

PART 2 — MATHEMATICS

57 QUESTIONS

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 determined from the information given.
- (3) Assume that a diagram is in one plane unless the question specifically states that it is not.
- (4) Graphs are drawn to scale. Unless stated otherwise, you can assume relationships according to appearance. For example, lines on a graph that appear to be parallel can be assumed to be parallel. This is also true for concurrent lines, straight lines, collinear points, right angles, etc.
- (5) Reduce (simplify) all fractions to lowest terms.

GRID-IN QUESTION NOTES

- (1) For each grid-in question, write your answer at the top of the grid.
- (2) Begin recording your answer in the columns on the far left.
- (3) Fill in the circle under the box that matches the number or symbol you wrote. Leave the negative sign bubble blank if your answer is positive.

(Answer: -1.5)

Negative sign →

← Decimal point

(Answer: 3.2)

Negative sign →

← Decimal point

CONTINUE TO THE NEXT PAGE ►

GRID-IN QUESTIONS

QUESTIONS 58–62

DIRECTIONS: Solve each problem. On the answer sheet, write your answer in the boxes at the top of the grid. Start on the left side of each grid. Print only one number or symbol in each box. Under each box, fill in the circle that matches the number or symbol you wrote above.

- Do not fill in a circle under an unused box.
 - Do not leave a box blank in the middle of an answer.
-

58. Simplify:

$$-3.8 + 2.3 - (-1.1)$$

59. Angle M and angle R are supplementary.
The measure of angle R is 5 times the
measure of angle M. What is the measure
of angle R, in degrees?

60. A juice mixture contains $\frac{3}{16}$ gallon of
apple juice and $\frac{3}{40}$ gallon of cranberry
juice. How many gallons of apple juice
per gallon of cranberry juice does the
mixture contain? (Express your answer
as a decimal.)

61. Mr. Chan's lawn grows $2\frac{1}{8}$ inches every 2 weeks. He mows his lawn every 2 weeks and cuts off the top $1\frac{3}{4}$ inches of lawn. If Mr. Chan's lawn was 4 inches tall at the beginning of the season, how many inches tall, in decimal form, is Mr. Chan's lawn after 8 weeks?

62.

RESULTS FROM SURVEY OF 110 FAMILIES

Number of Children in the Family	Number of Families
0	45
1	32
2	19
3	8
4	6

The table above shows the number of children in each of 110 families. What is the median number of children in these families?

MULTIPLE CHOICE QUESTIONS

QUESTIONS 63–114

DIRECTIONS: Solve each problem. Select the answer from the choices given. Mark the letter of your answer on the answer sheet. When you are solving problems, you can write in the test booklet or on the scrap paper given to you.

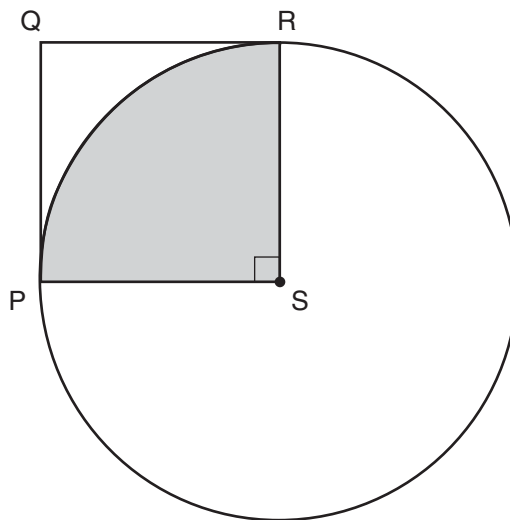
63. Mr. Jones has 550 goats, which is 10% more than Mr. King has. How many **more** goats does Mr. Jones have than Mr. King?

A. 50
B. 55
C. 495
D. 500

64. If $\frac{2y}{x} - \frac{y}{2x} = \frac{\square}{2x}$ and $x \neq 0$, what expression is represented by $\square$?

E. y
F. $2y$
G. $3y$
H. $4y$

- 65.



In the figure above, PQRS is a square. Point S is the center of the circle, and points P and R are on the circle. If the area of the square is 4 square centimeters, what is the area, in square centimeters, of the shaded quarter of the circle?

A. $\frac{\pi}{4}$
B. π
C. 2π
D. 4π

66. A list of consecutive integers begins with m and ends with n . If $n - m = 66$, how many integers are in the list?

E. 2
F. 33
G. 66
H. 67

67. Simplify:

$$\frac{\left(\frac{39(x-3)}{3}\right) + 39}{13}$$

A. x
B. $x - 2$
C. $13x - 36$
D. $x + \frac{36}{13}$

68. Jar 1 and Jar 2 each contain $\frac{1}{2}$ cup of water. If $\frac{1}{4}$ of the water in Jar 1 is poured into Jar 2, how much water is now in Jar 2?

E. $\frac{1}{8}$ cup
F. $\frac{1}{4}$ cup
G. $\frac{5}{8}$ cup
H. $\frac{3}{4}$ cup

69. If n is a whole number, and 0.01 is between $\frac{1}{n}$ and $\frac{1}{n+2}$, what is the value of n ?

A. 0
B. 1
C. 2
D. 99

70. When asked a certain question in a poll, 72% of the people polled answered yes. If 56 people did **not** answer yes to that question, what is the total number of people who were polled?

- E.** 78
- F.** 128
- G.** 144
- H.** 200

71. A museum has a room in the shape of a rectangle. The area of the floor is 960 square feet. In a scale drawing of the museum, 1 inch = 20 feet. If the length of the room is 2 inches in the scale drawing, what is the width of this room in the scale drawing?

- A.** $1\frac{1}{5}$ in.
- B.** $1\frac{1}{4}$ in.
- C.** 24 in.
- D.** 40 in.

72. A program on a computer randomly generates a sequence of whole numbers from 1 to 9, inclusive. If the computer generates a sequence of 300 numbers, what is the best prediction of the number of odd numbers in the sequence?

- E.** 120
- F.** 133
- G.** 150
- H.** 167

73. A truck rental company charges a one-time fee of \$40 plus \$1 per mile driven. Dalia rented a truck and used a coupon for 20% off the total rental cost. After the coupon was applied, she spent a total of \$60. How many miles did she drive?

- A.** 8
- B.** 20
- C.** 32
- D.** 35

-
- 74.** The probability of drawing a red candy at random from a bag of 25 candies is $\frac{2}{5}$.

After 5 red candies are removed from the bag, what is the probability of randomly drawing a red candy from the bag?

- E.** 0
F. $\frac{1}{10}$
G. $\frac{1}{5}$
H. $\frac{1}{4}$

-
- 75.** Each number in a sequence is formed by doubling the previous number and then adding 1. If the 9th number in the sequence is 63, what is the 10th number minus the 7th number?

- A.** 96
B. 111
C. 112
D. 127

76.

8.9, 8.2, 8.5, 9.0, 8.4, 8.6, 8.8

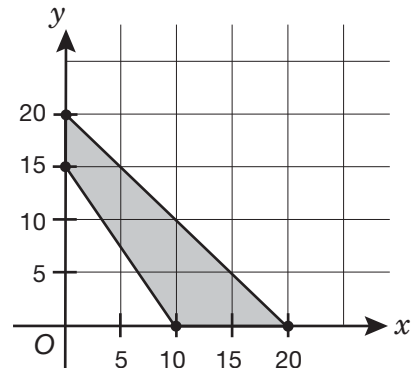
At a skating championship, there are seven judges who each award a score for each skater's performance. The highest and lowest scores given to each skater are discarded, and the mean of the remaining scores is then calculated and reported as the skater's final score. What is the final score for the skater who received the scores shown above from the judges?

- E.** 8.60
F. 8.62
G. 8.64
H. 8.70

77. A piece of wood that is $4\frac{1}{2}$ feet long is cut into 2 pieces of different lengths. The shorter piece has a length of x feet. Which inequality expresses all possible values of x ?

- A. $0 < x < 2\frac{1}{4}$
B. $0 \leq x \leq 2\frac{1}{4}$
C. $0 < x < 4\frac{1}{2}$
D. $2\frac{1}{4} < x < 4\frac{1}{2}$

78.



What is the area, in square units, of the shaded region shown in the figure above?

- E. 75
F. 125
G. 150
H. 200

79.

$$F = \frac{9}{5}C + 32$$

Yesterday in Centerville, the highest Fahrenheit temperature, F , was 86° , and the lowest was 68° . What was the difference between these temperatures, in degrees Celsius, C ?

- A. 10.0° C
B. 15.0° C
C. 20.0° C
D. 32.4° C

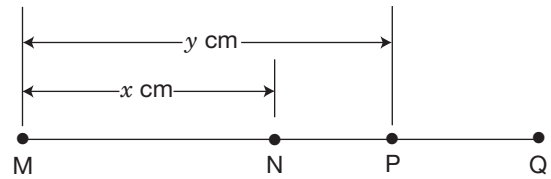
80. Let x be an odd number. In terms of x , what is the sum of the two even numbers closest to x ?

E. x
F. $2x$
G. $2x - 2$
H. $2x - 4$

81. In 1991, the total public debt of the United States was about \$3,600,000,000,000. In that year, there were about 250,000,000 people in the United States. Which amount is the best estimate of the public debt per person for that year?

A. \$1,440
B. \$14,400
C. \$144,000
D. \$14,400,000,000

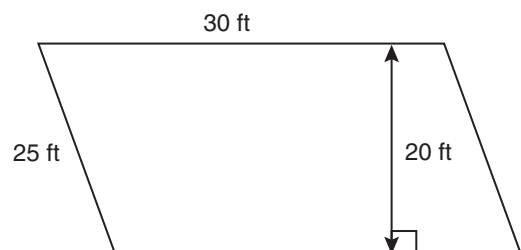
82.



In the figure above, N is the midpoint of $\overline{MQ}$. Which segment has length $(2x - y)$ centimeters?

E. $\overline{PQ}$
F. $\overline{NP}$
G. $\overline{MQ}$
H. $\overline{MP}$

83.



What is the area of the parallelogram shown above?

A. 750 sq ft
B. 600 sq ft
C. 500 sq ft
D. 300 sq ft

- 84.** On Wednesday, a baker produced 100 more loaves of bread than were produced on Tuesday. On Thursday, the baker produced 50 fewer loaves than were produced on Tuesday. If the total number of loaves produced on all three days was 230, how many loaves were produced on Wednesday?

E. 60
F. 80
G. 120
H. 160

85.

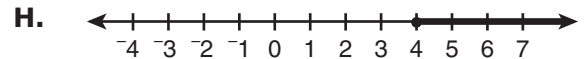
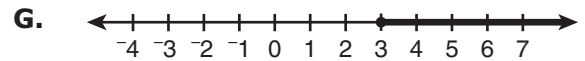
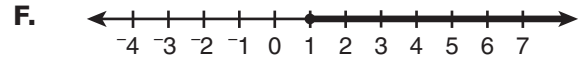
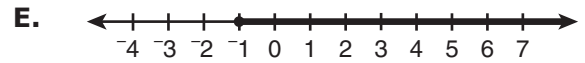
QUIZ SCORES IN
MRS. ARCH'S CLASS

Quiz Score	Number of Students
60	9
70	7
80	4
90	5
100	3

In the table above, what is the mean quiz score?

A. 60
B. 70
C. 75
D. 80

- 86.** Which graph represents the solution to the inequality $x + 4 \geq 3$?



- 87.** The reciprocal of $\frac{1}{4}$ is added to the reciprocal of 3. What is the reciprocal of this sum?

A. $\frac{3}{13}$
B. $\frac{3}{4}$
C. $\frac{4}{5}$
D. $\frac{13}{4}$

- 88.** Nura made a square poster with a side length of 13 inches. Latrice made a square poster with a side length of 15 inches. What is the difference, in square inches, between the area of Latrice's poster and the area of Nura's poster?

E. 56
F. 8
G. 4
H. 2

89.

INGREDIENTS FOR
4 SERVINGS
OF OATMEAL

Ingredient	Cups
Oats	$\frac{2}{3}$
Water	$3\frac{1}{4}$

The table shows the cups of ingredients used to make 4 servings of oatmeal. What is the unit rate for cups of oats per cup of water?

- A.** $\frac{1}{6}$
B. $\frac{8}{39}$
C. $\frac{13}{16}$
D. $\frac{13}{8}$

90. If $\left(\frac{3}{5} - \frac{1}{2}\right)x = \frac{1}{4} + \frac{2}{3}$, what is the value of x ?

E. $\frac{11}{120}$

F. $\frac{2}{7}$

G. $\frac{5}{6}$

H. $\frac{55}{6}$

91. In a certain state, the sales tax rate increased from 7.0% to 7.5%. What was the increase in the sales tax on a \$200 item?

- A. \$1
B. \$10
C. \$14
D. \$15

92. Evaluate:

$$|(-8) - 12 + (-17) - (-31)| - |24|$$

E. -30

F. -18

G. 18

H. 44

- 93.

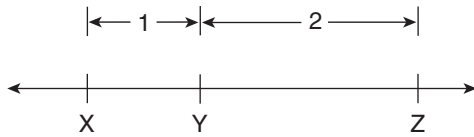
CELL PHONE SALES BY COLOR

Color	Percentage of Cell Phones Sold
White	$8k$
Black	30
Blue	$30 - 2k$
Red	$k + 5$
Total	100

The table above shows cell phone sales by color. What percentage of the cell phones sold were blue?

- A. 18%
B. 20%
C. 22%
D. 28%

94.

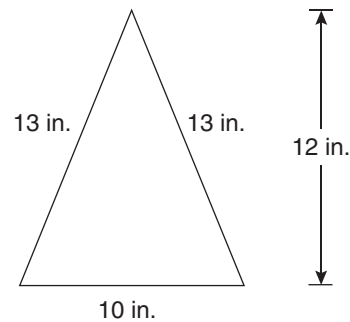


On the number line above, the distance between X and Y is 1 unit, and the distance between Y and Z is 2 units. What is the distance, in units, between Y and the midpoint of X and Z?

- E. $\frac{1}{2}$
- F. 1
- G. $1\frac{1}{2}$
- H. 3

95. By what percent did the price of a cup of coffee increase if its price was increased from \$1.25 to \$1.35?
- A. 7%
 - B. 8%
 - C. 10%
 - D. 12%

96.



Raquel is cutting out pieces of cardboard to make a pyramid. She will use a square piece for the base and identical triangular pieces for the sides. The figure above shows the dimensions of the triangle for each side. What will be the total surface area, in square inches, of the pyramid, including the square base?

- E. 280
- F. 295
- G. 340
- H. 360

97. The price of a sandwich was raised from \$6.25 to \$6.75. What was the percent increase in the price?
- A. 5%
 - B. 8%
 - C. 7%
 - D. 50%

98. Terrell played 5 computer games and earned a mean score of 8 points per game. If his mean score for the first 4 games was 7 points per game, how many points was his score in the fifth game?

- E.** 9
- F.** 11
- G.** 12
- H.** 14

99. Lian bought enough oranges to fill 4 bags. Each bag contains 8 oranges. The total cost was \$11.52. At that rate, how much would Lian pay for 42 oranges?

- A.** \$17.28
- B.** \$15.12
- C.** \$15.02
- D.** \$12.52

100. $3.6 \div 0.018 =$

- E.** 0.005
- F.** 0.648
- G.** 20
- H.** 200

101. A tank with a 500-gallon capacity currently contains 75 gallons of water. Additional water is poured into this tank at a rate of 5 gallons per minute. After 45 minutes of adding water, what percentage of the tank's total capacity will be filled? (Assume that there is no loss of water from the tank.)

- A.** 45%
- B.** 55%
- C.** 60%
- D.** 70%

102. Misha wants to use ribbon to make 2 straps for a backpack. The ribbon costs \$5.00 a yard. If each strap requires $1\frac{1}{4}$ yards of ribbon, how much will Misha pay for the ribbon (not including tax)?

- E.** \$4.00
- F.** \$6.25
- G.** \$11.25
- H.** \$12.50

-
- 103.** A graph shows the proportional relationship between the number of test questions a student gets correct, x , and the student's test score, y . The ordered pair $\left(1, \frac{5}{4}\right)$ is on the graph. What does the y -coordinate of the ordered pair represent in this relationship?
- A.** The test will last $1\frac{1}{4}$ hours.
- B.** Each test question is worth $1\frac{1}{4}$ points.
- C.** An average student can answer 5 questions in 4 minutes.
- D.** A student who answers 5 questions correctly will earn 4 points.

- 104.** In a survey of 200 adults in the town of Waskegon, 45 reported reading the online version of the *Waskegon Bulletin* the previous day. If 25,000 adults live in Waskegon, which number is the best estimate of the number of adults who read the online version of the *Waskegon Bulletin* the previous day?

- E.** 5,600
- F.** 9,000
- G.** 11,300
- H.** 24,800

-
- 105.** A hiker plans on hiking 17 miles in 3 days. Which equation describes the relationship between the number of days hiked, x , and the number of miles traveled, y ?

- A.** $y = \frac{3}{17}x$
- B.** $y = 3x$
- C.** $y = \frac{17}{3}x$
- D.** $y = 17x$

- 106.** Carolyn walked 3 miles from her house to the library and then $2\frac{1}{2}$ miles farther to the grocery store. Returning home by the same route, she walked $1\frac{2}{3}$ miles before stopping at a friend's house. How many miles did Carolyn have left to walk home?

E. $3\frac{5}{6}$

F. $4\frac{1}{6}$

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

H. $7\frac{1}{6}$

- 107.** A child grows $1\frac{1}{4}$ inches in $\frac{1}{3}$ of a year. What would be his yearly growth rate in inches per year?

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

B. $3\frac{1}{4}$

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

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

108. $3(0.01) - 3(0.1) =$

E. -0.33

F. -0.27

G. 0

H. 0.33

- 109.** What is the value of

$$10\frac{1}{2} + \left(-5\frac{1}{3}\right) - \left(-2\frac{3}{4}\right)?$$

A. $2\frac{5}{12}$

B. $7\frac{11}{12}$

C. $13\frac{1}{12}$

D. $18\frac{7}{12}$

110. Carlos has \$350 in a savings account that earns 5% simple interest each year. How much will he have in the account after 1 year, if there is no money withdrawn?

- E.** \$17.50
- F.** \$175.00
- G.** \$367.50
- H.** \$525.00

111. The probability of an event occurring is 0.05. What is the chance that the event will occur?

- A.** likely
- B.** unlikely
- C.** impossible
- D.** neither likely nor unlikely

112. The table below shows the number of cups of red paint and blue paint used to make a purple paint mixture.

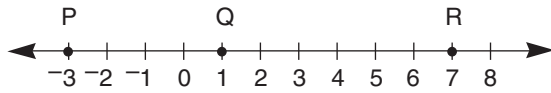
PURPLE PAINT

Cups of Red Paint	Cups of Blue Paint
1	1.5
4	6
11	y

Based on the relationship between the number of cups of red paint and the number of cups of blue paint, what is the value of y ?

- E.** 10.5
- F.** 13
- G.** 16.5
- H.** 24

113.



On the number line above, what is the distance, in units, between the midpoint of $\overline{PQ}$ and the midpoint of $\overline{QR}$?

- A. 3
- B. 4
- C. 5
- D. 6

114. An ice cream shop sells 16 cups of ice cream for \$48 and 4 cups for \$12. There is a proportional relationship between the number of cups of ice cream and the cost. What is the constant of proportionality for this relationship?

- E. 3 cups per dollar
- F. 3 dollars per cup
- G. 4 cups per dollar
- H. 4 dollars per cup

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