort over other carnivorous plants
   C. the kinds of environments in which carnivorous plants thrive
   D. the similarities between carnivorous animals and carnivorous plants
   E. the importance of nitrogen to green plants

34. What does the passage suggest about carnivorous plants?

   F. They feed exclusively on insects.
   G. They live longer than other green plants.
   H. They are unable to absorb nitrogen compounds.
   J. They are found only in the southern United States.
   K. They grow in wet, swampy areas and marshes.

35. Which of the following phrases conveys the same or most nearly the same meaning as the word "fast" in line 38?

   A. firmly
   B. rapidly
   C. crushingly
   D. helplessly
   E. unexpectedly

36. Which of the following is **not** used by carnivorous plants to trap and hold prey?

   F. sticky liquid
   G. mouth with teeth
   H. suction
   J. hinged leaves that fold together
   K. a pool of water

37. Why are the plants in the passage called carnivorous?

   A. They have mouths with teeth.
   B. They are attractive to insects and small animals.
   C. They capture and digest live animals.
   D. They have stomachs and digestive fluids.
   E. They digest other plants.

38. Why is a victim unable to escape from the bladderwort after it is sucked into the bladder?

   F. The sticky nectar keeps it stuck inside.
   G. It is trapped between the two lobes of the bladder.
   H. It is entangled in the cilia.
   J. The trigger hairs come together to form the bars of a cage.
   K. The trapdoor opens only inward.

Sometimes in nature, a plant or animal depends on another species for its survival. Once in a while, the existence of a single species is crucial to the survival of a large number of other life forms. An excellent example of such a species is the sea otter, a carnivorous marine mammal that lives in the rich kelp forests (dense areas of seaweed) in the coastal waters of the Pacific Ocean.

Sea otters have long been hunted for their valuable and beautiful fur. Before the governments of the United States and several other countries enacted laws banning their slaughter early in the twentieth century, the sea otter's numbers were dangerously low. Though they presently occupy only a fraction of their original habitat range, sea otters are thriving again. Today, they are often seen in California coastal waters in a characteristic pose: floating happily on their backs while eating a seemingly endless supply of seafood.

The sea otter seldom visits land, except to escape severe wind and waves or to give birth to young. It is quite at home in the kelp forest, which provides protective cover from enemies (including sharks and killer whales) and serves as an abundant source of its favorite seafoods. A sea otter may consume as much as twenty pounds of shellfish a day, feasting on mollusks, abalone, crabs, and its favorite treat—sea urchins.

The sea otter's eating habits are good news for the other inhabitants of its environment. Another big eater, the sea urchin, lives on a diet of kelp and seaweed. In some areas, uncontrolled sea urchin growth has devastated kelp forests. When sea urchin populations are held in check, and water pollution or shoreline development do not interfere, kelp forests generally thrive. Many varieties of fish and shellfish live in these seaweed forests, attracting still more animal species to nearby shores. For example, the survival of bald eagles and harbor seals depends on the availability of such marine life. Had the hunting of sea otters continued unabated into the twentieth century, the damage to this interdependent coastal community would have been much more far-reaching than the loss of an individual species.

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

- **A.** the sea otter's key role in kelp forests
- **B.** why sea urchins are a threat to the ecology of the Pacific
- **C.** how the sea otter was saved from extinction
- **D.** the origin of kelp forests
- **E.** the ecology of the Pacific coast

40. Why do sea otters leave the water?

- **F.** to sleep
- **G.** to find food
- **H.** to avoid violent storms
- **J.** to escape from predators
- **K.** to avoid water pollution

41. Which of the following, if it were to occur, could be caused in part by sea otters' actions?

- **A.** too much commercial fishing in coastal waters
- **B.** a sharp decrease in shellfish populations
- **C.** the devastation of kelp forests
- **D.** the extinction of killer whales
- **E.** the loss of bald eagle nesting areas

42. The passage implies that laws were passed banning the slaughter of sea otters because

- **F.** sea otters were being hunted only for pleasure.
- **G.** other forms of coastal marine life were in decline.
- **H.** sea otters were in danger of becoming extinct.
- **J.** sea otters were crucial for kelp forests to thrive.
- **K.** many people find sea otters very cute.

43. Which of the following situations is most like the one involving sea otters and sea urchins as it is presented in the passage?

    A. Parasites are removed from the digestive system of a mammal and the mammal dies.
    B. Human beings increase their use of pesticides and the populations of many bird species decrease.
    C. Acid rain, an industrial pollutant, causes dramatic changes in many forest ecosystems.
    D. Koala bear populations survive only if the bears obtain sufficient quantities of eucalyptus leaves.
    E. An area's wolf population disappears and the deer population increases dramatically.

44. Which of the following has **not** represented a threat to sea otter populations?

    F. water pollution
    G. shoreline development
    H. fur hunters
    J. sharks
    K. harbor seals

If you look around most preschool classrooms, you'll notice some common elements: rows of beads to count; wooden blocks and textured objects to touch; and furniture made to the scale of a small child. All of these familiar objects reflect the deep influence of Maria Montessori and her theory of education.

Born in 1870 in the Italian village of Chiaravalle, Maria moved to Rome with her family when she was five years old. Her mother encouraged her to pursue broader schooling than most girls received at the time. Maria began attending a boys' technical school at age 13, against her father's wishes but with her mother's support. She spent seven years studying engineering—and developing ideas about what a school should **not** be like. Although she was a good student, she felt stifled by the strictness, formality, and emphasis on learning by memorizing.

Eventually Montessori enrolled as a medical student at the University of Rome. In 1896 she graduated as the first female doctor in Italy. The following year, she joined the staff at a hospital for children with developmental disabilities. As she observed her patients, Montessori realized that many belonged in school, not in a hospital. Though not trained as a teacher, she wanted to find ways to educate these children.

Montessori drew ideas from anthropology, psychology, and medicine to develop her educational methods. She believed that children's personalities form as children interact with their environment. Everything they experience, she thought, becomes part of them. Montessori believed that the classroom environment was part of education. She was the first educator to provide child-size chairs and tables.

She also believed that education is a natural process that each student conducts in his or her own way. Teachers can help the process, but they should not attempt to direct it or change it. Children were given the freedom to learn in their own way, while at the same time required to follow classroom rules. In contrast to the commonly held view that children should be "seen and not heard," Montessori's teachers allowed their students to discover knowledge without interference.

In 1900, Montessori put her ideas into practice by opening a small school for children with developmental disabilities. The results were remarkable. Although her students were thought to lack ability, they learned to read, write, and participate in classroom activities. In 1907, Montessori founded a school for preschool children in one of Rome's poorest neighborhoods. Most of the children were shy and fearful or unruly and wild, but all responded quickly to Montessori's methods. Her students' success made Montessori famous, and she traveled the world to spread her ideas, revolutionizing education everywhere she went.

Montessori had her critics as well as her admirers. Some claimed that her methods placed too much emphasis on hands-on learning instead of intellectual development. Others questioned whether young children could achieve their own education without the structure and knowledge that a good teacher can provide. But educators agree that Maria Montessori recognized the universal characteristics that all children share, and she taught the world that each child is unique, admirable, and worthy of respect.

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

    A. how anthropology, psychology, and medicine can help children learn
    B. the history of children's education in Italy
    C. an important educator and the ideas she promoted
    D. the universal characteristics that children share
    E. how attitudes toward educating girls have changed

46. Maria Montessori believed that children's personalities form

    F. through formality and strict discipline.
    G. as a result of interaction with their surroundings.
    H. when children spend time in schools instead of hospitals.
    J. when children's intelligence and ability are high enough.
    K. after age six.

47. In 1907, Montessori established a school for

    A. children with developmental disabilities.
    B. boys who were studying engineering.
    C. children who lived in Chiaravalle.
    D. young children in a poor neighborhood.
    E. teachers who wanted to learn the Montessori method.

48. The author includes information about Montessori's childhood to demonstrate that

    F. she had a good relationship with both of her parents.
    G. she was never diagnosed with a developmental disability.
    H. becoming an educator had always been one of her goals.
    J. education was of primary importance throughout her life.
    K. her interest in engineering had influenced her career.

49. What is the most likely reason that the author began the passage by describing familiar objects found in preschool classrooms?

    A. to demonstrate how Montessori's method has shaped preschool education
    B. to argue that the Montessori method does not live up to its claims
    C. to illustrate the influence of Montessori's own schooling
    D. to give an example of what a school should **not** be like
    E. to show that students cannot learn without a teacher

50. How were Maria Montessori and her mother alike?

    F. Both attended technical school to study engineering.
    G. Both supported her father's wishes for her educational goals.
    H. Both believed that girls should have access to the educational system.
    J. Both held that a child's personality was formed through interaction with his or her surroundings.
    K. Both believed that classrooms should be less strict and formal.

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.

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51. M is 20% of $N,$ and N is 5% of 1,000. What is the value of M?

    A. 10
    B. 40
    C. 100
    D. 250
    E. 1,000

52.
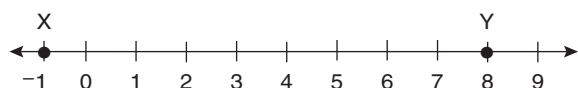
If $\overline{XY}$ is divided into 3 equal parts by points R and S (not shown), what position will point R fall on? (Assume R $<$ S.)

    F. 2
    G. 2.5
    H. 3
    J. 4
    K. 6

53. Convert $\frac{5}{16}$ to decimal form.

    A. 0.31
    B. 0.31125
    C. 0.312
    D. 0.3125
    E. 5.16

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54. If n is positive and $n^2 = 51$, between which two numbers does n lie?

    F. 5 and 6
    G. 6 and 7
    H. 7 and 8
    J. 8 and 9
    K. 9 and 10

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55.

SIT-UPS IN GYM CLASS

Sit-ups	Number of Students
20	5
21	3
25	2
27	2

The table above shows the number of sit-ups completed by 12 students in gym class. What is the mean number of sit-ups completed?

A. 22.25
B. 23
C. 23.25
D. 27
E. 93

56. What is the **greatest** prime number less than 40?

F. 31
G. 37
H. 38
J. 39
K. 41

57. $2x(3y + 1) =$

A. $3y + 2x$
B. $5xy + 2x$
C. $6xy + 1$
D. $5xy + 2x + 1$
E. $6xy + 2x$

58. What is the **least** integer greater than $\frac{27}{4}$?

F. 5
G. 6
H. 7
J. 8
K. 9

59. P is a point that is not on line m. How many lines can be drawn through P that form a 30° angle with line m?
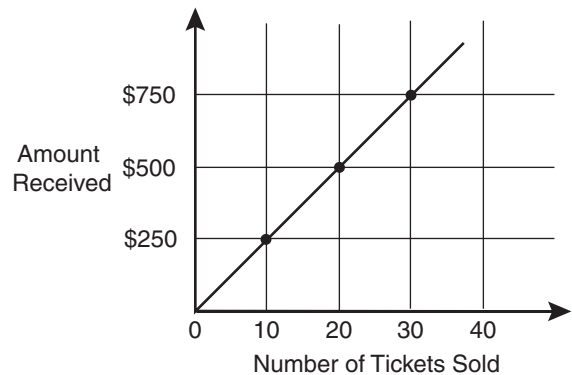
A. 0
B. 1
C. 2
D. 3
E. The number varies.

60. At 7:00 a.m., the temperature was 12° **below zero** Fahrenheit. Then the temperature rose 3° per hour for 9 hours. What was the temperature at 2:00 p.m.?

F. 21°
G. 9°
H. 6°
J. 3°
K. ⁻6°

61.

INCOME FROM TICKET SALES

The graph above shows the relationship between the number of tickets sold and the amount of money received from the sale. What is the price of one ticket?
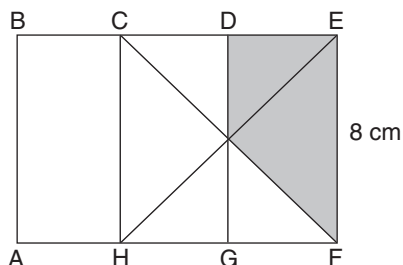
A. $20.00
B. $25.00
C. $25.50
D. $50.00
E. $250.00

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62. The product of a nonzero integer and ⁻1 has the same value as the square of the integer. What is the integer?

- **F.** ⁻2
- **G.** ⁻1
- **H.** 0
- **J.** 1
- **K.** 2

63.

8 cm

ABDG and HCEF are squares, and $\overleftrightarrow{BCDE}$ is a straight line. $\overline{DG}$ and the diagonals $\overline{CF}$ and $\overline{HE}$ pass through the same point. What is the area of the shaded region?

- **A.** 16 sq cm
- **B.** 24 sq cm
- **C.** 32 sq cm
- **D.** 40 sq cm
- **E.** 56 sq cm

64. Which of the following is equivalent to the inequality $10 < x - 6$?

- **F.** $x < 4$
- **G.** $x > 4$
- **H.** $x > ^-4$
- **J.** $x < 16$
- **K.** $x > 16$

65. $(13 + 2x) - (4 - x) =$

- **A.** $9 - 3x$
- **B.** $9 + x$
- **C.** $9 + 3x$
- **D.** $13 + 3x$
- **E.** $17 + x$

66. What is the difference between 90% of 9 and 9% of 90?

- **F.** 0
- **G.** 2
- **H.** 7.29
- **J.** 10
- **K.** 81

67. If $27,783 = 3^x \cdot 7^y$, what is xy?

- **A.** 3
- **B.** 4
- **C.** 9
- **D.** 12
- **E.** 21

68. A train traveling at a speed of 30 miles per hour passes point A on its way to point B. At the same time, on a parallel track, another train traveling at a speed of 70 miles per hour passes point B on its way to point A. If point A and point B are 300 miles apart, how far from **point B** will the trains meet?

- **F.** 240 mi
- **G.** 210 mi
- **H.** 150 mi
- **J.** 140 mi
- **K.** 90 mi

69.

The figure above is made up of eight squares. How many rectangles in the figure are similar to BCEN? (Do not count BCEN itself.)

- **A.** 3
- **B.** 5
- **C.** 9
- **D.** 10
- **E.** 11

70. One-half the sum of two numbers is 9. If one of the numbers is 5, what is the product of the two numbers?

    F. 45
    G. 65
    H. 85
    J. 105
    K. 115

71. There are 10,000 fish in a pond. Of 50 fish caught in a net, 35 are female and 15 are male. Which is the best estimate of the number of male fish in the pond before the 50 fish were caught?

    A. 750
    B. 1,500
    C. 3,000
    D. 3,500
    E. 7,000

72. The area of a rectangular rug is 70 square feet. If the width is 5 feet, what is the perimeter?

    F. 14 ft
    G. 19 ft
    H. 38 ft
    J. 150 ft
    K. 350 ft

73. Mei-Ling has paints in 4 different colors. If she is going to paint the inside of a box with one color and the outside of the box with another color, in how many different ways can she paint the box?

    A. 2
    B. 4
    C. 6
    D. 8
    E. 12

74. If $\hat{x} = \dfrac{1}{x}$, what is the value of $3 \cdot \hat{3}$?

    F. $\dfrac{1}{9}$
    G. $\dfrac{1}{3}$
    H. 1
    J. 3
    K. 9

75. What is the value of $(x + y)(y - x)$ when $x = 5.5$ and $y = 4.5$?

    A. ‾10
    B. 0
    C. 9
    D. 10
    E. 11

76. Lindsey is now x years old and Xiu Dan is 2 years older than Lindsey. In terms of x, how old was Xiu Dan 3 years ago?

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

77. A cylindrical soup can is 4 inches tall and has a radius of $1\dfrac{1}{2}$ inches. What is the area of a label that will completely cover the side of the can, with no overlap (not including the top and bottom)?

    A. 6 sq in.
    B. 12 sq in.
    C. 16 sq in.
    D. 6π sq in.
    E. 12π sq in.

78.   R = 3•3•7•11
            S = 3•5•7•7

What is the least common multiple of R and S?

F. 3•5
G. 3•7
H. 3•5•7•11
J. 3•3•5•7•7•11
K. 3•3•3•5•7•7•7•11

79. In a scale diagram, 1 inch represents 100 feet. How many square inches on the diagram represent 1 square foot?

A. 0.000001 sq in.
B.   0.0001 sq in.
C.   0.01 sq in.
D.   0.1 sq in.
E.   100 sq in.

80. Nadia put 23 coins (nickels, dimes, and pennies) with a total value of $1.22 into a jar. She removed seven dimes, seven nickels, and seven pennies. Which coins remain in the jar?

F. 2 pennies
G. 2 nickels
H. 2 dimes
J. 1 nickel and 1 penny
K. 1 dime and 1 penny

81. x, y, and z are consecutive multiples of 5, counting from smallest to largest. What is $x + y$ in terms of z?

A. $z + 10$
B. $z + 15$
C. $2z - 15$
D. $2z + 5$
E. $3z - 5$

82. A sheet of cardboard measuring 12 inches by 54 inches is to be cut into squares with equal sides. What is the **largest** possible size of the squares if they are all to be equal, without any waste?

F.   3 in. by 3 in.
G.   4 in. by 4 in.
H.   6 in. by 6 in.
J. 12 in. by 12 in.
K. 54 in. by 54 in.

83. A pyramid has a square base. Its volume is 48 cubic centimeters and its height is 4 centimeters. What is the length of one side of the base?

A.   2 cm
B.   6 cm
C.   12 cm
D.   36 cm
E. 144 cm

84. What fraction, reduced to its lowest terms, is halfway between $\frac{4}{5}$ and 0.9?

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

G. $\frac{2}{3}$

H. $\frac{17}{20}$

J. $\frac{6}{7}$

K. $4\frac{1}{2}$

85. Which of the following indicates that s is greater than or equal to half the value of t and that t is greater than 0?

    A. $s \geq \dfrac{t}{2} > 0$

    B. $s \geq 2t > 0$

    C. $s > \dfrac{t}{2} \geq 0$

    D. $s \leq \dfrac{t}{2} > 0$

    E. $s \leq 2t < 0$

86. If $x = 2$ and $y = 3$, what is the value of $\dfrac{x^y}{y^x}$?

    F. $\dfrac{8}{27}$

    G. $\dfrac{4}{9}$

    H. $\dfrac{2}{3}$

    J. $\dfrac{8}{9}$

    K. 1

87.

MUSEUM VISITORS

Day	1	2	3	4	5	6	7	8	9
Number of Visitors	142	106	117	127	106	113	106	95	117

What was the median number of visitors for the days shown?

    A. 95
    B. 106
    C. 113
    D. 117
    E. 142

88. In a certain month, Latoya earned twice as much as Jaclyn earned. Pei-Lin earned three times as much as Jaclyn. If Pei-Lin earned $240, how much did Latoya earn?

    F. $80
    G. $160
    H. $240
    J. $360
    K. $480

89.
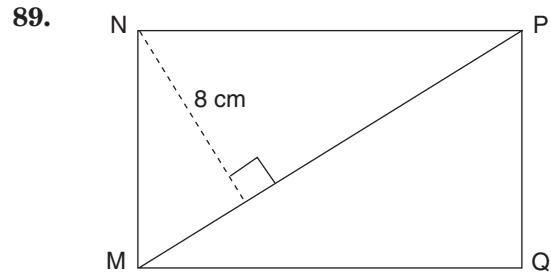
If the area of the rectangle above is 112 square centimeters, what is the length of $\overline{MP}$? (*Hint:* The area of rectangle MNPQ is twice that of triangle MNP.)
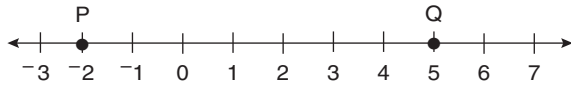
    A. 7 cm
    B. 14 cm
    C. 16 cm
    D. 28 cm
    E. 56 cm

90. Suppose that 387 people will travel on a shuttle with room for 420 people. Each compartment seats 14 people before the next compartment opens. How many people will ride in the last compartment that opened?

    F. 8
    G. 9
    H. 11
    J. 12
    K. 31

CONTINUE ON TO THE NEXT PAGE ➤

91.

P .... Q
−3 −2 −1 0 1 2 3 4 5 6 7

Point R (not shown) is located on line segment $\overline{PQ}$ so that $\overline{PR}$ is 6 times as long as $\overline{RQ}$. What is the location of point R?

A. ⁻1
B. 2
C. 3
D. 4
E. 6

92. Tamika's salary is $26,000. Joe's salary is $24,500. At the end of each year, Tamika is given a $500 raise and Joe is given an $800 raise. After how many years will Joe and Tamika be earning the same amount?

F. 2
G. 3
H. 4
J. 5
K. 6

93. When n is divided by 5, the remainder is 2. What is the remainder when $n + 4$ is divided by 5?

A. 1
B. 2
C. 3
D. 4
E. 6

94. From a box containing 5 black marbles, 8 pink marbles, 6 white marbles, and 5 yellow marbles, Ingrid removed 4 marbles, one of which was black. If she removes one more marble at random, what is the probability that it will be black?

F. $\frac{1}{6}$

G. $\frac{4}{21}$

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

J. $\frac{5}{21}$

K. $\frac{1}{4}$

95. For how many values of n is $\dfrac{n - 6}{6 - n} > 0$? (Assume $n \neq 6$.)

A. 0
B. 1
C. 2
D. 3
E. 5

96. In a list of numbers that starts with the number 13, every number is 14 less than twice the number that comes just before it. What will the fourth number in the list be?

F. ⁻2
G. 4
H. 6
J. 9
K. 10

97. One diagonal of a square lies on the y-axis of a coordinate system. The coordinates of one corner of the square are (3, 7). What are the coordinates of the opposite corner?

A. (⁻3, 7)
B. (7, 3)
C. (3, ⁻7)
D. (⁻3, ⁻7)
E. (⁻7, ⁻3)

98. Maria can paint $\frac{2}{3}$ of a square wall with 1 gallon of paint. How much of that same wall could she paint with $\frac{3}{5}$ of a gallon?

    F. $\frac{1}{4}$

    G. $\frac{1}{3}$

    H. $\frac{2}{5}$

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

    K. $\frac{5}{2}$

99. Katie swam $\frac{3}{4}$ as many laps as Ruby. Katie swam $3\frac{1}{2}$ laps. How many laps did Ruby swim?

    A. $2\frac{1}{4}$

    B. $2\frac{5}{8}$

    C. $2\frac{3}{4}$

    D. $4\frac{1}{4}$

    E. $4\frac{2}{3}$

100. The average score of 10 players was 6.5. One player's score was dropped, changing the mean of the remaining scores to 6.0. What score was dropped?

    F. 4.5
    G. 5
    H. 10
    J. 11
    K. 54

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. ■