

Name: \_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_

1. A photo of a painting measures 13 inches by 17 inches. The scale of the photo to the original painting is 1 inch to 3 inches. What size is the painting?

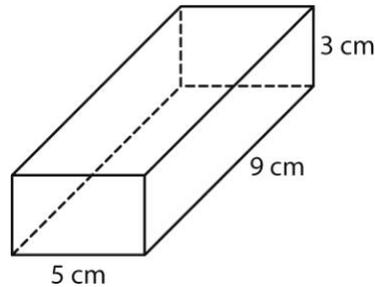
- A 4.3 in.  $\times$  5.7 in.
- B 26 in.  $\times$  34 in.
- C 39 in.  $\times$  51 in.
- D 65 in.  $\times$  85 in.

2. On a map, the distance between two cities is 7.3 centimeters. The map scale is 1 cm:50 km. What is the actual distance between the two cities?

- A 365 cm
- B 365 km
- C 400 km
- D 500 km

3. What is the volume of the rectangular prism to the nearest cubic centimeter?

- A 68 cm<sup>3</sup>
- B 75 cm<sup>3</sup>
- C 81 cm<sup>3</sup>
- D 135 cm<sup>3</sup>



4. The experimental probability of seeing a hawk at the Avian Viewing Center on any given day is 20%. If Jun visits the center 240 days, on about how many days can she expect to see a hawk?

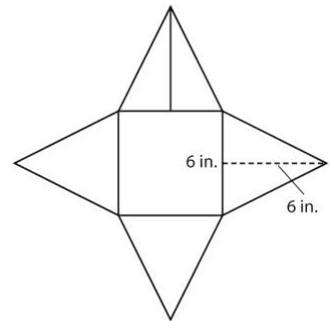
- A 24 days
- B 48 days
- C 96 days
- D 192 days

5. The circumference of a circle is  $28\pi$  meters. What is its radius?

- A 7 m
- B 14 m
- C 21 m
- D 28 m

6. The net below can be folded to form a square pyramid. What is the surface area of the pyramid to the nearest square inch?

- A 63 in<sup>2</sup>
- B 72 in<sup>2</sup>
- C 81 in<sup>2</sup>
- D 108 in<sup>2</sup>



7. Zack flips a coin and rolls a number cube with sides labeled 1 to 6. What is the probability that he gets heads and a number greater than 4?

- A  $\frac{1}{6}$
- B  $\frac{1}{4}$
- C  $\frac{1}{3}$
- D  $\frac{1}{2}$

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8. Your school is choosing new school colors. Which group should you ask to get a random sample of student opinion?

- A ten 7th grade students
- B every tenth student that enters the building in the morning
- C twenty 1st and 2nd graders
- D every other student going into the principal's office

9. A rectangle is 8 inches long and 4 inches wide. A similar rectangle is 12 inches long. What is the width of the second rectangle to the nearest inch?

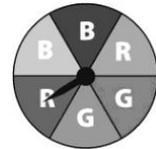
- A 4 in.
- B 6 in.
- C 8 in.
- D 10 in.

10. There are 25 counters in a bag: 6 red, 4 white, 7 blue, and 8 yellow. You choose one counter at random. Which color are you **least** likely to choose?

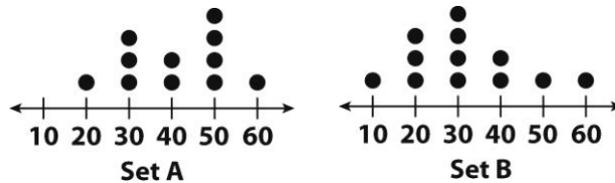
- A white
- B red
- C blue
- D yellow

11. The sections of spinner below are shaded red, blue, or green. What is the probability that the spinner will land on blue **or** green?

- A  $\frac{1}{3}$
- B  $\frac{1}{2}$
- C  $\frac{2}{3}$
- D  $\frac{5}{8}$



12. Based on the dot plots below, which of the following is a true statement?



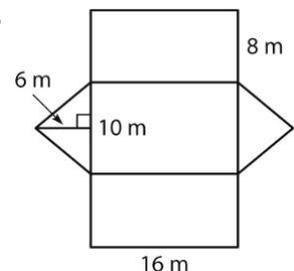
- A Set B has the greater mode.
- B Set A has the lesser mean.
- C Set A is more symmetric than set B.
- D Set B has the greater range.

13. A diner has a breakfast special. A customer can chose scrambled, fried, or poached eggs. The breakfast comes with a side of bacon, sausage, or fruit salad. The customer can choose coffee, tea, or milk. You make a sample space of all the possible combinations. How many different combinations of eggs, side, and drink does a customer have to choose from?

- A 9
- B 12
- C 27
- D 135

14. The net below is of a triangular prism. What is the surface area of the prism?

- A  $288 \text{ m}^2$
- B  $300 \text{ m}^2$
- C  $318 \text{ m}^2$
- D  $476 \text{ m}^2$



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15. A school has 520 students. Dan surveys a random sample of 50 students and finds that 32 have pet cats. How many students are likely to have pet cats?

- A 180 students
- B 320 students
- C 333 students
- D 488 students

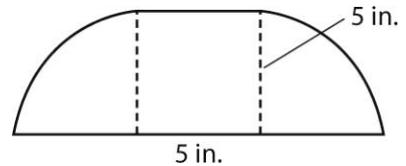
16. Which of the following is the solution for the inequality below?

$$-3x + 2 < 8$$

- A  $x > -3$
- B  $x > -2$
- C  $x < -2$
- D  $x < -3$

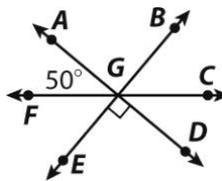
17. To the nearest tenth, what is the area of the figure below? Use 3.14 for  $\pi$ .

- A 12.5 in<sup>2</sup>
- B 25.0 in<sup>2</sup>
- C 37.5 in<sup>2</sup>
- D 64.3 in<sup>2</sup>



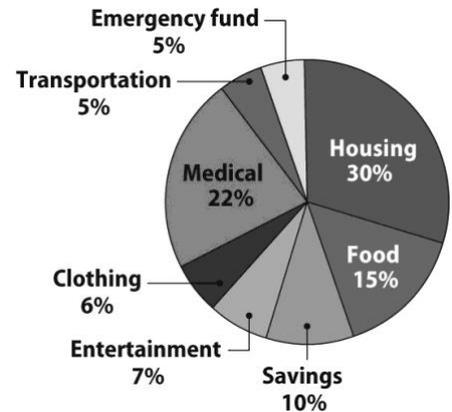
18. What is the measure of  $\angle BGC$ ?

- A 30°
- B 40°
- C 45°
- D 50°



19. The Grabo family's monthly budget is shown in the circle graph. The family has a monthly income of \$5,000. How much money do they spend on housing each month?

- A \$250
- B \$500
- C \$1,100
- D \$1,500



20. A storage trunk is 36 inches wide, 22 inches deep, and 44 inches high. What is the volume of the trunk to the nearest cubic inch?

- A 4,356 in<sup>3</sup>
- B 17,424 in<sup>3</sup>
- C 34,848 in<sup>3</sup>
- D 46,656 in<sup>3</sup>

21. A circle has a radius of 9 inches. What is the area of the circle?

- A 28.26 in<sup>2</sup>
- B 56.52 in<sup>2</sup>
- C 127.14 in<sup>2</sup>
- D 254.34 in<sup>2</sup>

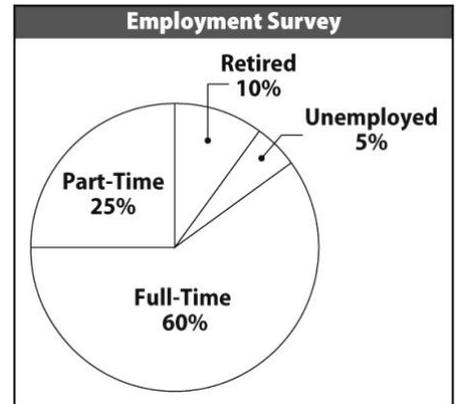
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22. The circle graph shows the results of an employment survey of 800 people. How many of the people surveyed were employed full time?

- A 80 people
- B 200 people
- C 320 people
- D 480 people



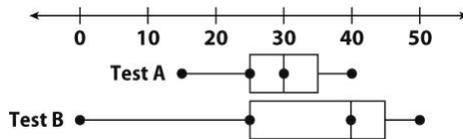
23. Which of the following is a random sample?

- A Members of a polling organization survey city voters about who they expect to be elected mayor.
- B A survey company asks 100 members at a concert who their favorite singer is.
- C Customers at a pizza shop are surveyed about their favorite food.
- D Carlos uses an e-mail survey to find out how many students have computers at home.

24. One circle has a diameter of 10 inches. A second circle has a diameter that is twice the diameter of the first circle. What is the ratio of the area of the smaller circle to the larger circle?

- A 1:2
- B 1:3.14
- C 1:4
- D 1:8

Use the box plot for 25–26.



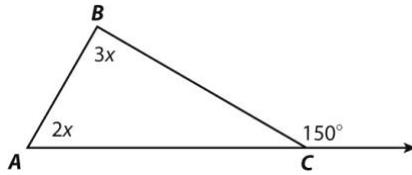
25. What is the difference between the medians for Test A and Test B?

- A 10
- B 15
- C 20
- D 30

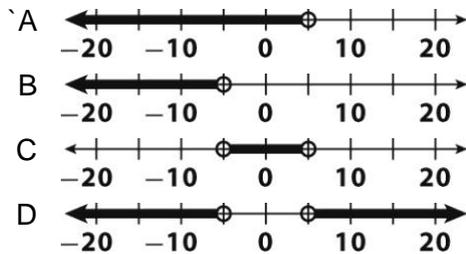
26. Which statement is true based on the box plots?

- A The range was greater for Test A.
- B More students did better on Test A than on Test B.
- C The interquartile range for Test B is greater than for Test A.
- D One half of the students on each test got 25 or fewer questions correct.

Use the figure for 27–28.



27. What is the measure of  $\angle BCA$ ?
- A  $30^\circ$                       C  $90^\circ$   
 B  $60^\circ$                       D  $150^\circ$
28. The angle measures of triangle  $ABC$  total  $180^\circ$ . Which of the following is **not** true?
- A  $2x + 3x = 150$               C  $3x - 2x = 30$   
 B  $2x + 3x + 30 = 180$       D  $2x + 3x \geq 180$
29. Which number line represents the solution to the inequality  $4x + 20 < 40$ ?



30. In a circle of any size, what ratio does pi ( $\pi$ ) represent?
- A the ratio of the radius to the diameter  
 B the ratio of the circumference to the diameter  
 C the ratio of the circumference to the radius  
 D the ratio of the circumference to the area

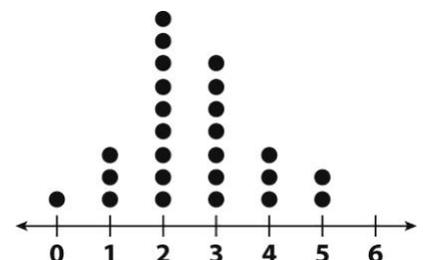
31. Jana has a bag of marbles. Without looking, she removes one marble from the bag, records the color, and replaces it. She repeats this process 50 times and records the results in the table.

Color	Frequency
Red	11
Blue	14
Green	9
Yellow	16

What is the probability that Jana will pick a blue marble on her fifty-first time?

- A  $\frac{9}{50}$                       C  $\frac{7}{25}$   
 B  $\frac{11}{50}$                      D  $\frac{8}{25}$

32. Mills Middle School has 250 students. A random sample of 25 students were asked how many TVs they have at home. The results are shown in the dot plot below.



- Which of the following is a qualitative statement that is reasonable based on the data?
- A The least number of TVs at home is 1.  
 B Most students have 2 or fewer TVs at home.  
 C Most students have 3 or more TVs at home.  
 D The mean number of TVs students have at home is 2.

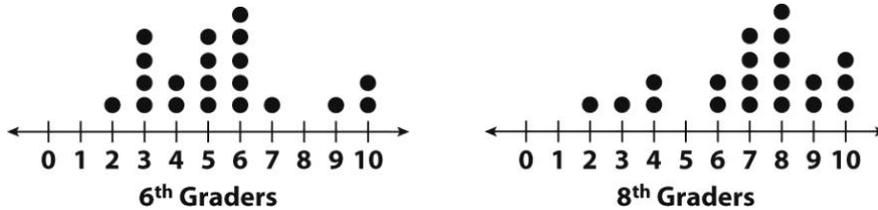
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33. The probability of spinning an even number is 40%. What is the probability of **not** spinning an even number, written as a decimal?

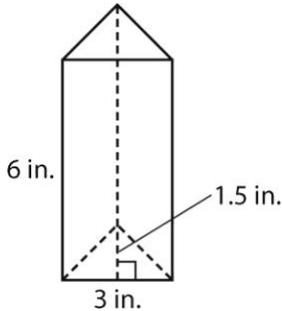
34. Tanya took a random survey of 20 sixth graders and 20 eighth graders. She asked how many hours a week each played video games. Her data is shown in the two dot plots below.



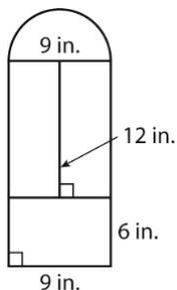
To the nearest tenth, what is the difference between the mean number of hours that 6<sup>th</sup> graders play video games and the mean number of hours that 8<sup>th</sup> graders play video games?

35. A hockey player scores a goal on 35% of her attempts. Out of her next 20 attempts, how many times can you expect the player to score a goal?

36. To the nearest tenth, what is the volume in cubic inches of the triangular prism below?



37. To the nearest hundredth, what is the area in square inches of the figure below? Use 3.14 for  $\pi$ .



38. Jenna has \$50 to spend at a local crafts fair. The entrance price for the fair is \$10. At a pottery stand, Jenna finds some cups that she likes that are \$4.50 each. What is the maximum number of cups that Jenna can buy?

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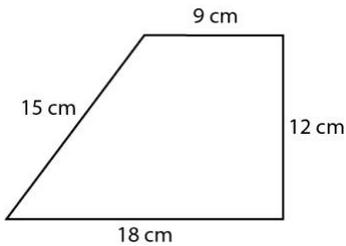
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39. At the Pebble Pick at a school carnival the probability of drawing a pebble that wins a pencil is 50%, a pebble that wins a CD is 25%, and a pebble that wins a book is 25%. How could Zack design a spinner to simulate the probability of winning each prize?

40. On a road map, the distance from New York City to Albany is 3 inches. The map scale is 1 in.:50 mi. How many miles is the actual distance between the two cities?

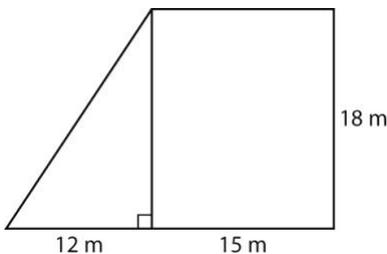
41. A scale drawing of a sunroom is shown below. The scale is 1 cm to 1.5 ft. What is the length of the actual wall that corresponds to the 18 cm side of the scale drawing?



42. According to the Royal Canadian Mint Act, a 50-cent Canadian coin must have a diameter of 27.13 millimeters. To the nearest hundredth, what is the circumference of this coin in millimeters?

43. In 5 years, twice a puppy's current age will be equal to or greater than 15. What is the least integer that satisfies the inequality  $2x + 5 \geq 15$ ?

44. To the nearest square meter, what is the area of the figure below?



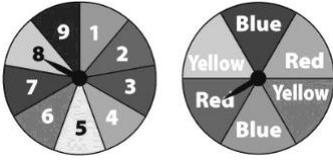
45. On a scale drawing, the image of an alligator is 7 inches long. The scale of the drawing to the actual alligator is 1 in. to 14 in. What is the actual length of the alligator in inches?

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46. A building has 9 floors. Each floor has 2 apartments, one in the front and one in the back. Describe how Omar could use the spinners below as a probability model for randomly choosing one apartment.



47. Beth says the graph below shows today's temperatures in degrees Celsius. What is the greatest temperature that is a solution to the inequality shown below?



48. A rectangular prism is 10 inches long, 6 inches wide, and 4 inches high. What is the surface area of this prism in square inches?

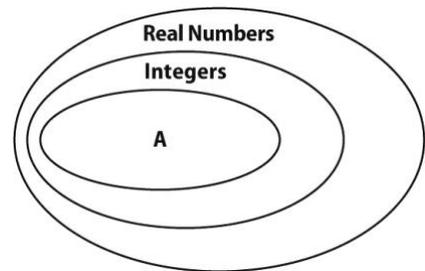
49. What is the probability of flipping two coins and both landing heads? Give your answer as a decimal.

50. At a school carnival you pick a ball from two different containers. Each container has balls marked A, B, and C. Make a sample space that shows all the possible outcomes. Tell how many possible outcomes there are.

51. A company knows that 30% of their customers who come to the store will check out the merchandise and then order it on-line because it is cheaper. The company wants to know the probability that it will take at least 3 customers to find one who shops on-line. How could the company find out this information?

52. Which label could replace "A" in the diagram below?

- A Rational Numbers
- B Whole Numbers
- C Negative Numbers
- D Irrational Numbers



53. Between which two integers does the value of  $\sqrt{50}$  lie?

- A 4 and 5
- B 7 and 8
- C 8 and 9
- D 49 and 51

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54. Alejandro wrote the number 6,240,000 in scientific notation. Which number did he write?

- A  $62.4 \times 10^{-6}$       C  $62.4 \times 10^5$   
B  $6.24 \times 10^{-5}$       D  $6.24 \times 10^6$

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

$$3.1, 3.5, 3\frac{1}{5}, 4.2$$

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

- A  $3.1, 3\frac{1}{5}, 3.5, 4.2$   
B  $3.1, 3.5, 3\frac{1}{5}, 4.2$   
C  $3\frac{1}{5}, 3.1, 3.5, 4.2$   
D  $4.2, 3.5, 3\frac{1}{5}, 3.1$

56. The points  $A(0, 0)$ ,  $B(1, 1)$ ,  $C(2, 2)$  and  $D(3, 3)$  all lie on the line  $y = x$ . Ben calculated the slopes of  $\overline{AB}$  and  $\overline{CD}$ . What can he 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.

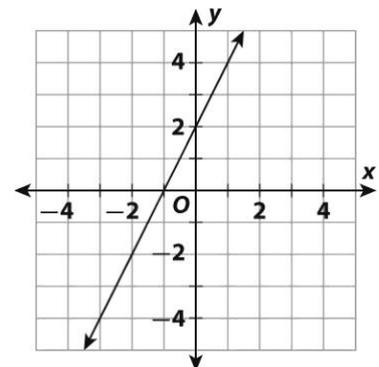
57. What is the slope of the line described by the data in the table below?

<b>x</b>	0	1	2	3
<b>y</b>	2	4	6	8

- A  $-2$       C  $-\frac{1}{2}$   
B  $\frac{1}{2}$       D  $2$

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

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



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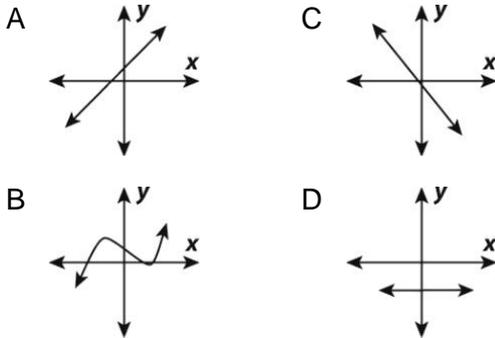
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59. Carmella sells homemade pies for \$10 a pie. It costs \$2 for the ingredients to bake each pie. Carmella bought a new oven for \$600. How many pies must Carmella bake and sell before she recovers the cost of the oven?

- A 50
- B 60
- C 75
- D 95

60. Which of the following graphs does **not** show a linear relationship?



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

- A -1
- B  $-\frac{7}{9}$
- C 1
- D 17

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

- A  $y = 5x$
- B  $y = \frac{1}{2}x + 5$
- C  $y = \frac{5}{x}$
- D  $y = x + \frac{1}{2}$

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

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

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

64. Ananya drew a cylinder with a radius of 3 inches and a height of 5 inches. She also drew a cone with the same radius and height. 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.

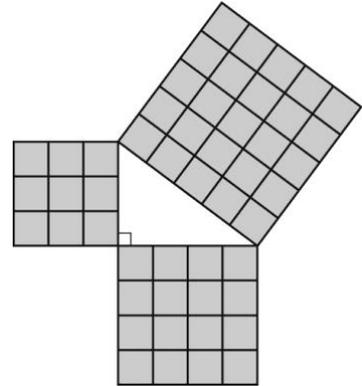
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65. Martin used the diagram below to explain the Pythagorean theorem to a classmate. Which statement did Martin use in his explanation?

- A  $3^2 + 4^2 < 5^2$
- B  $5^2 + 4^2 = 3^2$
- C  $3^2 + 5^2 = 4^2$
- D  $3^2 + 4^2 = 5^2$

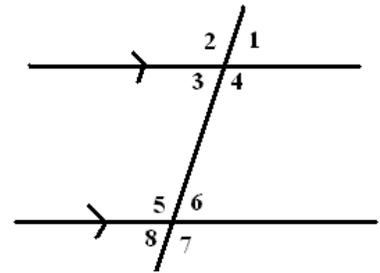


66. A sphere has a radius of 3 centimeters. What is the volume of the sphere?

- A  $36\pi \text{ cm}^3$
- B  $72\pi \text{ cm}^3$
- C  $144\pi \text{ cm}^3$
- D  $288\pi \text{ cm}^3$

67. The figure shows two parallel lines intersected by a transversal. Which pair of angles is congruent?

- A  $\angle 1$  and  $\angle 2$
- B  $\angle 2$  and  $\angle 5$
- C  $\angle 3$  and  $\angle 7$
- D  $\angle 5$  and  $\angle 6$

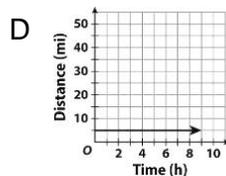
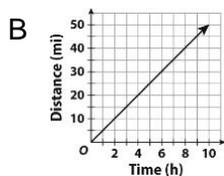
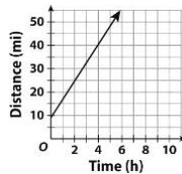
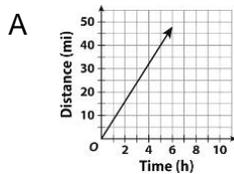


68. The equation below can be used to solve which of the following word problems?

$$2x + 15 = 4x$$

- A The price of four books is \$15 more than the price of two books. What is the price per book?
- B The price of two books is \$15 more than the price of four books. What is the price per book?
- C The price of four books equals \$15. What is the price per book?
- D John bought a certain number of \$2 books and \$4 books for a total of \$15. How many of each book did he buy?

69. Mariana rides her bicycle 5 miles per hour. Which graph represents this relationship?



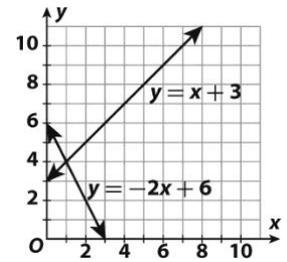
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70. What is the solution of the system of equations graphed below?

- A (0, 3)                      C (1, 4)
- B (0, 6)                      D (3, 0)



71. Michael 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 Michael applied?

- A translation                      C reflection
- B dilation                        D rotation

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

$$\begin{cases} 2x + y = 3 \\ -4x - 2y = -6 \end{cases}$$

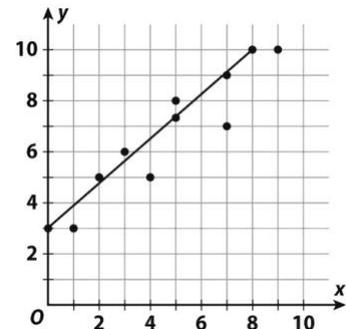
- A no solutions
- B one solution
- C two solutions
- D infinitely many solutions

73. Which expression represents 64?

- A  $2^3$                               C  $2^5$
- B  $2^4$                               D  $2^6$

74. Which of the following best describes the relationship between the two variables in the scatter plot and trend line below?

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



**Use the table to answer questions 75–79.**

Marlo collected data from students about whether they watched the latest Super Bowl game. The table below shows the results of Marlo's survey.

75. Of the students surveyed, how many watched the Super Bowl?

- A 40                                C 120
- B 80                                D 200

	Watched	Did Not Watch	TOTAL
Boys	80	20	100
Girls	40	60	100
Total	120	80	200

76. Of the students surveyed, how many girls did **not** watch the Super Bowl?

- A 20                                C 60
- B 40                                D 80

Name: \_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_

77. What is the relative frequency of students that watched the Super Bowl?

- A 20%                      C 40%  
B 30%                      D 60%

78. What is the relative frequency of boys among those who watched the Super Bowl?

- A 33.3%                    C 75%  
B 66.7%                    D 80%

79. What is the relative frequency of girls among those who did **not** watch the Super Bowl?

- A 65%                      C 80%  
B 75%                      D 85%

80. What value of  $x$  is the solution to the equation?

$$4(x - 1) = 2(x + 1)$$

- A -2                        C 1  
B 0                         D 3

81. Mary wrote the number  $2.3 \times 10^3$  in standard form. Which number did she write?

- A 0.0023                  C 23  
B 0.023                    D 2,300

82. At a bookstore, the price of two notebooks plus a \$40 backpack is the same as the price of 10 notebooks. Which equation could be used to find the price of each notebook?

- A  $2x = 10x + 40$         C  $40 = 2x + 10x$   
B  $2x + 40 = 10x$         D  $2x - 40 = 10x$