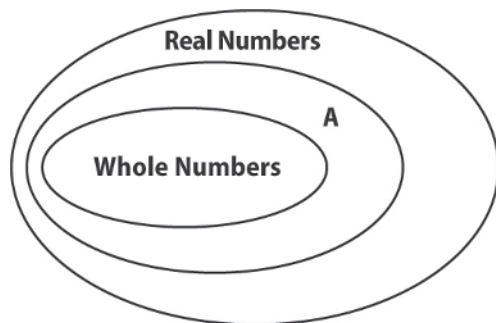
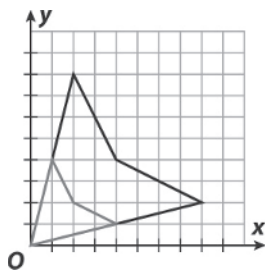


End-of-Year Test

1. Which label or labels could replace "A" in the diagram below?



- A Rational Numbers only
 B Rational Numbers or Integers
 C Integers only
 D Irrational Numbers
2. Between which two integers does the value of $\sqrt{88}$ lie?
- A 1 and 2 C 9 and 10
 B 8 and 9 D 87 and 89
3. James wrote the number 8,980,000 in scientific notation. Which number did he write?
- A 8.98×10^{-6} C 89.8×10^5
 B 8.98×10^{-5} D 8.98×10^6
4. The gray figure is the image of the black figure after a dilation.



Which represents the dilation?

- A $(x, y) \rightarrow \left(\frac{1}{4}x, \frac{1}{4}y\right)$
 B $(x, y) \rightarrow \left(\frac{1}{2}x, \frac{1}{2}y\right)$
 C $(x, y) \rightarrow (2x, 2y)$
 D $(x, y) \rightarrow (4x, 4y)$

5. The lengths in centimeters of four line segments are shown below.

$$3.12, 3.24, 3\frac{1}{4}, \sqrt{10}$$

Which list shows the lengths in order from **least to greatest**?

- A $3.12, 3\frac{1}{4}, 3.24, \sqrt{10}$
 B $3.12, \sqrt{10}, 3.24, 3\frac{1}{4}$
 C $\sqrt{10}, 3.12, 3.24, 3\frac{1}{4}$
 D $3.12, 3.24, 3\frac{1}{4}, \sqrt{10}$
6. A figure is dilated by a factor of 2. Which statement about the dimensions of the image is true?
- A The perimeter of the original figure is multiplied by 4. The area is doubled.
 B The perimeter and area of the original figure are doubled.
 C The perimeter of the original figure is multiplied by 4. The area is multiplied by 8.
 D The perimeter of the original figure is doubled. The area is multiplied by 4.
7. The points $A(0, 0)$, $B(2, 2)$, $C(3, 3)$ and $D(5, 5)$ all lie on the line $y = x$. Ana calculated the slopes of \overline{AB} and \overline{CD} . What can she conclude?
- A The slopes are the same.
 B The slope of \overline{AB} is greater than the slope of \overline{CD} .
 C The slope of \overline{CD} is greater than the slope of \overline{AB} .
 D The slopes of \overline{AB} and \overline{CD} are negative.

End-of-Year Test

8. What is the slope of the line described by the data in the table below?

x	-1	1	3	5
y	3	8	13	18

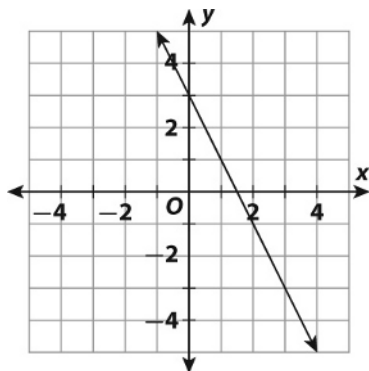
- A $\frac{2}{5}$ C $\frac{5}{4}$
 B $\frac{2}{3}$ D $\frac{5}{2}$

9. Which equation shows the relationship in the table below?

x	5	8	9	11
y	10	16	18	22

- A $y = 2x$ C $y = 2x + 1$
 B $y = 3x$ D $y = 3x + 3$

10. Which of the following is the equation of the line graphed below?

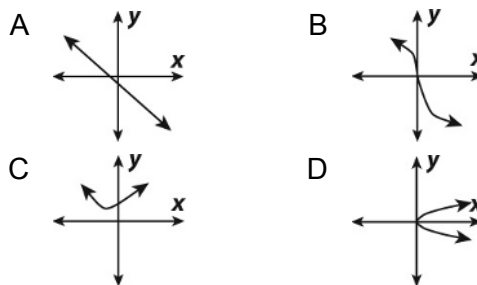


- A $y = -2x + 3$ C $y = -3x + 3$
 B $y = -2x + 5$ D $y = -3x + 2$

11. Marcus sells homemade pies for \$10.50 a pie. It costs \$1.25 for the ingredients to bake each pie. Marcus bought a new oven for \$800. About how many pies must Marcus bake and sell before he recovers the cost of the oven?

- A 68 C 87
 B 76 D 640

12. Which of the following graphs shows a linear relationship?



13. What is the value of n in the equation: $8n + 9 = -n + 5$?

- A -45
 B $-\frac{4}{9}$
 C 5
 D 45

14. Which of the following equations represents a proportional relationship?

- A $y = 3x$ C $y = \frac{3}{x}$
 B $y = \frac{1}{2}x + 1$ D $y = x + \frac{1}{2}$

15. Which of the following tables represents a function?

A

x	1	1	4	5
y	2	5	2	6

B

x	1	-1	4	5
y	2	3	4	-3

C

x	0	1	2	2
y	2	3	3	4

D

x	0	1	2	1
y	-1	0	1	3

End-of-Year Test

16. Kenneth graphed the triangle $A'B'C'$ by dilating triangle ABC . Which of the following **must** be true?
- A The ratios of corresponding sides of ABC and $A'B'C'$ are equal.
 - B The area of $A'B'C'$ is greater than the area of ABC .
 - C Triangle ABC is congruent to triangle $A'B'C'$.
 - D Triangle ABC is a isosceles triangle.

17. A cell phone company charges \$40 for the phone plus a monthly service charge of \$25. The equation below describes the cost y after x months.

$$y = 25x + 40$$

Which is true of the relationship between x and y ?

- A It is linear and proportional.
 - B It is linear and non-proportional.
 - C It is not linear and proportional.
 - D It is not linear and non-proportional.
18. A cheetah's speed was timed over a 50-yard distance. The cheetah was clocked running 60 miles per hour. Which equation shows the relationship between the distance, y , and time, x , the cheetah runs?

- A $y = 50x$
- B $y = 60x + 50$
- C $y = 50x + 60$
- D $y = 60x$

19. Which expression can you substitute in the indicated equation to solve the system of equations shown below?

$$\begin{cases} 4x + 3y = 4 \\ 3x + y = -2 \end{cases}$$

- A $-3x - 2$ for y in $4x + 3y = 4$
- B $-3x + 2$ for y in $4x + 3y = 4$
- C $3x - 2$ for y in $4x + 3y = 4$
- D $3x + 2$ for y in $4x + 3y = 4$

20. What is the solution to the system of equations shown below?

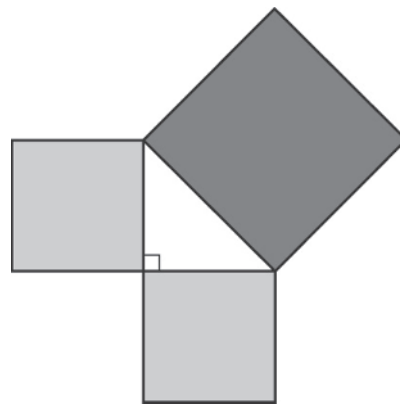
$$\begin{cases} -2x + 5y = -12 \\ 4x + 3y = -2 \end{cases}$$

- A $(-2, 1)$
- B $(-1, 2)$
- C $(-1, -2)$
- D $(1, -2)$

21. Ryan drew a cylinder and a cone with identical bases and heights. Which of the following is true?

- A The volumes are the same.
- B The volume of the cylinder is three times the volume of the cone.
- C The volume of the cone is three times the volume of the cylinder.
- D The volume of the cylinder is four-thirds the volume of the cone.

22. How can the diagram below be used to explain the Pythagorean theorem?



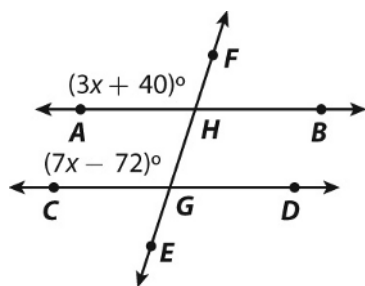
- A The area of the black square is equal to the sum of the areas of the gray squares.
- B The sum of the areas of the gray squares is less than the area of the black square.
- C The perimeter of the triangle is equal to one-fourth of the total perimeter of the three squares.
- D The area of the black square is equal to the area of the triangle.

End-of-Year Test

23. A sphere has a radius of 6 centimeters. What is the volume of the sphere?

A $72\pi \text{ cm}^3$ C $200\pi \text{ cm}^3$
 B $144\pi \text{ cm}^3$ D $288\pi \text{ cm}^3$

24. The figure shows two parallel lines intersected by a transversal. What is the measure of $\angle CGH$?

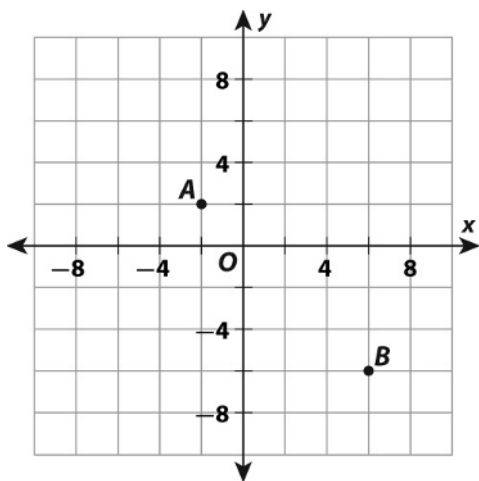


A 28° C 124°
 B 62° D 151°

25. A diagonal shortcut across a rectangular lot is 130 feet long. The lot is 50 feet long. What is the other dimension of the lot?

A 60 ft C 120 ft
 B 90 ft D 150 ft

26. On the grid below, what is the distance between points A and B?



A 8.2 units C 10.8 units
 B 9.9 units D 11.3 units

27. A tank holds 50 cubic feet of gas to heat a home. The table shows the amount of gas left in the tank after each of five consecutive weeks. What is the rate of change?

Week	1	2	3	4	5
Gas (ft^3)	44	38	32	26	20

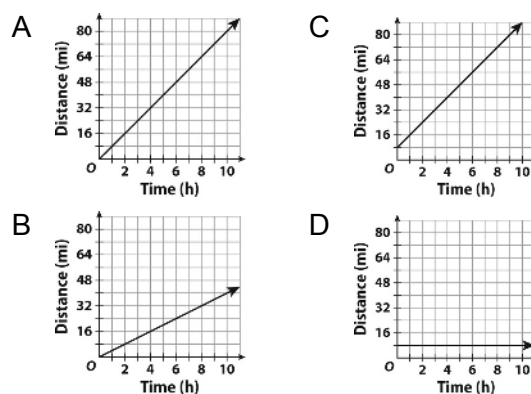
A -12 ft^3 per week
 B -6 ft^3 per week
 C 6 ft^3 per week
 D 12 ft^3 per week

28. The equation below can be used to represent which of the following situations?

$$2x + 5 = 3x$$

A The price of five boxes of apples is \$5.
 B The price of two boxes of apples and a \$5 drink equals the price of three boxes of apples.
 C The price of three boxes of apples and a \$5 drink equals the price of two boxes of apples.
 D The price of two boxes of apples equals the price of a \$5 drink.

29. Alexander rides his bicycle at a speed of 8 miles per hour. Which graph represents this relationship?

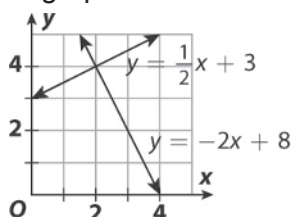


End-of-Year Test

30. The measures of three angles of a triangle are $(2x)^\circ$, $(3x)^\circ$ and $(x + 60)^\circ$. What is the value of x ?

A 20 C 40
B 30 D 50

31. What is the solution of the system of equations graphed below?



- A $(-1, 1)$ C $(2, 2)$
B $(2, 4)$ D $(0, 3)$
32. Under which transformation is orientation **not** preserved?

A translation C reflection
B dilation D rotation

33. Daria applied a transformation to triangle ABC to obtain triangle $A'B'C'$. The two triangles are **not** congruent. Which of the following could be the transformation Daria applied?

A translation C reflection
B dilation D rotation

34. Which of the following best describes the number of solutions to the system of equations shown below?

$$\begin{cases} 2x + 3 = y \\ -4y + 8x = -12 \end{cases}$$

- A no solutions
B one solution
C two solutions
D infinite solutions
35. Which expression represents 81?

A 3^3 C 3^5
B 3^4 D 3^6

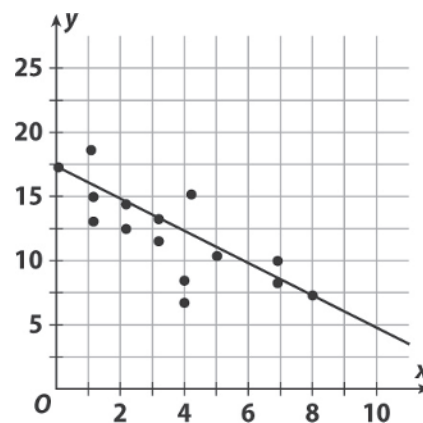
36. The vertices of a triangle are located at the points $A(1, 1)$, $B(2, -3)$ and $C(5, 0)$. The triangle is translated 4 units down, then reflected across the x -axis to obtain triangle $A'B'C'$. What are the coordinates of the vertices of triangle $A'B'C'$?

A $A'(-1, 3)$, $B'(-2, 7)$, $C'(-5, 4)$
B $A'(-1, -3)$, $B'(-2, -7)$, $C'(-5, -4)$
C $A'(1, -3)$, $B'(2, -7)$, $C'(5, -4)$
D $A'(1, 3)$, $B'(2, 7)$, $C'(5, 4)$

37. Isobel obtained an image of triangle WXY under a dilation with a scale factor of 3. Which of the following describes the area and perimeter of the new figure?

A The original area is multiplied by 9, and the perimeter is multiplied by 3.
B The original area is multiplied by 3, and the perimeter is multiplied by 3.
C The original area is divided by 9, and the perimeter is divided by 3.
D The original area is divided by 3, and the perimeter is divided by 3.

38. Which of the following best describes the relationship between the data displayed in the scatter plot and in the trend line below?



A positive linear association
B negative linear association
C no association
D quadratic association

End-of-Year Test

Use the situation and table for 39–43.

Fran collected data from students about whether they watched the latest Super Bowl game. The table below shows the results of Fran's survey. Round answers to the nearest whole percent.

	Watched	Did Not Watch	TOTAL
Boys	85	20	105
Girls	45	?	95
Total	130	70	200

39. Of the students surveyed, how many watched the Super Bowl?
- A 70 C 130
B 85 D 200
40. Of the students surveyed, how many girls did **not** watch the Super Bowl?
- A 45 C 70
B 50 D 85
41. What is the relative frequency of students who watched the Super Bowl?
- A 23% C 43%
B 35% D 65%
42. What is the relative frequency of boys who watched the Super Bowl?
- A 19% C 65%
B 35% D 81%
43. What is the relative frequency of girls who did **not** watch the Super Bowl?
- A 50% C 65%
B 53% D 70%

Use the situation and table for 44–47.

Thomas collected data from students about the type of pet they preferred: dog, cat, or other. The two-way relative frequency table below shows the results of Thomas's survey. Round answers to the nearest hundredth.

	Type of Pet			
School	Dog	Cat	Other	Total
Middle School	0.26	0.18	0.10	0.54
High School	0.25	0.15	0.06	0.46
Total	0.51	0.33	0.16	1.00

44. What is the joint relative frequency of high-school students that prefer having a dog?
- A 0.15 C 0.25
B 0.18 D 0.26
45. What is the joint relative frequency of middle-school and high-school students that prefer a pet other than a dog or cat?
- A 0.06 C 0.15
B 0.10 D 0.16
46. What is the marginal relative frequency of students surveyed that are in middle school?
- A 0.10 C 0.26
B 0.18 D 0.54
47. What is the conditional relative frequency that a student prefers a cat as a pet, given that the student is in high school?
- A 0.15 C 0.31
B 0.28 D 0.33

End-of-Year Test

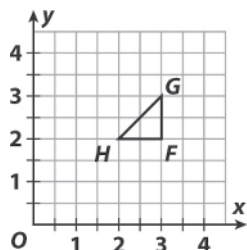
48. A sphere has a radius of 2 inches. What is the volume of the sphere to the nearest tenth?

A 16.8 in.^2 C 33.5 in.^2
 B 16.8 in.^3 D 33.5 in.^3

49. The mass of Earth in kilograms is 5.97×10^{24} , and the mass of the Moon is 7.35×10^{22} . What is the sum of the masses of Earth and its moon?

A 6.0435×10^{22} C 6.0435×10^{24}
 B 6.0435×10^{23} D 6.0435×10^{46}

50. If the triangle shown is rotated 180° , what are the coordinates of Point F?



A (1, 1) C (2, 1)
 B (-3, -2) D (-3, -1)

51. What value of x is the solution to the equation?

$$-5(x - 5) = 2(-4x + 5)$$

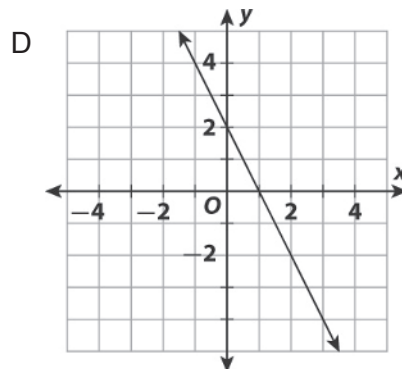
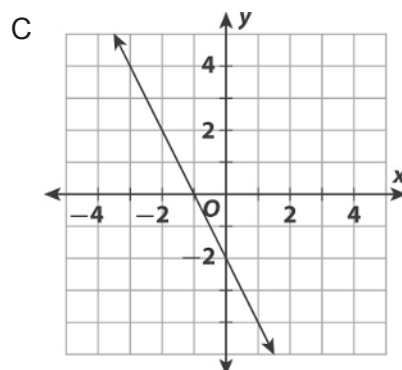
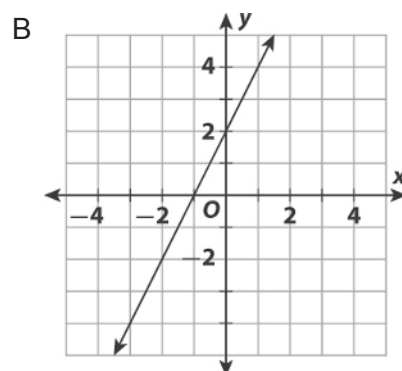
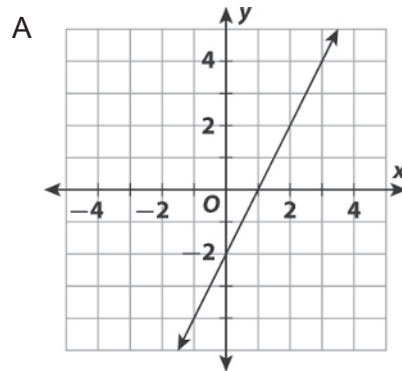
A -15 C 5
 B -5 D 15

52. What is the value of x in the solution to the system of equations shown below?

$$\begin{cases} 7x + y = 14 \\ -2x - 6 = y \end{cases}$$

A -7 C 4
 B -4 D 7

53. Which graph below shows a linear equation with a slope of 2 and a y -intercept of -2?



End-of-Year Test

54. Lourenço analyzed prices of laptop computers based on the speed of the processor. He calculated the trend line to be $y = 101x + 207.85$, where x is the speed of the processor in gigahertz and y is the price. Which amount below is closest to the price of a laptop with a processor speed of 2.5 gigahertz?

A \$309 C \$460
B \$455 D \$620

55. Which of the following sets of ordered pairs does **not** represent a function?

A $\{(1, 2), (2, 3), (4, 5), (3, 3)\}$
B $\{(-1, 3), (2, 3), (6, 5), (7, 3)\}$
C $\{(1, 2), (1, 3), (-4, 5), (3, 8)\}$
D $\{(-1, 2), (2, 2), (4, 2), (3, 2)\}$

56. What is the solution to the system of equations shown below?

$$\begin{cases} y = -\frac{1}{2}x - 6 \\ 2y - 3x = -8 \end{cases}$$

A $(-1, -5.5)$ C $(0, 3)$
B $(-1, 5.5)$ D $(0, 8)$

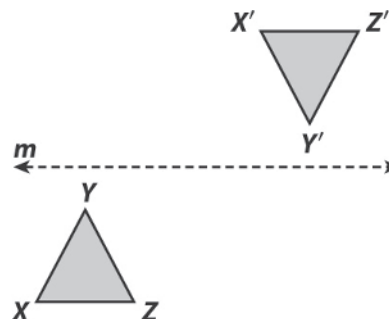
57. Erica wrote the number 3.24×10^{-3} in standard form. Which number did she write?

A 0.00324 C 0.324
B 0.0324 D 3,240

58. The vertices of a triangle are located at the points $A(-1, 0)$, $B(-2, 2)$ and $C(3, 3)$. $A'B'C'$ is the result of rotating ABC counterclockwise 90° about the origin. Which formula can be used to find the coordinates of the vertices of $A'B'C'$?

A $(x, y) \rightarrow (-x, y)$
B $(x, y) \rightarrow (-x, -y)$
C $(x, y) \rightarrow (y, -x)$
D $(x, y) \rightarrow (-y, x)$

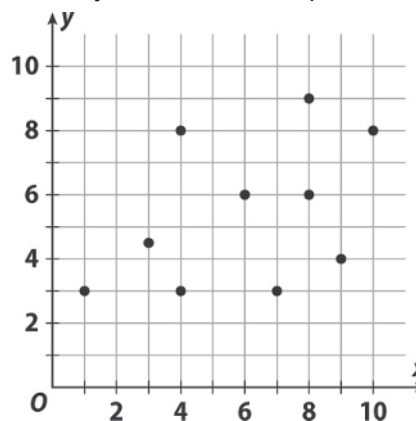
59. Jerlyn applied a sequence of transformations to obtain triangle $X'Y'Z'$ from triangle XYZ as shown below.



Which of the following describes the sequence of transformations?

- A a translation followed by a reflection across line m
B a translation followed by a 180° counterclockwise rotation
C a dilation with scale factor 2
D a reflection across line m followed by a 180° counterclockwise rotation

60. Lisa analyzed the scatter plot below.



Which of the following best describes the relationship between the two variables?

- A positive linear association
B negative linear association
C nonlinear association
D no association

End-of-Year Test

Solve.

61. Amman drew a rectangle with a perimeter of 36 units. He then performed a dilation with a scale factor of 3. What is the perimeter in units of the resulting image? Show your work.

62. What is the x -value of the solution to the system of equations shown below?

$$\begin{cases} y = 3x + 5 \\ 2y = 4x + 24 \end{cases}$$

63. Elizabeth wrote the number 8.45×10^{-2} in standard form. Which number did she write?

64. At the café, Rebecca can choose to earn \$10 per hour plus a \$60 starting bonus or to earn \$12 per hour with no starting bonus. After how many hours of work will she earn the same amount under both payment options? Write the equation to solve the problem. Solve.

65. The point $(-2, -3)$ is rotated 180° counterclockwise about the origin. What is the y -coordinate of the resulting image?

66. What is the slope of the line described by the data in the table below? Show how you find the slope.

x	-2	0	4	12	16
y	5	6	8	12	14

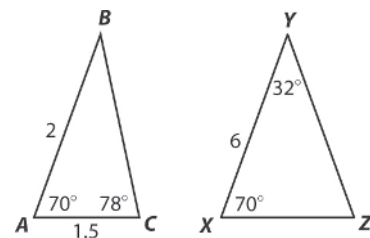
67. The volume of a cone is 242.1 cubic centimeters. A cylinder has the same base and height as the cone. What is the volume in cubic centimeters of the cylinder? Explain how you found the volume.

68. At a fruit stand, Rajendra can purchase three apples and one orange for the same price as five apples. The price of the orange is \$0.84. What is the price in dollars of each apple? Write and solve the equation.

69. To the nearest tenth, what is the distance in units between the points $(-3, 2)$ and $(5, 6)$?

70. Samantha deposited \$650 into a savings account that pays 3.5% interest compounded annually. After 6 years what will be the value of her investment in dollars?

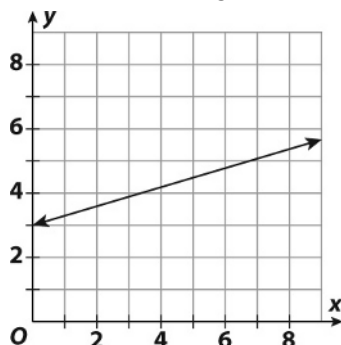
71. How many units long is \overline{XZ} ?



72. At a farmer's market the price of a basket of apples is based on the number of apples it contains. A basket that contains 12 apples costs \$3.75. What is the price for a basket that contains 18 apples? Show your work.

End-of-Year Test

73. What is a y -intercept? What is the y -intercept of the line graphed below?

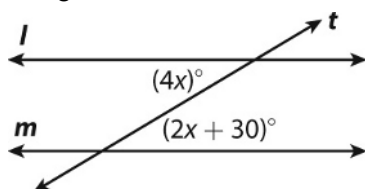


74. Beth has a rectangular yard that measures 12 feet by 18 feet. She wants to put a fence along the diagonal of the yard. To the nearest tenth, how many feet long will the fence be?

75. At a supermarket, the price of a carton of blueberries varies directly with its weight. A carton that weights 0.5 pound costs \$4.25. What is the price in dollars of a carton of blueberries that weighs 0.75 pound? Show your work.

76. In the diagram below, lines l and m are parallel. Both are intersected by transversal t .

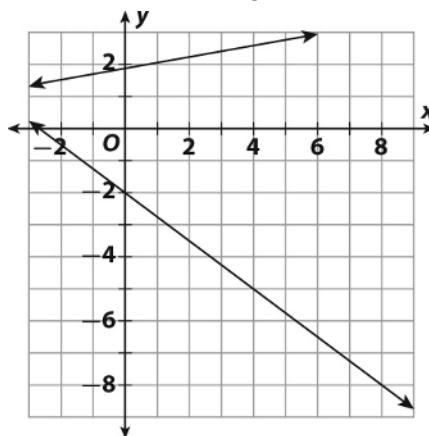
What is the value of x ? Explain your reasoning.



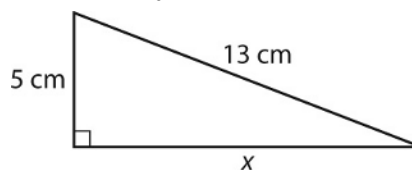
77. What is the value of x in the equation below?

$$\frac{1}{2}x + 5 = \frac{1}{4}x + 8$$

78. What is the y -value of the solution to the system of equations graphed below?



79. What is the value of x in the diagram below? Show your work.



80. Grant filled a cylindrical tank with water. The tank has a base radius of 1.2 meters and a height of 3 meters. To the nearest tenth, how many cubic meters of water are in the tank?