

Algebra 1 Summer Break Assignment

Name: _____

Date: _____

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1.

	New Students	Returning Students	TOTAL
10 th Grade	5	170	175
11 th Grade	3	162	165
12 th Grade	2	158	160
TOTAL	10	490	500

Choose the two-way relative frequency table which represents the two-way frequency table above.

	New Students	Returning Students	TOTAL
10 th Grade	0.5	0.347	0.35
11 th Grade	0.3	0.331	0.33
12 th Grade	0.2	0.233	0.32
TOTAL	1	1	1

W.

	New Students	Returning Students	TOTAL
10 th Grade	0.0286	0.9714	1
11 th Grade	0.018	0.982	1
12 th Grade	0.125	0.9875	1
TOTAL	0.02	0.98	1

X.

	New Students	Returning Students	TOTAL
10 th Grade	0.01	0.34	0.35
11 th Grade	0.006	0.324	0.33
12 th Grade	0.004	0.316	0.32
TOTAL	0.02	0.98	1

Y.

	New Students	Returning Students	TOTAL
10 th Grade	100	2.94	2.86
11 th Grade	166.67	3.09	3.03
12 th Grade	250	3.16	3.125
TOTAL	50	1.02	1

Z.

A. Z

- B. X
 - C. W
 - D. Y
-

2. Li and Jen went shopping.

- Li bought 5 pairs of earrings and 1 necklace for a total of \$56.
- Jen bought 1 pair of earrings and 3 necklaces for a total of \$70.

Each pair of earrings cost e dollars and each necklace cost n dollars. Which system of equations can be used to find the cost, in dollars, of each pair of earrings and each necklace?

- A. $5e + n = \$56$
 $3e + n = \$70$
 - B. $e + 5n = \$56$
 $e + 3n = \$70$
 - C. $5e + 3n = \$56$
 $e + n = \$70$
 - D. $5e + n = \$56$
 $e + 3n = \$70$
-

3. Find the solution to the system of equations given below using elimination by addition.

$$\begin{aligned}4x + 3y &= -20 \\6x + 12y &= -10\end{aligned}$$

- A. $x = 3, y = -\frac{32}{3}$
 - B. $x = -7, y = \frac{8}{3}$
 - C. $x = -\frac{41}{3}, y = 6$
 - D. $x = -6, y = \frac{13}{6}$
-

4. Each statement describes a transformation of the graph of $y = x^2$. Which statement correctly describes the graph of $y = (x + 4)^2 - 7$?

- A. It is the graph of $y = x^2$ translated 7 units down and 4 units to the left.

- B. It is the graph of $y = x^2$ translated 4 units up and 7 units to the left.
- C. It is the graph of $y = x^2$ translated 7 units down and 4 units to the right.
- D. It is the graph of $y = x^2$ translated 4 units down and 7 units to the left.
-

5. What is the factored form of the following expression?

$$9x^2 + 18x + 9$$

- A. $3(x + 1)^2$
- B. $9(x + 1)^2$
- C. $3(x + 3)(3x + 1)$
- D. $(9x + 1)(x + 9)$
-

6. Solve the following inequality for x .

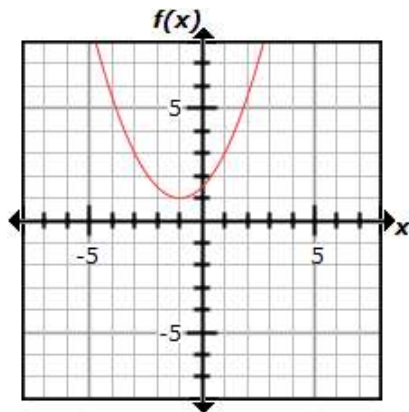
$$\frac{1}{4}x + 3 \geq -\frac{3}{4}x + 11$$

- A. $x \geq 14$
- B. $x \leq 8$
- C. $x \leq 14$
- D. $x \geq 8$
-

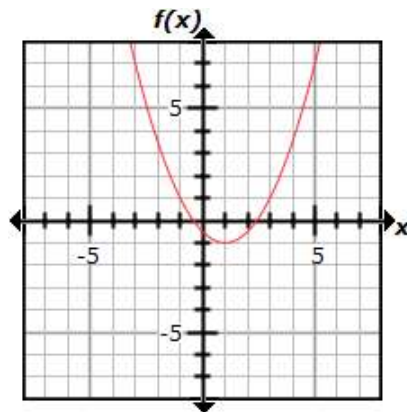
7.

$$f(x) = \frac{1}{2}(x + 1)^2 + 1$$

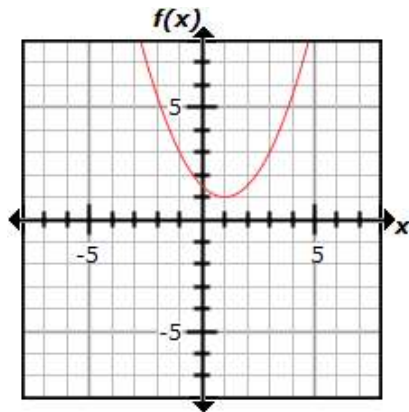
Which of the following graphs corresponds to the function above?



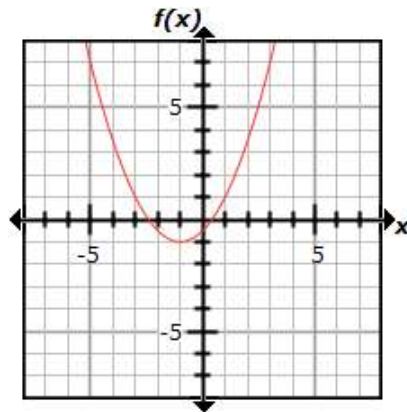
W.



X.



Y.



Z.

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

8. Caroline measured the weight of a dog that came into the veterinary clinic. She determined that her measurement had a margin of error of 0.05 kilogram. Which of the following could be the measured weight of the dog?

- A. 11.9 kilograms
- B. 11.953 kilograms
- C. 11 kilograms
- D. 11.95 kilograms

9. Clayton is plowing a wheat field. There are a total of 320 acres to be plowed. If he can plow 4 acres per hour, which equation would represent A , the number of acres left to plow, after Clayton has plowed for h hours?

- A. $A = 320 + 4h$
 - B. $A = 4 + 320h$
 - C. $A = 4 - 320h$
 - D. $A = 320 - 4h$
-

10. The following formula can be used to find the period of a simple pendulum. If the pendulum length (L) is in meters, and gravity (g) is in meters per second squared, then in what unit is the pendulum period (T) measured?

$$T = 2\pi\sqrt{\frac{L}{g}}$$

- A. seconds
 - B. seconds squared
 - C. meters
 - D. seconds per meter
-

11. A car company that provides maintenance services for cars wants to measure its overall customer satisfaction of its services. Which measure provides the best information to the company?

- A. complaints per customer per service
 - B. complaints per service
 - C. complaints per year
 - D. complaints per year per customer
-

12. Jeri is a hairdresser. The table below shows the relationship between the number of clients she has per month, x , and her monthly revenue, $f(x)$. Based on the relationship shown in the table, which function represents the situation?

x	$f(x)$
12	0
20	800
30	1,800

- A. $f(x) = 12x - 144$
 - B. $f(x) = 100x - 1200$
 - C. $f(x) = 4x + 720$
 - D. $f(x) = 8x - 96$
-

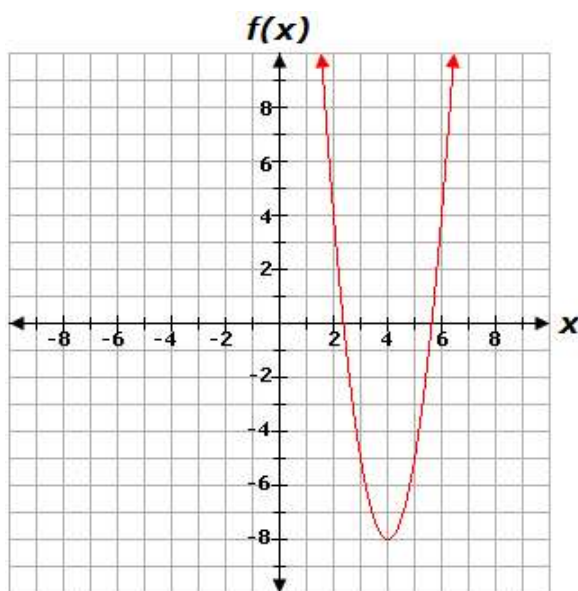
13. Jennifer owns a small bakery. The cost function of Jennifer's bakery can be shown by the function below, where d represents the number of days in business.

$$C(d) = d^2 + 5d - 235$$

Which statement best describes the term 235?

- A. the initial investment for the bakery
 - B. the cost of operation per day
 - C. the daily profit
 - D. the profit per cake sold
-

14. The graph of $f(x)$ is shown below.



If $g(x) = 9(x - 8)^2 - 6$, which statement is true?

- A. The minimum value of $g(x)$ is less than the minimum value of $f(x)$.
 - B. The minimum value of $g(x)$ is the same as the minimum value of $f(x)$.
 - C. The maximum value of $g(x)$ is greater than the maximum value of $f(x)$.
 - D. The minimum value of $g(x)$ is greater than the minimum value of $f(x)$.
-

15. Ten people were chosen at random and surveyed. The survey asked participants for the number of hours they watched TV per day and their ages. Letting X represent the number of hours the participant watched TV per day and Y represent the participant's age, the surveyor calculated the correlation coefficient between X and Y to be 0.23.

Interpret the correlation coefficient calculated by choosing the statement below which correctly describes the association between X and Y .

- A. weak positive association
 - B. strong negative association
 - C. weak negative association
 - D. strong positive association
-

16. A study was done to investigate the population of bald eagle breeding pairs over time. The correlating regression model is shown below, where x represents the number of years after 1986, and y represents the number of bald eagle breeding pairs. Interpret the y -intercept.

$$y = 1,772 + 334x$$

- A. There were approximately 334 additional eagle breeding pairs each year after 1986.
 - B. There were approximately 1,772 eagle breeding pairs in 1986.
 - C. There were approximately 334 eagle breeding pairs in 1986.
 - D. There were approximately 1,772 additional eagle breeding pairs each year after 1986.
-

17. Given the following formula, solve for x .

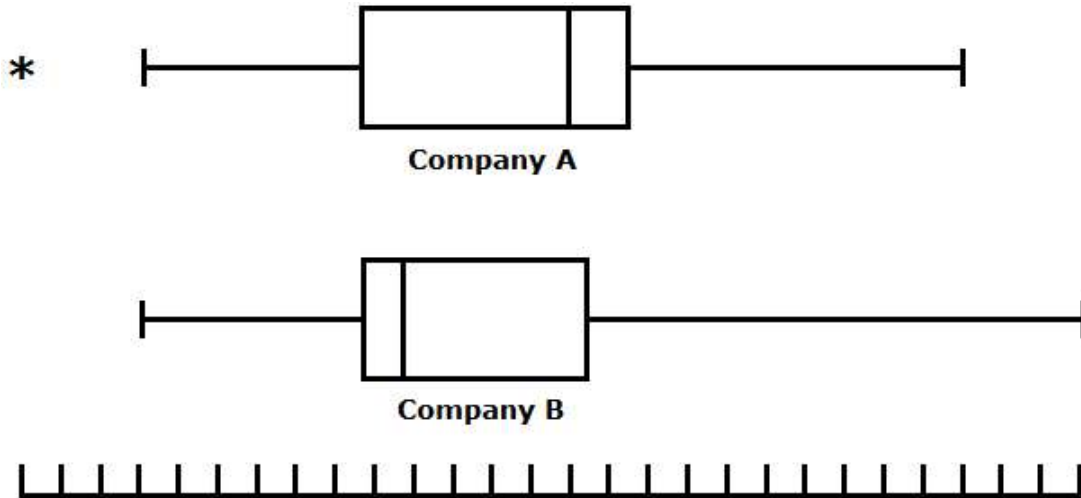
$$v^2 = v_0^2 + 2a(x - x_0)$$

- A. $x = \frac{v^2 - v_0^2}{2a} - x_0$
 - B. $x = \frac{v^2 - v_0 + x_0}{2a}$
 - C. $x = \frac{v^2 - v_0^2}{2a} + x_0$
 - D. $x = \frac{v^2 - v_0 - 2a}{x_0}$
-

18. All of the situations below imply correlation. Which situation most likely implies causation?

- A. As gasoline prices increased, the number of bikes purchased increased.
 - B. As a company's advertising budget increased, the company's sales increased.
 - C. As lake water levels increased, boats on the lake increased.
 - D. As outdoor temperatures increased, residents' electric bills increased.
-

19. The box plots below show the distribution of salaries at two companies. Compare the ranges and medians of the data sets.

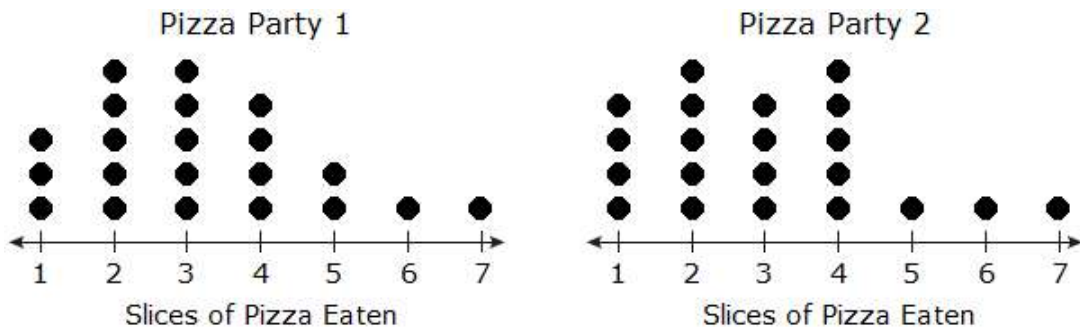


- Company A range = Company B range
- A. Company A median > Company B median
- Company A range < Company B range
- B. Company A median > Company B median
- Company A range > Company B range
- C. Company A median > Company B median
- Company A range > Company B range
- D. Company A median < Company B median

20. Which of the following relations is a function?

- A. $(-2, -2), (-9, -5), (3, 8), (3, 2)$
- B. $(-9, 0), (-2, 5), (-9, -3), (3, 9)$
- C. $(-9, 2), (-2, 3), (3, 7), (6, 2)$
- D. $(6, -10), (-9, 7), (6, 6), (-9, 12)$

21. Pizza PDQ hosted two pizza parties last Friday. The number of slices of pizza eaten by partygoers is displayed on the dot plots below. Based on this data, which of the following generalizations can be made?



- A. The medians and means of both data sets are not close in value.
- B. Each data set has a mean of 3. The medians are not equal.
- C. The medians and means of both data sets are close to or equal to 3.
- D. Each data set has a mean of 3. Each data set has a median of 3.
-

22. Find the value of $f(-1)$ for the function below.

$$f(x) = \frac{2}{3} \cdot 3(3x + 12)$$

- A. 19,683
- B. 118,098
- C. 13,122
- D. 512
-

23. Mrs James is making chocolate cookies for her guests. She needs flour, sugar and chocolate for making cookies. She needs 1.25 cups of sugar, and 1 cup of chocolate. Which cup measure would be an appropriate measure for the amount of flour needed?

- A. 1.50 cups
- B. 1.79 cups
- C. 1.56 cups
- D. 1.30 cups
-

24. Simplify the expression given below.

$$(5x^2 + 6x - 8) - (10x^2 - 14)$$

- A. $5x^2 + 6x + 6$
- B. $11x^2 + 6x + 6$
- C. $-5x^2 + 6x + 6$
- D. $11x^2 - 6x + 6$
-

25. A horse and buggy is traveling between towns in a rural region. The table represents the distance, in miles, the horse and buggy has traveled after x hours.

x	1.5	2	2.5	3	3.5	4
$h(x)$	33	44	55	66	77	88

What is the average rate of change over the interval $[2, 3.5]$?

- A. 44 miles per hour
 - B. 22 miles per hour
 - C. 33 miles per hour
 - D. 11 miles per hour
-

26. Which of the following statements is false?

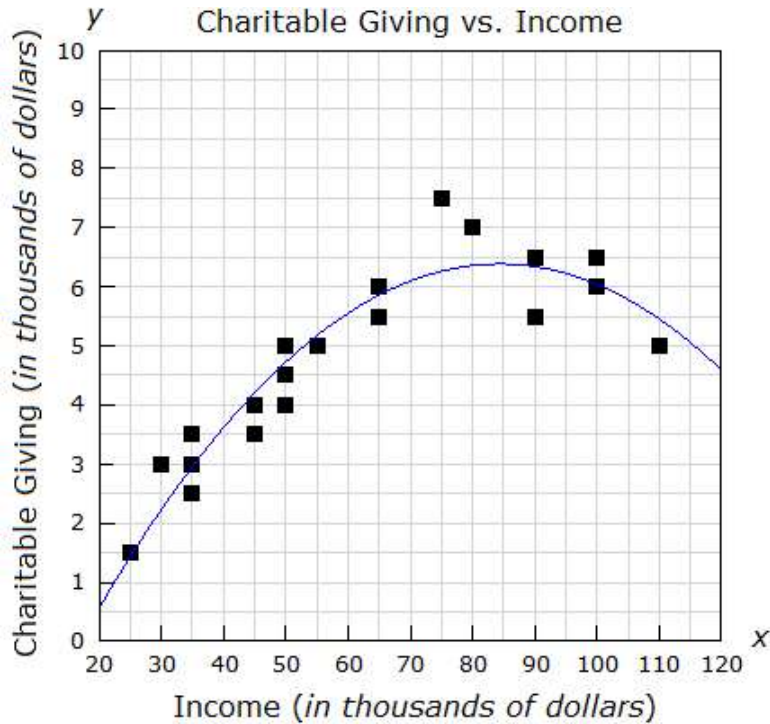
- A. The sum of a rational number and an irrational number is irrational.
 - B. The product of two rational numbers is rational.
 - C. The product of a nonzero rational number and an irrational number is rational.
 - D. The sum of two rational numbers is rational.
-

27. In the following formula, v_i is initial velocity, v_e is ending velocity, a is acceleration, and d is distance. If v_i is 7 meters per second, a is 8 meters per second squared, and d is 2 meters, what is the value of v_e ?

$$v_i = \sqrt{v_e^2 - 2ad}$$

- A. 5.74 meters per second
 - B. 6.25 meters per second
 - C. 4.12 meters per second
 - D. 9 meters per second
-

28. The annual charitable giving in thousands of dollars, y , vs. the annual income in thousands of dollars, x , of 20 randomly selected individuals is shown in the following scatter plot.



Use the curve of best fit in the given graph to estimate the annual charitable giving of someone who earns \$50,000 annually.

- A. \$5,000
- B. \$4,750
- C. \$4,500
- D. \$4,000

29. A scatter plot was created to show the increase in value of a baseball card over time. The equation of the line of best fit is shown below, where x represents the number of years after 1987, and y represents the value of the baseball card in dollars.

$$y = 5.89 + 0.61x$$

Which of the following is predicted by the equation of the line of best fit?

- A. The value of the baseball card would be \$21.35 in 2022.
- B. The value of the baseball card would be \$36.52 in 2017.
- C. The value of the baseball card would be \$27.24 in 2022.
- D. The value of the baseball card would be \$18.30 in 2017.

30. Which of the following will result in an irrational number?

- A. $\sqrt{81} + 7$

B. $-\frac{37}{10} + 3$

C. $-\frac{1}{5} \cdot \sqrt{9}$

D. $-3 \cdot \sqrt{10}$
