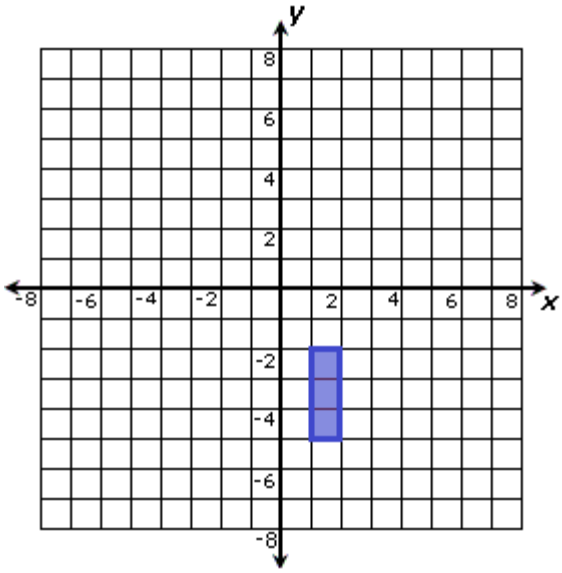
Name _____

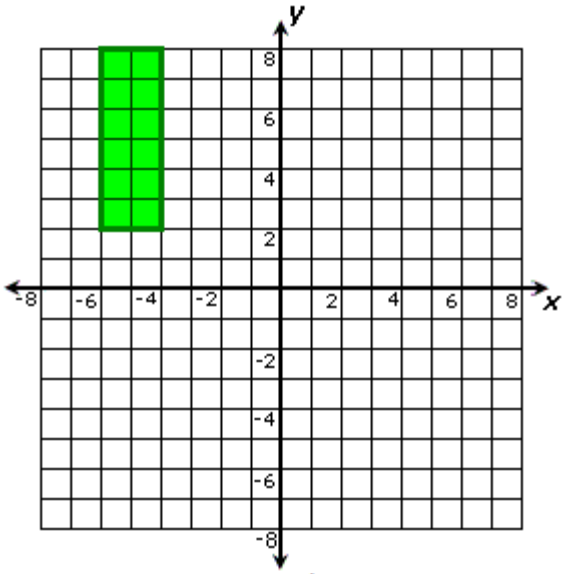
Section _____

Summer 2021 Practice Work
Rising 9th graders

1. Which series of transformations shows that rectangle A is similar to rectangle B?



Rectangle A



Rectangle B

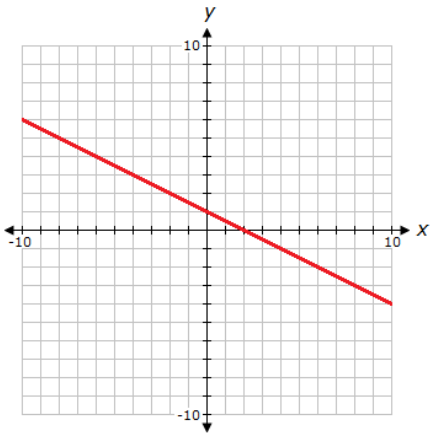
○ **A.** Rotate rectangle A 180° about the origin, dilate it by a scale factor of $\frac{1}{2}$, and translate it 5 units to the left.

○ **B.** Reflect rectangle A across the *x*-axis, dilate it by a scale factor of two, and translate it 8 units to the left and 2 units down.

○ **C.** Rotate rectangle A 180° about the point (1, -2), dilate it by a scale factor of two, and translate it 5 units up and six units to the left.

○ **D.** Reflect rectangle A across the *x*-axis, dilate it by a scale factor of $\frac{1}{2}$, and translate it 8 units to the left and two units down.

2. Describe the behavior of the graph below.



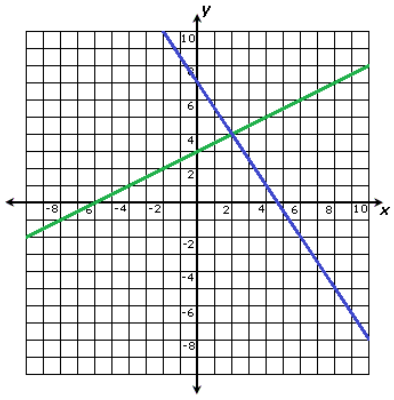
- **A.** The graph is decreasing for all values of *x*.
- **B.** The graph is increasing for all values of *x*.
- **C.** The graph is decreasing only when $x > 0$.
- **D.** The graph is increasing only when $x > 0$.

3.

$$y = \frac{1}{2}x + 3$$

$$y = -\frac{3}{2}x + 7$$

The system of equations above is graphed below.



What is the solution to the system of equations?

- **A.** (2, 4)
- **B.** (4, 5)
- **C.** (0, 8)
- **D.** (4, 2)

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4. Compare the rates of change of the following items.

I	II
$y = 0.9x$	x | y 0 | 0.9 0.5 | 1.8 1 | 2.7 1.5 | 3.6 2 | 4.5

- **A.** The rate of change of item I is equal to the rate of change of item II.
- **B.** The rate of change of item II is greater than the rate of change of item I.
- **C.** The rate of change of item I is greater than the rate of change of item II.

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5. What is the solution to the equation below?

$$5 + 4x = -11$$

- **A.** 4
- **B.** -4
- **C.** 1.5
- **D.** -1.5

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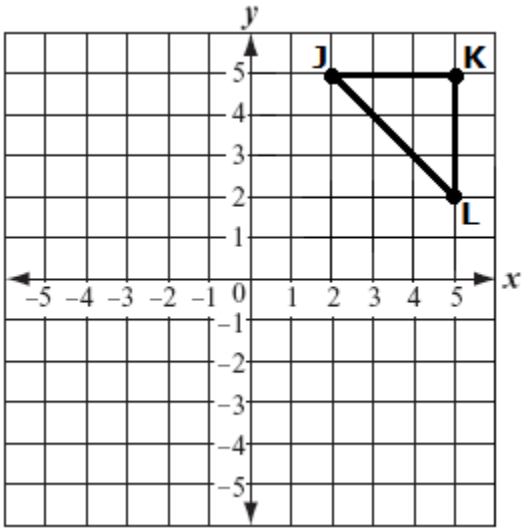
6. Triangle JKL is shown on the coordinate plane below. What are the coordinates of the image of point K after triangle JKL is translated 5 units down?



- **A.** (5,1)
- **B.** (5,-1)
- **C.** (5,0)
- **D.** (5,-2)

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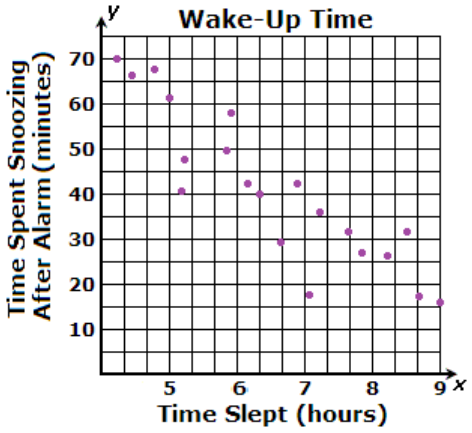
7. Which of the following best describes the relationship between the amount of time spent snoozing and the amount of time slept?



- **A.** positive and negative correlation
- **B.** no correlation
- **C.** positive correlation
- **D.** negative correlation

8. Convert the number below to a rational number.

$$0.\bar{1}$$

- **A.** $\frac{11}{111}$
- **B.** $\frac{1}{9}$
- **C.** $\frac{1}{10}$
- **D.** $\frac{1}{11}$

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9. The manager of a pizzeria collected data from customers on whether they prefer cheese, veggie, or pepperoni pizza and whether they prefer thin or regular crust pizza. The two-way table below shows the data collected.

	Cheese	**Veggie**	**Pepperoni**	**Total**
Thin	35	42	25	102
Regular	23	12	63	98
Total	58	54	88	200

Which correlation does the two-way table suggest?

- **A.** Those who prefer thin crust pizza tend to prefer pepperoni pizza.
- **B.** Those who prefer regular crust pizza tend to prefer cheese pizza.
- **C.** Those who prefer regular crust pizza tend to prefer pepperoni pizza.
- **D.** None of the correlations listed are correct.

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10. Which of the following is closest to $\sqrt{26}$?

- **A.** 5.672
- **B.** 4.988

○ **C.** 6.215

○ **D.** 5.099

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11. Which of the following sets of numbers only includes rational numbers?

○ **A.** $\sqrt{37}, \pi, \sqrt{12}, \frac{\pi}{2}$

○ **B.** $3\frac{1}{4}, \sqrt{37}, 12.88, \frac{3}{5}$

○ **C.** $6, 12.88, \frac{1}{4}, \sqrt{143}$

○ **D.** $\frac{1}{2}, 6.88, \sqrt{36}, 3\frac{1}{4}$

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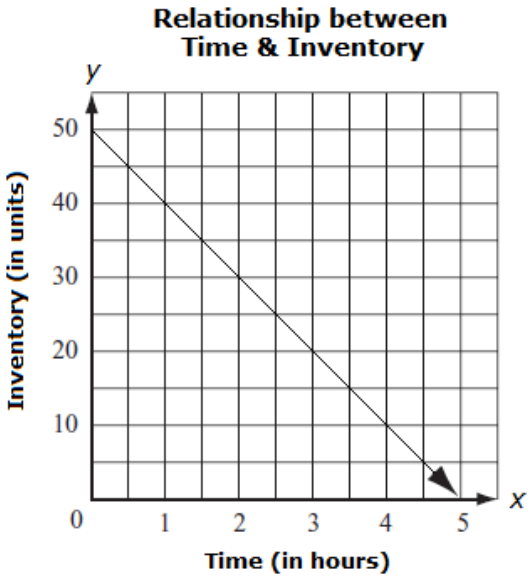
12. A company analyzed how inventory was affected during the first five hours after a commercial aired for its product. The relationship is shown on the graph below.



What happens to inventory as each hour passes?

○ **A.** The inventory decreases by 10 units.

○ **B.** The inventory decreases by 5 units.

○ **C.** The inventory decreases by 20 units.

○ **D.** The inventory decreases by 1 unit.

13.

At what position on the number line is the red dot located?

○ **A.** $\sqrt{57}$

○ **B.** $\sqrt{53}$

○ **C.** $\sqrt{48}$

○ **D.** $\sqrt{60}$

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14. Lars put stakes in his backyard, as shown in the diagram below, to separate sections of his garden.

Lars stretched 24 yards of a string from stake X to stake Y and 18 yards of the string from stake Y to stake Z. The two strings meet at a right angle.

He wants to stretch the string from stake Z to stake X next. What is the distance from stake Z to stake X?

○ **A.** 30 yards

○ **B.** 450 yards

C. 42 yards

D. 6 yards

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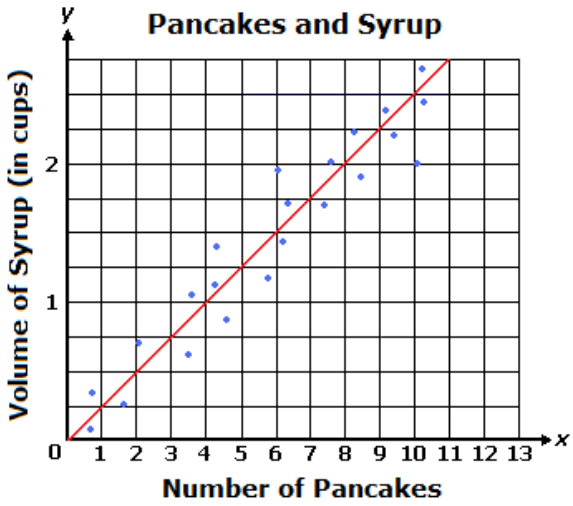
15. The scatter plot and line of best fit show the relationship between the number of pancakes eaten and the volume of syrup used.



Which statement describes the relationship between the volume of syrup used and the number of pancakes eaten?

A. The volume of syrup used increases by 1 cup for every 2 pancakes eaten.

B. The volume of syrup used increases by 1 cup for every 4 pancakes eaten.

C. The volume of syrup used increases by 1 cup for every 1 pancake eaten.

D. The volume of syrup used increases by 4 cups for every 1 pancake eaten.

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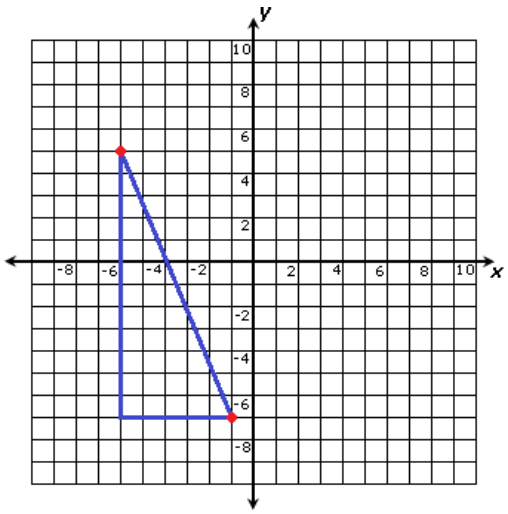
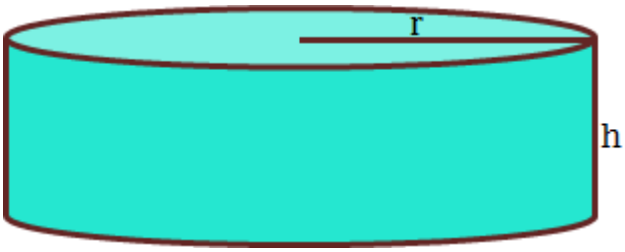
16. Use the diagram below to find the distance between points (-6, 5) and (-1, -7).



- **A.** 19 units
- **B.** 6 units
- **C.** 17 units
- **D.** 13 units

17.



Note: figure not drawn to scale.

If r = 14 units and h = 10 units, what is the volume of the cylinder shown above? Use 3.14 for π .

$$V_{\text{cylinder}} = \pi r^2 h$$

- **A.** 6,154.4000000000 cubic units
- **B.** 439.6 cubic units
- **C.** 314 cubic units
- **D.** 4,396 cubic units

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18. Order the following numbers from greatest to least.

$\sqrt[3]{18}, \sqrt[3]{9}, \sqrt{31}, \sqrt{18}$

- **A.** $\sqrt[3]{18}, \sqrt[3]{9}, \sqrt{31}, \sqrt{18}$
- **B.** $\sqrt[3]{9}, \sqrt[3]{18}, \sqrt{18}, \sqrt{31}$
- **C.** $\sqrt[3]{18}, \sqrt{18}, \sqrt[3]{9}, \sqrt{31}$
- **D.** $\sqrt{31}, \sqrt{18}, \sqrt[3]{18}, \sqrt[3]{9}$

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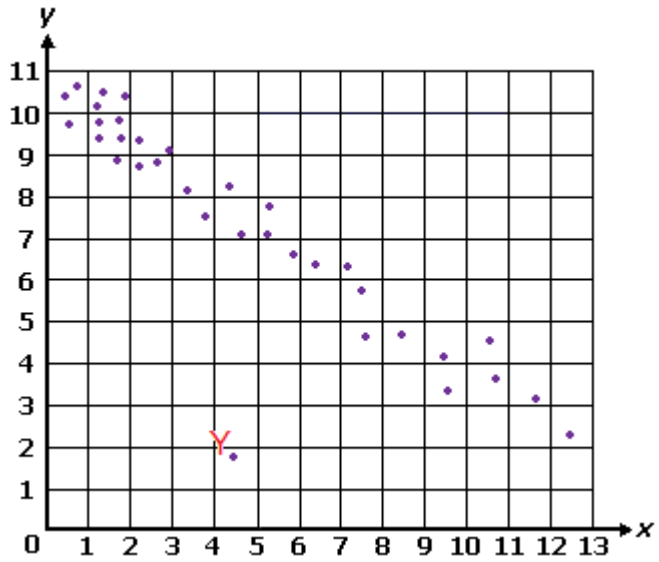
19. Which of the following best describes Y on the scatter plot below?



- **A.** cluster
- **B.** positive correlation
- **C.** nonlinear association
- **D.** outlier

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20. Which of the following best describes the equation below?

$$y = \frac{2}{5}x - 10$$

- **A.** neither linear nor nonlinear
- **B.** both linear and nonlinear
- **C.** nonlinear

○ **D.** linear

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21. Ninety members of a gym were asked whether or not they use a treadmill when they exercise and whether or not they lift weights when they exercise.

The results of the poll are as follows:

- 14 members do not use a treadmill or lift weights
- 31 members use a treadmill but do not lift weights
- 28 members lift weights but do not use a treadmill
- 17 members use a treadmill and lift weights

Which two-way table represents the information found in the poll? (see next page)

	Use Treadmill	Do Nc Use Treadn
Lift Weights	17	31
Do Not Lift Weights	28	14

W.

	Use Treadmill	Do Nc Use Treadn
Lift Weights	17	28
Do Not Lift Weights	33	14

X.

	Use Treadmill	Do Nc Use Treadn
Lift Weights	14	28
Do Not Lift Weights	31	17

Y.

	Use Treadmill	Do Nc Use Treadn
Lift Weights	17	28
Do Not Lift Weights	31	14

Z.

○ **A.** Z
○ **B.** W
○ **C.** X
○ **D.** Y

22. Which of the following relations is a function?

- **A.** (5, 11), (-8, 2), (0, 9), (0, -5)
- **B.** (5, 11), (-8, 2), (0, 9), (-5, 11)
- **C.** (0, 11), (-8, 2), (0, 9), (-8, -5)
- **D.** (11, 5), (2, -8), (9, 0), (11, -5)

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23. Which of the following best describes the equation below?

$$2(x + 6) + 5x = 7x - 12$$

- **A.** no real solutions
- **B.** infinite real solutions
- **C.** exactly one real solution, $x = -1$
- **D.** exactly one real solution, $x = 4\frac{4}{5}$

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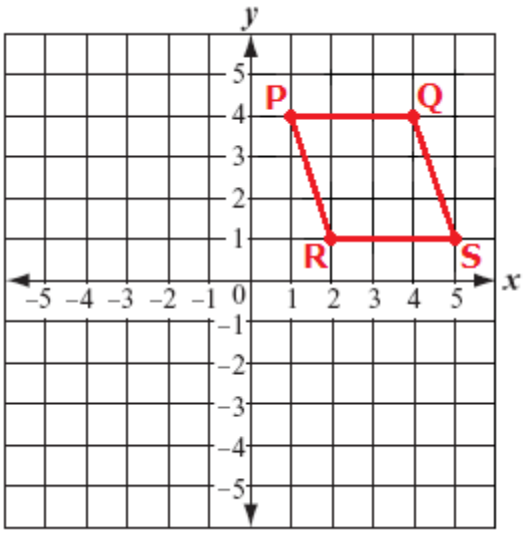
24. Parallelogram PQSR is shown on the coordinate plane below. What are the coordinates of the image of point Q after parallelogram PQSR is reflected over the *y*-axis?



- **A.** (-4, -4)
- **B.** (4, -4)
- **C.** (-4, 4)
- **D.** (0, 4)

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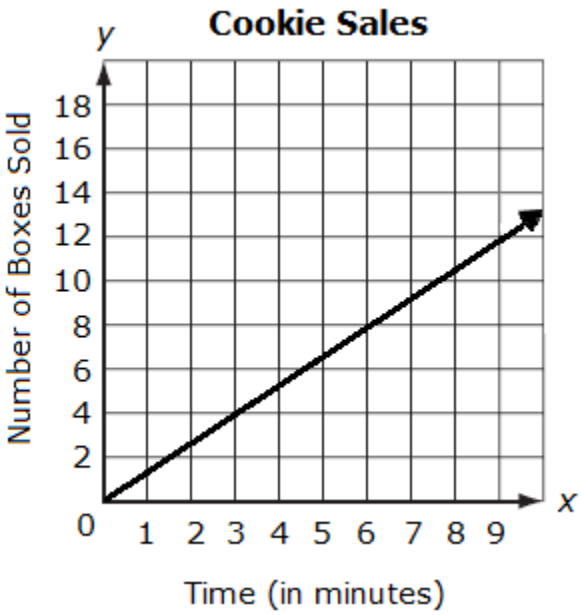
25. Lola is selling boxes of cookies for a fundraiser. The graph below shows the time it took Lola to make her first few sales. Based on the data in the graph, which of the following best represents the rate at which she was selling? [Round, if necessary.]



- **A.** 2 boxes per minute
- **B.** 1.3 boxes per minute
- **C.** 1 box per minute

○ **D.** 0.75 boxes per minute

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26. Which of the following is an irrational number?

○ **A.** $\frac{8}{9}$

○ **B.** 6.1

○ **C.** $\sqrt{144}$

○ **D.** $\sqrt{38}$

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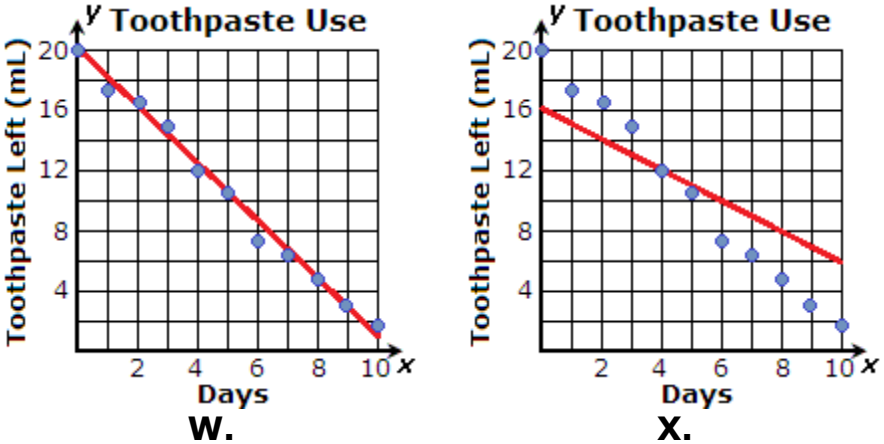
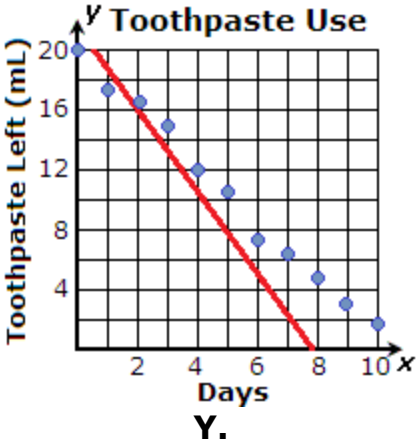
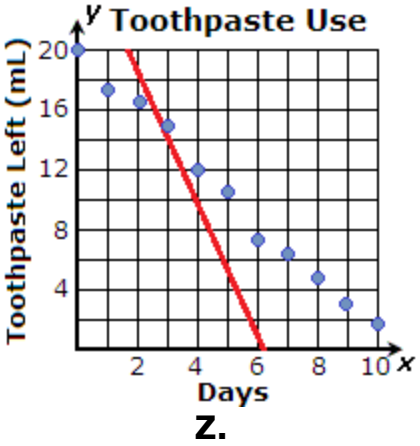
27. Which of the scatter plots below shows the most accurate line of best fit?





Y.



Z.

- **A.** Z
- **B.** X
- **C.** Y
- **D.** W

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28. Add the following values.

$$(4.2 \times 10^{14}) + (3.5 \times 10^{13})$$

- **A.** 7.7×10^{13}
- **B.** 4.55×10^{14}
- **C.** 4.235×10^{15}
- **D.** 4.235×10^{14}

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29. Amy joined a gym with a $68 enrollment fee. The equation below can be used to find the total Amy has paid, *y*, if she has belonged to the gym for *x* months.

$$y = 47x + 68$$

What does the 47 represent in the equation?

- **A.** the number of months of membership
- **B.** the amount for *x* months of membership
- **C.** the cost to join
- **D.** the monthly dues

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30. Simplify the following expression.

$\sqrt{49}$

- **A.** 7
- **B.** 25
- **C.** 12
- **D.** 5