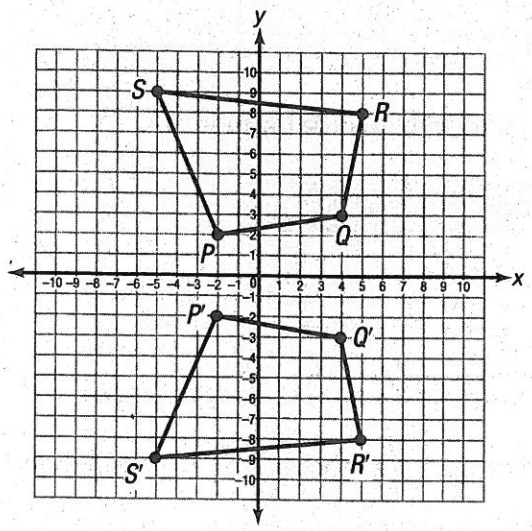
Summative Assessment

1. In the coordinate plane below, quadrilateral *PQRS* is reflected over the *x*-axis.



Which segment is $\overline{QR}$ congruent to?

A. $\overline{P'S'}$

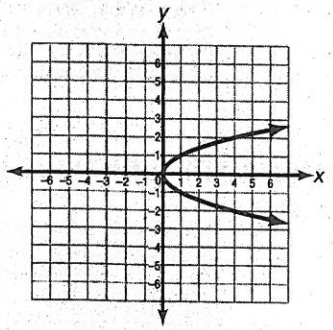
B. $\overline{P'Q'}$

C. $\overline{Q'R'}$

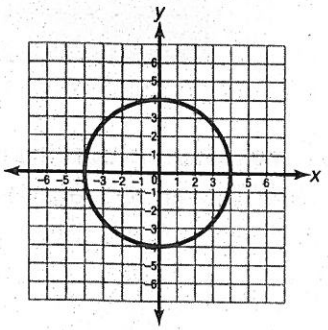
D. $\overline{R'S'}$

2. Which of the following is the graph of a function?

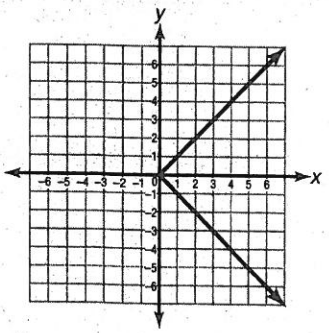
A.



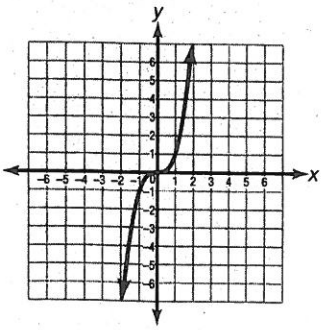
B.



C.



D.



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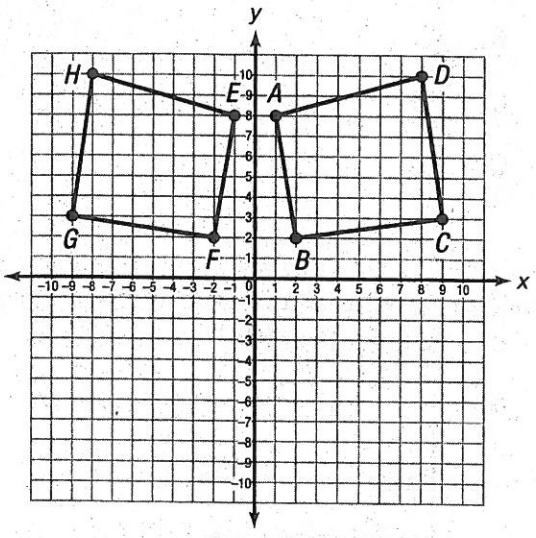
20. Lupe had heard that left-handed people are more artistic than right-handed people. She surveyed students at her school at random to ask whether they were left-handed and whether they took an art class. The results of Lupe's survey are shown in the table below.

	Left-handed	Right-handed
Art Class	5	39
No Art Class	7	49
Total	12	88

A. Use the data in Lupe's table to create a two-way table with relative frequencies.

B. Do Lupe's data support the idea that left-handed people are more artistic than right-handed people? Explain your answer.

3. In the coordinate plane below, quadrilateral *ABCD* is reflected over the *y*-axis to form quadrilateral *EFGH*.



Which angle is angle *B* congruent to?

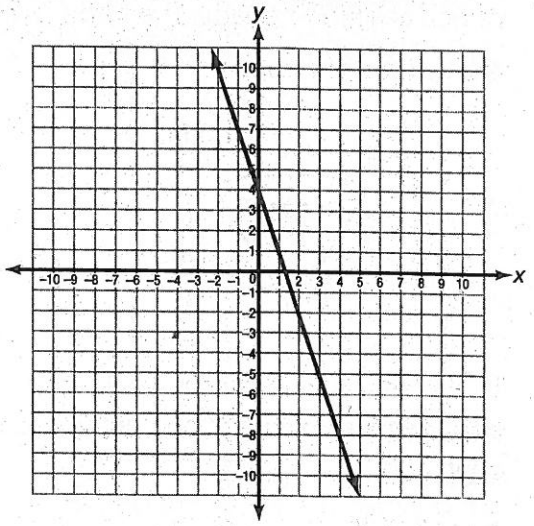
A. $\angle E$

B. $\angle F$

C. $\angle G$

D. $\angle H$

4. Below is the graph of the linear equation $y = -3x + 4$.



What are the slope and *y*-intercept of this graph?

A. slope of -3, *y*-intercept of 4

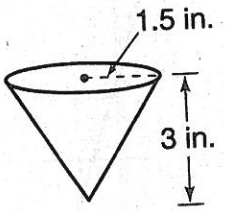
B. slope of $\frac{1}{3}$, *y*-intercept of -4

C. slope of -3, *y*-intercept of -4

D. slope of $-\frac{1}{3}$, *y*-intercept of 4

Go On ▶

5. Pablo wants to know how much punch can fill the paper cone cups used to serve punch at a friend's party. The formula for the volume of a cone is $V = \frac{1}{3}\pi r^2 h$.



To the nearest cubic inch, what is the approximate volume of one of the paper cone cups?

A. 2 in.^3

B. 5 in.^3

C. 7 in.^3

D. 21 in.^3

6. Which of the following sets contains both rational and irrational numbers?

A. $1.2389503\ldots, \pi, \sqrt{13}$

B. $\frac{2}{3}, 1.\overline{1}, 6.2\overline{4}$

C. $\sqrt{2}, \sqrt{5}, 2\pi$

D. $\sqrt{9}, \pi, 5.25$

7. Of which of the following perfect squares is 4 the square root?

A. 8

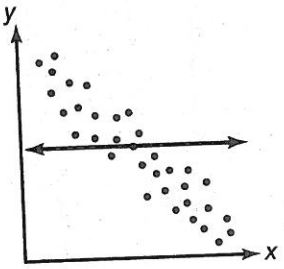
B. 16

C. 25

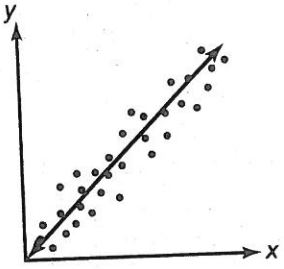
D. 36

8. Which of the graphs below contains a line of best fit for the data?

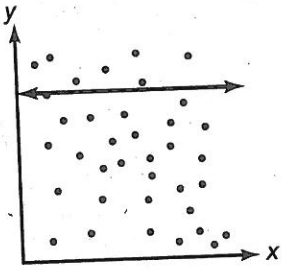
A.



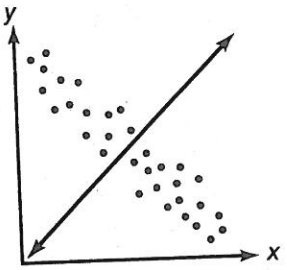
B.



C.



D.



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9. What is the decimal expansion of $\frac{3}{16}$?

A. $0.0\overline{6}$

B. $0.0\overline{9}$

C. 0.125

D. 0.1875

10. A neighborhood playground has an area of 3,025 square feet. Which is this area expressed in scientific notation?

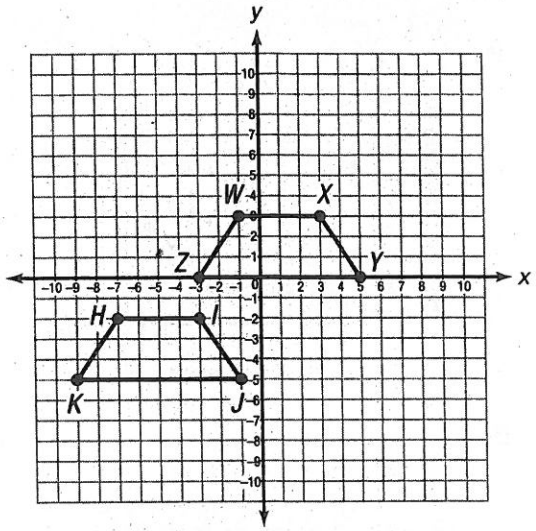
A. 3.025×10^3 ft^2

B. 3.025×10^4 ft^2

C. 30.25×10^2 ft^2

D. 302.5×10 ft^2

11. In the coordinate plane below, quadrilateral *HIJK* is translated 5 units up and 6 units to the right to form quadrilateral *WXYZ*.



If segment *HI* is parallel to segment *JK*, which segment(s) is segment *YZ* parallel to in quadrilateral *WXYZ*?

A. $\overline{XY}$

B. $\overline{WZ}$

C. $\overline{WX}$

D. both $\overline{WZ}$ and $\overline{XY}$

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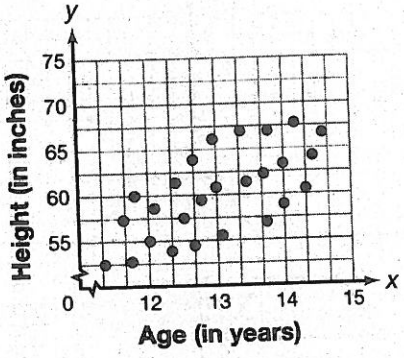
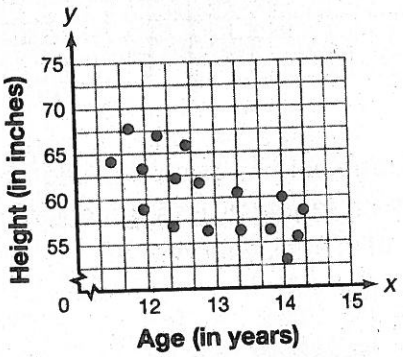
12. Quincy created a scatter plot showing the relationship between age and height in the students in his middle school. Which of the following graphs is most likely the scatter plot he created?

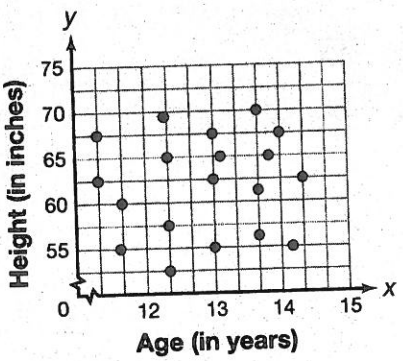
A.



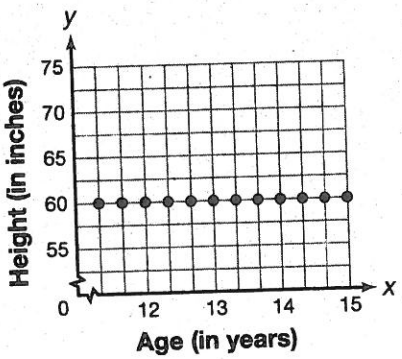
B.



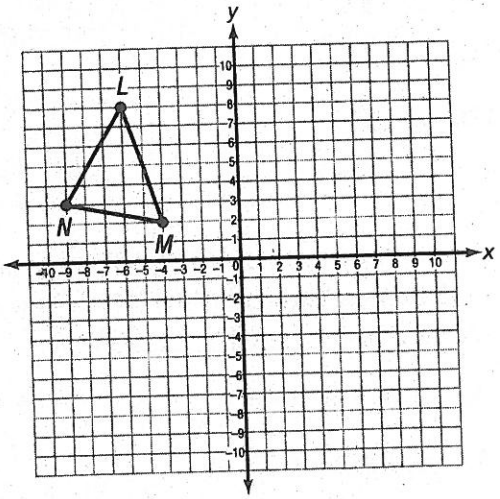
C.



D.



13. In the coordinate plane below, figure *LMN* is rotated 180 degrees about the origin.



What are the coordinates of the new figure?

A. $L'(8, -6), M'(2, -4), N'(3, -9)$

B. $L'(6, -8), M'(4, -2), N'(9, -3)$

C. $L'(-8, 6), M'(-2, 4), N'(-3, 9)$

D. $L'(-6, 8), M'(-4, 2), N'(-9, 3)$

14. Which is the product of $(1.35 \times 10^5)(4.89 \times 10^3)$?

A. 6.24×10^8

B. 6.6015×10^5

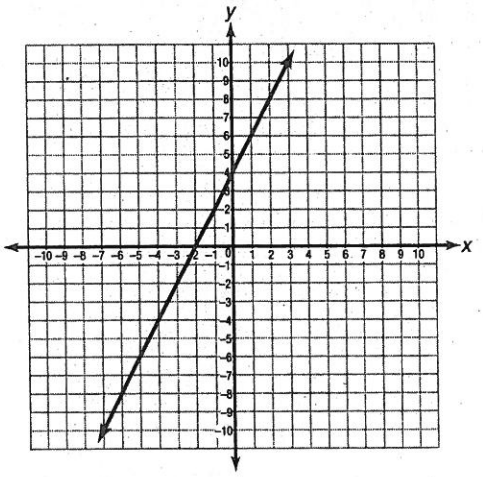
C. 6.6015×10^8

D. 66.015×10^7

Go On ▶

15. Below is a table showing one linear function and a graph showing another linear function.

x	y
−5	−9
−4	−6
−2	0
1	9
2	12



Which of the following is true?

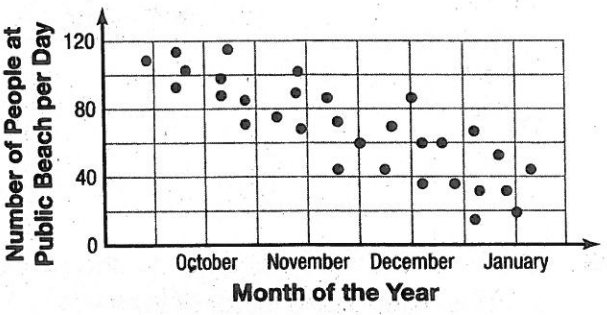
A. The function represented in the table has the greater rate of change.

B. The function represented in the graph has the greater rate of change.

C. Both functions have the same rate of change.

D. Neither function has a positive or a negative rate of change.

16. Below is a scatter plot showing the relationship between the month of the year and the number of people at a public beach per day.



What kind of correlation is shown in the scatter plot?

A. strong positive correlation

B. weak positive correlation

C. no correlation

D. strong negative correlation

17. Marcela has the lid from a can of cherries that her friend Lily used to make a pie. The radius of the lid measures 1.5 inches, and the formula for the volume of a cylinder is $V = \pi r^2 h$.

If the recipe calls for cherries that fill a 22-cubic inch can, which is the height to the nearest inch of the can of cherries needed to make a pie?

A. 1.5 in.

B. 3 in.

C. 4 in.

D. 6.75 in.

Go On ▶

18. Which is a solution of the equation $x^2 = 8$?

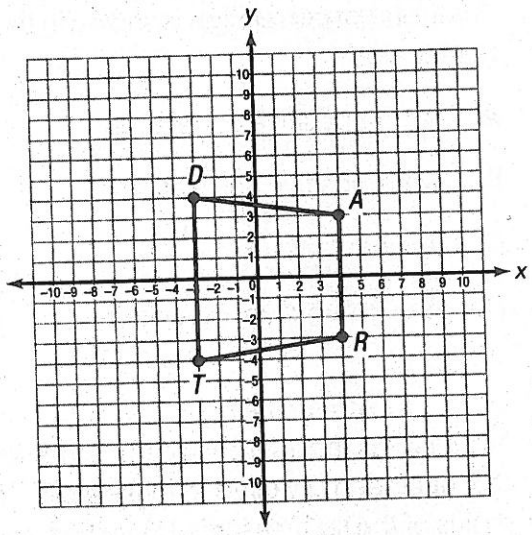
A. $\sqrt{4}$

B. $\sqrt{8}$

C. 4

D. 8

19. On the coordinate plane below, the figure *DART* is dilated by a factor of 2.



What are the coordinates of the new figure?

A. $D'(-6, 8), A'(8, 6), R'(8, -6), T'(-6, -8)$

B. $D'(8, -6), A'(6, 8), R'(-6, 8), T'(-8, -6)$

C. $D'(6, -8), A'(-8, -6), R'(-8, 6), T'(6, 8)$

D. $D'(-8, 6), A'(-6, -8), R'(6, -8), T'(8, 6)$

20. In a biology class, Melanie measures 2.25×10^{-3} liter of pond water in a test tube for a lab experiment. Her partner Penelope adds 0.00328 liter to the test tube. How much pond water do they now have for the experiment?

A. 2.25328×10^{-3} L

B. 3.28×10^{-3} L

C. 5.53×10^{-3} L

D. 7.38×10^{-3} L

Go On ▶

21. Kirsten is a pet lover and wants to find out how many of her friends have cats and dogs. She asked 15 friends and created a two-way table of the results.

Which of the tables below best represents her results?

A.

	Has a Cat	Has a Dog
Has a Guinea Pig	3	2
Does Not Have a Guinea Pig	6	4

B.

	Has a Dog	Does Not Have a Dog
Has a Cat	6	4
Does Not Have a Cat	2	3

C.

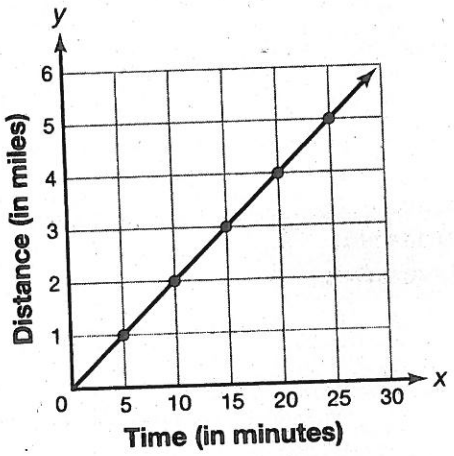
	Has a Dog	Has a Cat
Has a Cat and a Dog	3	2
Has Neither a Cat nor a Dog	6	4

D.

	Has a Hamster	Does Not Have a Hamster
Has a Cat and a Dog	6	4
Has Neither a Cat nor a Dog	2	3

Go On ▶

22. Ray tells his friend Danny that he can bicycle 5 miles to the local pool in 20 minutes. Danny then shows Ray a graph of his bicycle ride to the local YMCA, pictured below.



Who is the faster bicycler?

A. Ray, because he bicycles 15 miles an hour and Danny bicycles 12 miles an hour.

B. Ray, because he bicycles 20 miles an hour and Danny bicycles 12 miles an hour.

C. Danny, because he bicycles 10 miles an hour and Ray bicycles 5 miles an hour.

D. Danny, because he bicycles 5 miles an hour and Ray bicycles 4 miles an hour.

23. Solve for y:

$$11(y - 2) + 3y = -7y + 14$$

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

B. $1\frac{5}{7}$

C. 14

D. 21

24. A coordinate grid contains graphs of the following equations:

$$y = \frac{3}{x}$$

$$y = x^2$$

$$y = 8x - 6$$

Which of the following equations is (are) linear?

A. only $y = \frac{3}{x}$

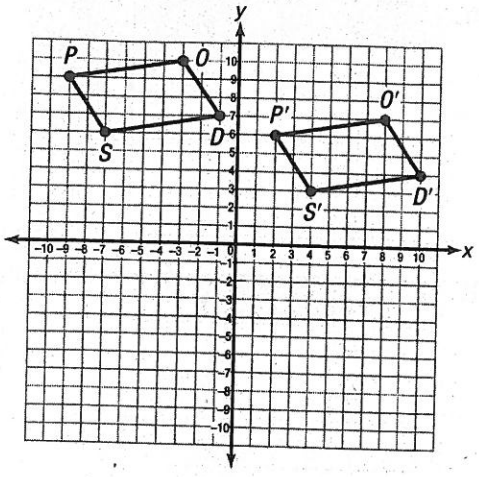
B. only $y = x^2$

C. both $y = \frac{3}{x}$ and $y = 8x - 6$

D. only $y = 8x - 6$

Go On ▶

25. Which of the following sequences transforms *PODS* into *P'O'D'S'*?



A. horizontal shift 3 units to the right, vertical shift 1 unit down

B. horizontal shift 11 units to the right, vertical shift 4 units down

C. horizontal shift 11 units to the left, vertical shift 4 units up

D. horizontal shift 4 units to the right, vertical shift 11 units down

26. Below is a two-way table of students in the seventh and eighth grades at Eastville Middle School who eat either a packed lunch or a school lunch.

	Packed Lunch	School Lunch	Total
Seventh-Grade Students	123	95	218
Eighth-Grade Students	170	68	238
Total	293	163	456

If 30 eighth-grade students started eating a school lunch instead of a packed lunch, which grade would have more students eating school lunch?

A. Seventh grade, because 95 students would be eating a school lunch.

B. Seventh grade, because 218 students would be eating a school lunch.

C. Eighth grade, because 98 students would be eating a school lunch.

D. Eighth grade, because 193 students would be eating a school lunch.

Go On ▶

27. Two points on the graph of a line are $(-2, 6)$ and $(1, 2)$. What is the rate of change of the line?

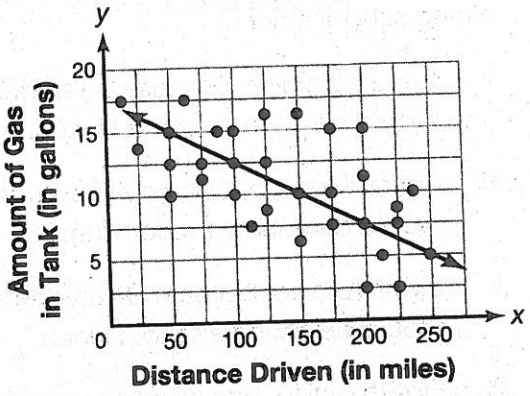
A. $-\frac{4}{3}$

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

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

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

28. Below is a scatter plot of the relationship between distance driven and gallons of gas in the tanks of various cars.



What relationship does the line of best fit show in the data?

A. For every 50 miles driven, the tank loses 5 gallons of gas.

B. For every 50 miles driven, the tank loses 2.5 gallons of gas.

C. For every 5 miles driven, the tank loses 150 gallons of gas.

D. For every 25 miles driven, the tank loses 5 gallons of gas.

29. Which of the following tables does **not** represent a functional relationship?

A.

x	y
−4	2
−8	5
0	5
2	6

B.

x	y
−3	6
−5	5
1	5
3	6

C.

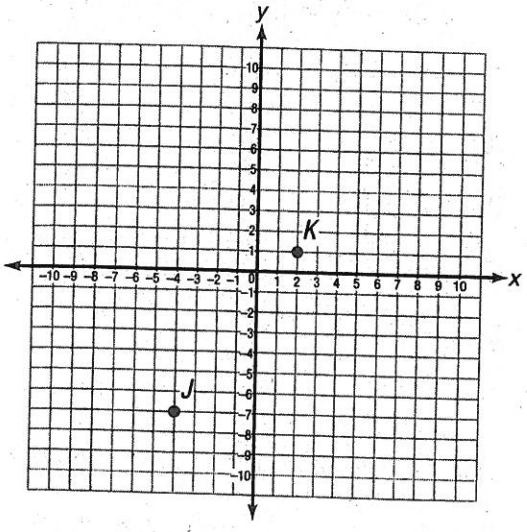
x	y
6	8
9	2
4	0
2	7

D.

x	y
0	4
9	1
0	5
2	3

Go On ▶

30. Point *J* and point *K* are shown on the coordinate plane below.



What is the distance between point *J* and point *K*?

A. 4 units

B. 8 units

C. 10 units

D. 16 units

31. A real estate developer measures his land to be in the shape of a perfect square, and using the Pythagorean theorem, he finds the diagonal of the land to measure $\sqrt{130}$ miles. Between which two whole numbers is this measurement?

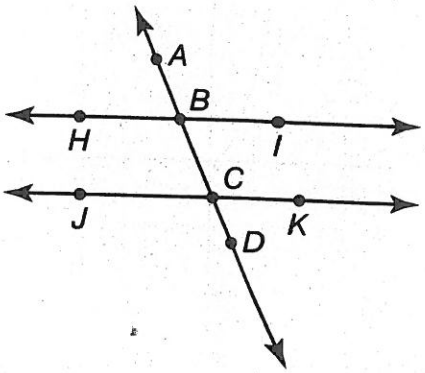
A. 11 and 12 miles

B. 12 and 13 miles

C. 13 and 14 miles

D. 14 and 15 miles

32. In the figure below, lines *HI* and *JK* are parallel.



If angle *HBA* measures 63 degrees, what is the measure of angle *BCK*?

A. 27°

B. 90°

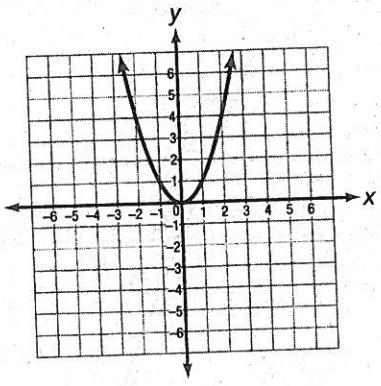
C. 117°

D. 153°

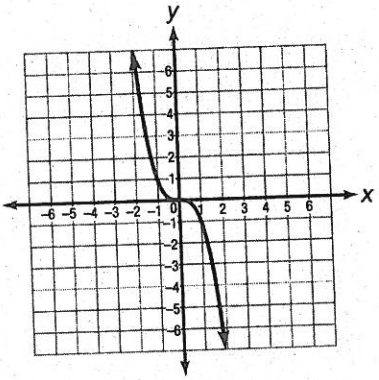
Go On ▶

33. Which of the following functions is linear?

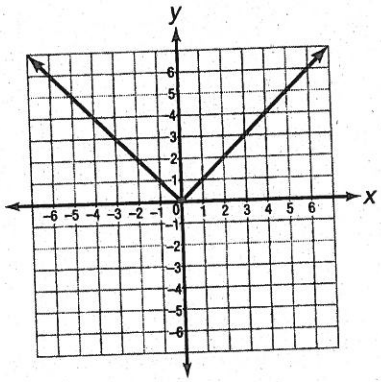
A.



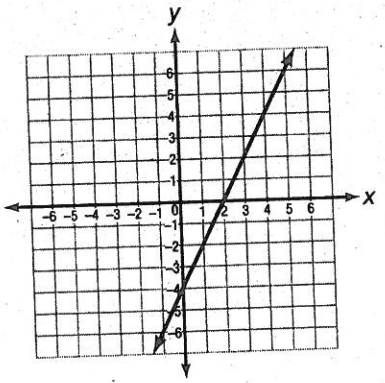
B.



C.



D.



34. What is the solution to the following system of linear equations?

$$2x - 7y = 12$$

$$-2x + 6y = -10$$

A. $(1, 2)$

B. $(2, -1)$

C. $(-1, -2)$

D. $(-2, -1)$

35. What is the value of the expression $\frac{4^5}{4^8}$?

A. 4^{-13}

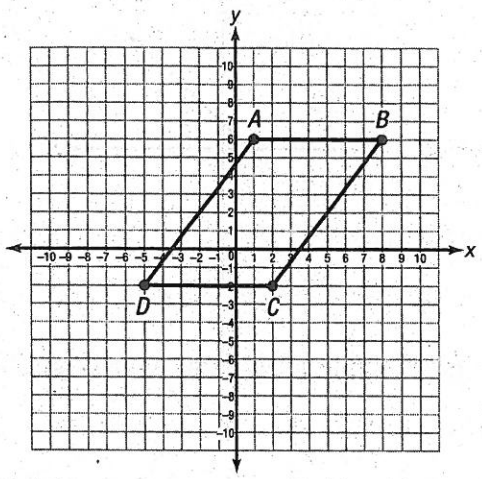
B. 4^{-3}

C. 4^3

D. 4^{13}

Go On ▶

36. Below is figure *ABCD* plotted on a coordinate plane.



What is the length of side *BC*?

A. 6 units

B. 8 units

C. 10 units

D. 12 units

37. Below are the side lengths (in centimeters) of three triangles.

triangle *X*: 2, 3, 3

triangle *Y*: 2, 4, $2\sqrt{5}$

triangle *Z*: 6, 8, 10

Which of the three is (are) right triangle(s)?

A. triangle *X* only

B. triangle *Y* only

C. both triangle *X* and triangle *Y*

D. both triangle *Y* and triangle *Z*

38. Solve for *y* in the following linear equation:

$$-\frac{1}{3}x - 12y + 3 = -5y + \frac{5}{3}x - 11$$

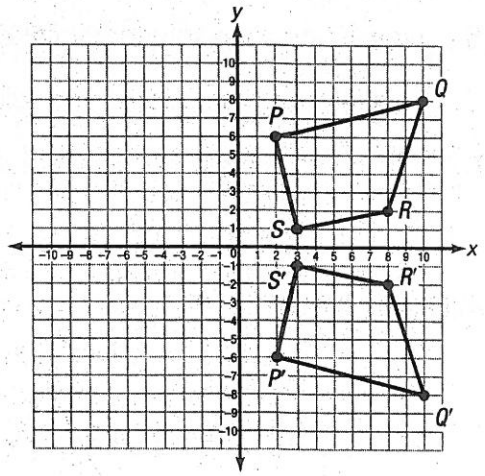
A. $y = -\frac{2}{7}x + 2$

B. $y = -\frac{7}{2}x + 2$

C. $y = -\frac{2}{7}x + 8$

D. $y = -\frac{7}{2}x + 8$

39. Quadrilateral *PQRS* is transformed to create quadrilateral *P'Q'R'S'*.



Which of the following best describes the transformation from *PQRS* to *P'Q'R'S'* below?

A. reflection over the *y*-axis

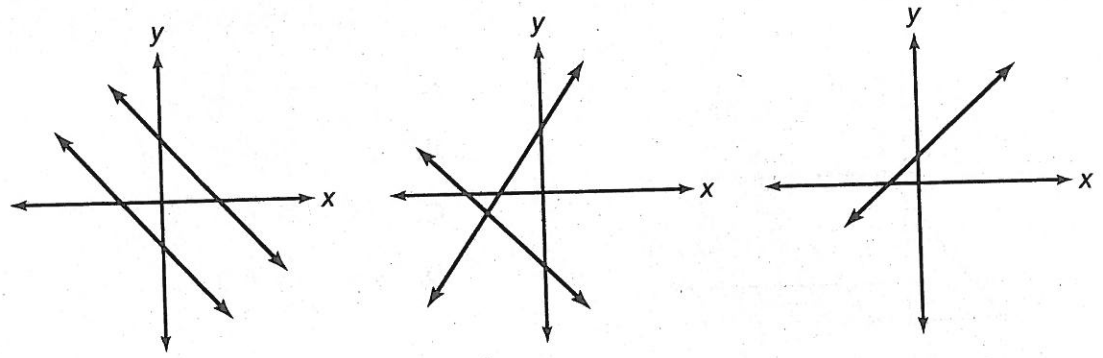
B. rotation 90° clockwise

C. translation 4 units down

D. reflection over the *x*-axis

Go On ▶

40. Graphs of three systems of linear equations are shown below.



Which of the following describes the number of solutions for each graph, from left to right?

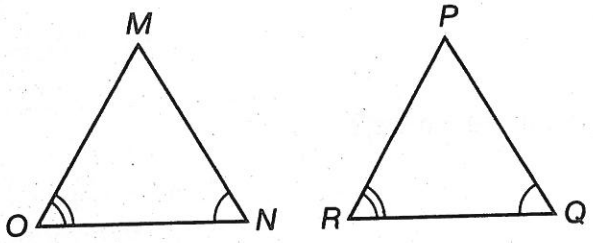
A. no solution, infinitely many solutions, one solution

B. no solution, one solution, infinitely many solutions

C. infinitely many solutions, one solution, no solution

D. infinitely many solutions, no solution, one solution

41. Below are two triangles.



Based on the information in the figure, which of the following must be true?

A. The two triangles are congruent because they have two pairs of congruent angles.

B. The two triangles are congruent because they have three equal sides.

C. The two triangles are similar because they have two pairs of congruent angles.

D. The two triangles are similar because they have three equal sides.

Go On ▶

42. The three linear equations below are solved for the variable a.

$$2a - 6a = 12 \qquad -4a = 12 \qquad a = -3$$

$$3a \times 5 - 4 = \frac{30}{2}a - \frac{8}{2} \qquad 15a - 4 = 15a - 4 \qquad 15a = 15a \qquad a = a$$

$$7a + 1 = 7a - 3 \qquad 7a = 7a - 4 \qquad 0 = -4$$

Which of the following describes the number of solutions for each equation, from left to right?

A. one solution, infinitely many solutions, no solution

B. one solution, one solution, infinitely many solutions

C. infinitely many solutions, one solution, no solution

D. infinitely many solutions, infinitely many solutions, one solution

43. The diameter of Earth is about 1.274×10^4 kilometers, and the diameter of the Great Red Spot, a giant storm in Jupiter's atmosphere, is about 3.218×10^4 kilometers.

Which object has a larger diameter, and by how much?

A. Earth, by about 2×10 km

B. Earth, by about 3.218×10^4 km

C. the Great Red Spot, by about 2 km

D. the Great Red Spot, by about 2×10^4 km

44. Katharine and Janie are neighbors who are bicycling to a soccer game in their neighborhood. Janie leaves 6 minutes before Katharine and bicycles 10 miles per hour. When Katharine leaves, she bicycles 12 miles per hour. This situation is represented by the system of linear equations below.

$$y = 10x$$

$$y = 12(x - 0.1)$$

After how many hours will Katharine catch up to Janie?

A. 0.6 hour

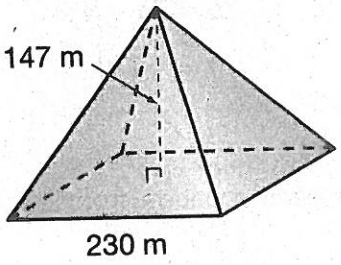
B. 1.2 hours

C. 2.4 hours

D. 6 hours

Go On ▶

45. The Great Pyramid of Giza in Egypt is about 147 meters in height, and each side of its base is about 230 meters in length.



What is the approximate measure of the pyramid's slant height?

A. 136 m

B. 187 m

C. 230 m

D. 273 m

46. What is the slope of the line that passes through the points $(-7, 6)$ and $(3, 0)$?

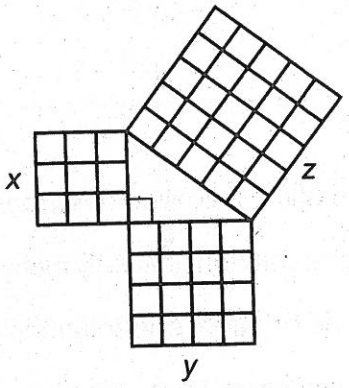
A. $-\frac{8}{3}$

B. -2

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

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

47. The side lengths of the three squares in the figure below are represented by x, y, and z.



According to the Pythagorean theorem, which of the following equations is true?

A. $x + y = z$

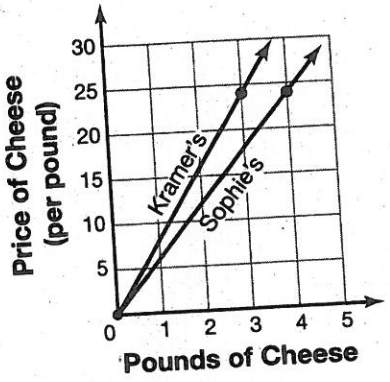
B. $x^2 + z^2 = y^2$

C. $x^2 + y^2 = z^2$

D. $z^2 - y^2 + x^2 = 0$

Go On ▶

8. Below is a graph representing the price per pound of cheese at Kramer's Grocery and Sophie's Supermarket.



Based on the graph, which of the following statements is true?

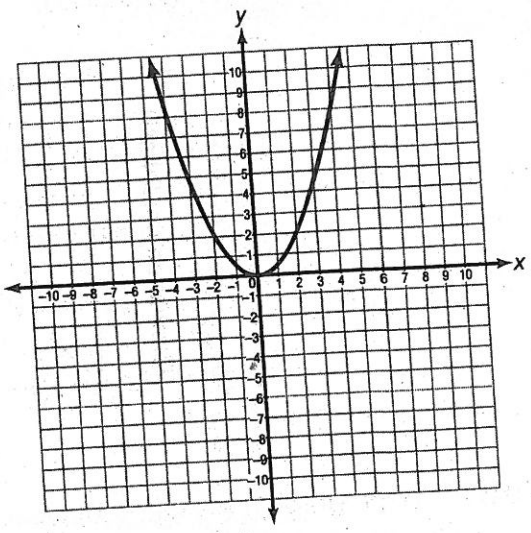
A. Kramer's cheese is \$1 less per pound than Sophie's cheese.

B. Kramer's cheese is \$3 more per pound than Sophie's cheese.

C. Sophie's cheese is \$4 more per pound than Kramer's cheese.

D. Sophie's cheese is \$2 less per pound than Kramer's cheese.

49. Below is a graph of the equation $y = \frac{1}{2}x^2$.



Over the interval $(-4, -1)$ on the x-axis, which of the following is true about the graph?

A. nonlinear and decreasing

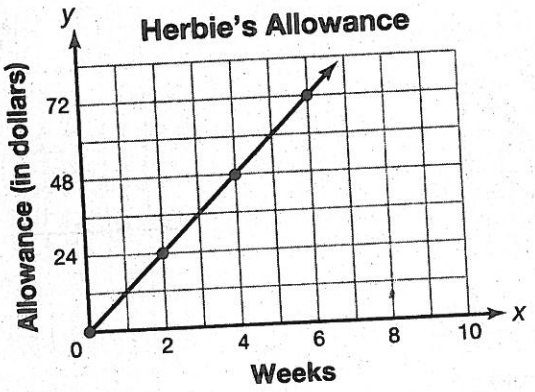
B. nonlinear and increasing

C. linear and decreasing

B. linear and increasing

Go On ▶

50. Each week, Herbie receives an allowance for helping with tasks around the house. Below is a graph that represents this situation.



Based on the graph, how much allowance does Herbie receive each month? (Assume that 4 weeks are a month.)

A. $24

B. $48

C. $60

D. $72