

Algebra 1 STAAR EOC Review #1
Reporting Category 1: Functional Relationships
A.1abcde

RC1 A.01A

1. A function is described by the equation $f(x) = x^2 + 5$. The replacement set for the independent variable is $\{1, 5, 7, 12\}$. Which of the following is contained in the corresponding set for the dependent variable?
 - A. 0
 - B. 6
 - C. 7
 - D. 15

2. A department store had a 20%-off sale on all clothing items. Which statement best represents the functional relationship between the sale price of an article of clothing and the original price?
 - F. The original price is dependent on the sale price.
 - G. The sale price is dependent on the original price.
 - H. The sale price and original price are independent of each other.
 - J. The relationship cannot be determined.

3. If y is a function of x in the equation $y = x^2 - 9$, which statement is true?
 - A. The independent variable x is equal to 9 less than the square of the dependent variable y .
 - B. The independent variable y is equal to 9 less than the square of the dependent variable x .
 - C. The dependent variable y is equal to 9 less than the square of the independent variable x .
 - D. The dependent variable x is equal to 9 less than the square of the independent variable y .

RC1 A.01B

4. The function table shows the values of $f(n)$ for given values of n .

n	1	2	3	4
$f(n)$	2	2.5	3	3.5

Which function best represents the relationship between the quantities in the table?

- F. $f(n) = n + \frac{1}{2}$
- G. $f(n) = 2n$
- H. $f(n) = \frac{n+1}{n}$
- J. $f(n) = \frac{n+3}{2}$

5. Students in a science class recorded lengths of a stretched spring, as shown in the table below.

Length of Stretched Spring

Distance Stretched, x (centimeters)	Weight, y (newtons)
0	0
2	10
4	20
7	35
9	45
10	50

Which equation best represents the relationship between the distance stretched, x , and the weight on the spring, y ?

- A. $y = -5x$
- B. $y = \frac{5}{x}$
- C. $y = 5x^2$
- D. $y = 5x$

6. Given that y is a function of x , which of the following tables best represents a function?

F.

x	y
-7	12
-3	8.5
0	-1
-3	-8.5
7	-12

H.

x	y
-5	-17
-2	-11
1	-5
2	-3
5	3

G.

x	y
-2	-14
-2	-8
-2	-5
-2	-1
-2	7

J.

x	y
-8	-7
-5	-2
0	1
-5	4
-8	12

RC1 A.01C

7. Eddie's Towing Company charges \$40 to hook a vehicle to the truck and \$1.70 for each mile the vehicle is towed. Which equation best represents the relationship between the number of miles towed, m , and the total charges, c ?

- A. $c = 40 + 1.70$
 B. $c = 40 + 1.70m$
 C. $c = 40m + 1.70$
 D. $c = 40m + 1.70$

8. Which quadratic function has a vertex below the origin and opens upward?

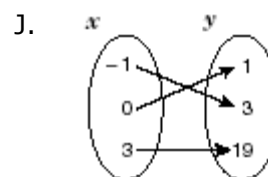
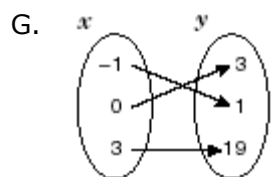
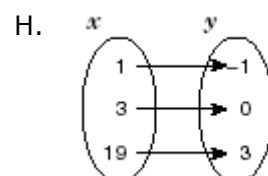
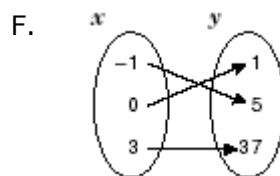
- F. $y = -x^2 + 3$
 G. $y = -x^2 - 1$
 H. $y = x^2 + 5$
 J. $y = x^2 - 2$

9. A candy company sells chocolate-covered cherries in a box. The empty box weighs 4.2 ounces. Each piece of candy weighs at least 1.8 ounces. Which inequality best describes the total weight in ounces, w , of a box of chocolate-covered cherries in terms of c , the number of candies in the box?

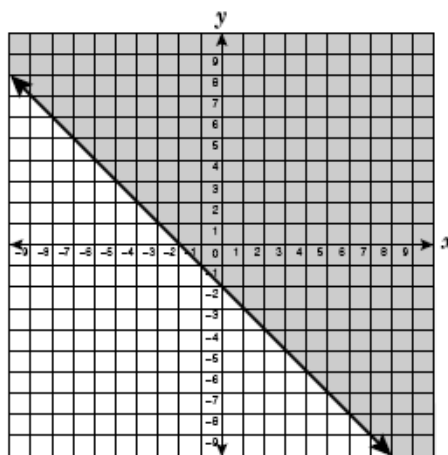
- A. $w \geq 1.8c + 4.2$
 B. $w \geq 1.8c - 4.2$
 C. $w \geq 4.2c + 1.8$
 D. $w \geq 4.2c - 1.8$

RC1 A.01D

10. Which mapping best represents the function $y = 2x^2 + 1$ when the replacement set for x is $\{-1, 0, 3\}$?

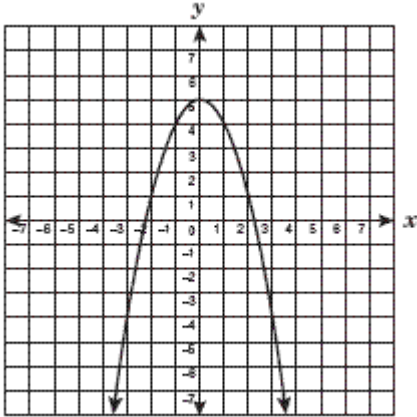


11. Which inequality best describes the graph shown below?



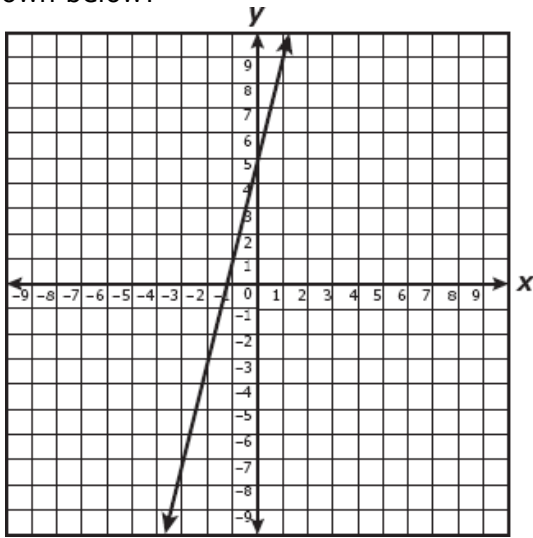
- A. $y \leq -2x$
 B. $y \leq -x - 2$
 C. $y \leq -2x - 2$
 D. $y \leq x - 2$

12. Which quadratic equation best represents the parabola shown below?



- F. $y = x^2 + x + 5$
- G. $y = x^2 + 5$
- H. $y = -x^2 + 5$
- J. $y = -x^2 + x + 5$

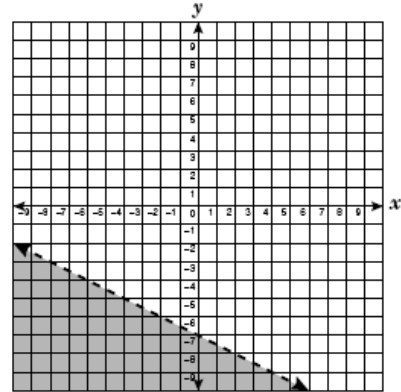
13. Which equation best represents the graph shown below?



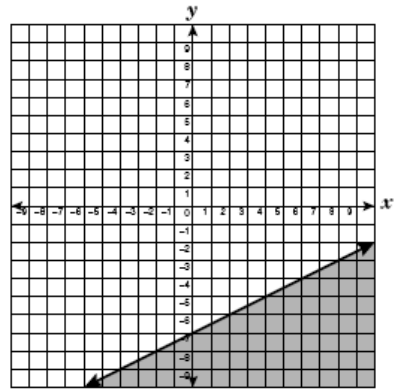
- A. $y = -4x + 5$
- B. $y = 5x + 4$
- C. $y = 4x + 5$
- D. $y = 4x - 5$

14. Which graph best represents the inequality $x + 2y \leq -14$?

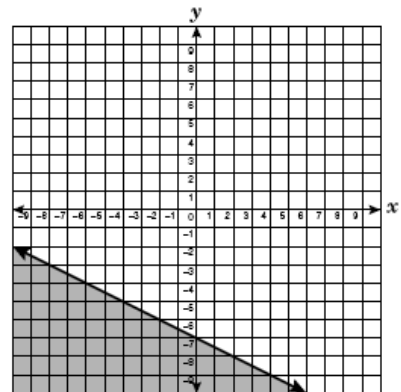
A.



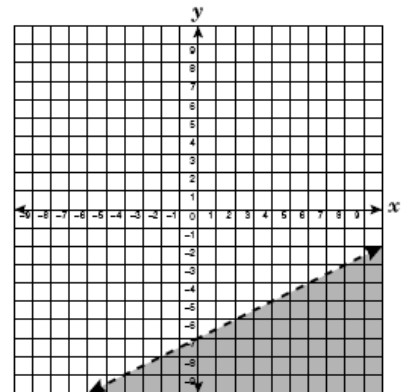
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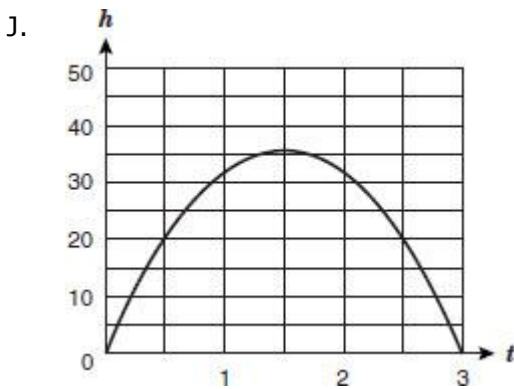
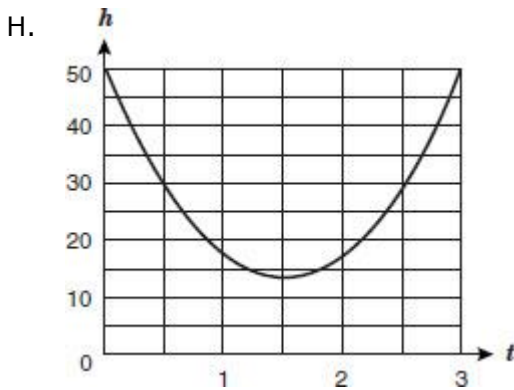
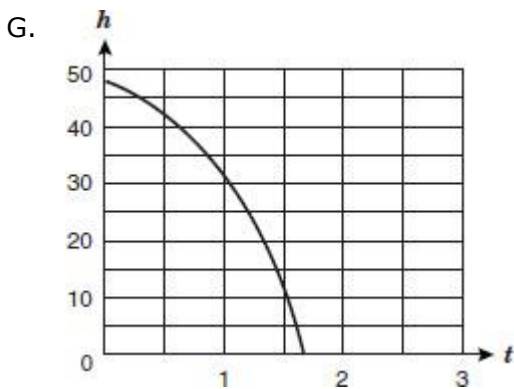
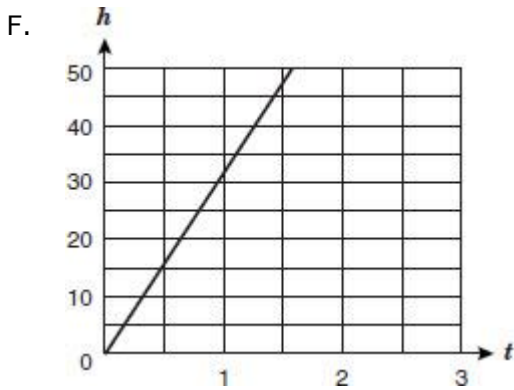
C.



D.



15. The height, h , of a football when kicked with respect to time, t , is described by the function $h = -16t^2 + 48t$. Which graph shows the correct sketch of this function?

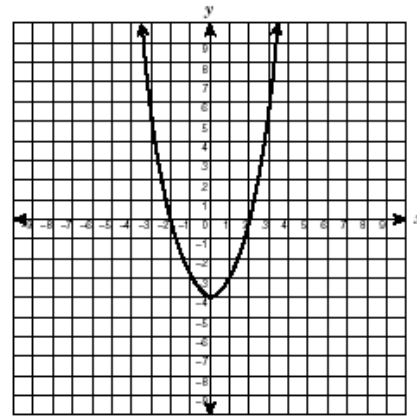


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16. Which is always a correct conclusion about the quantities in the function $y = x + 4$?

- F. The variable x is always 4 more than y .
- G. When the value of x is negative, the value of y is also a negative.
- H. The variable y is always greater than x .
- J. As the value of x increases, the value of y decreases.

17. Jake studied the parabola shown below.



Which is an accurate conclusion that Jake could make about his parabola?

- A. The vertex is at $(-2, 0)$.
- B. The minimum value is at $(0, -4)$.
- C. The maximum value is at $(2, 0)$.
- D. The axis of symmetry is the x -axis.

18. The payroll clerk at an appliance store calculates each salesclerk's weekly salary using the function $f(x) = 75 + 0.10x$, where x is each salesclerk's total weekly sales. The best interpretation of this situation is that each salesclerk is paid —

- F. \$75 plus a 10% commission on the total weekly sales of all the salesclerks
- G. \$75 plus a 10% commission on his or her weekly sales
- H. \$75 plus a 10% commission on the total weekly profit for the store
- J. The same amount regardless of his or her total weekly sales

19. The function below shows a relationship between x and y .

$$y = 7x + 3$$

If the value of x increases by 1, what happens to the value of y ?

- A. The value of y increases by 3.
B. The value of y increases by 7.
C. The value of y increases by 10.
D. The value of y increases by 21.
20. The function $c = 5 + 2h$ can be used to determine c , the cost of renting a bike for h hours. Based on this function, which of the following statements is true?
- F. It costs \$15 to rent a bike for 5 hours.
G. It costs \$5 per hour to rent a bike.
H. It costs \$2 to rent a bike for 1 hour.
21. The total cost to park in a parking garage can be expressed by the function $c = 2 + 0.60(h - 1)$, where h represents the number of hours parked. Which is the best interpretation of this information?
- A. The charge for parking in the parking garage is \$2.00 for the first hour and \$0.60 per hour for each additional hour.
B. The charge for parking in the parking garage is \$2.60 plus the number of hours parked.
C. There is no charge for parking in the parking garage for the first hour, but each additional hour costs \$0.60.

22. Southern Phone Company is promoting a new cell phone service plan: a customer can make up to 500 minutes of calls each month for \$39.99. If the number of minutes used in a month exceeds 500, then the function

$$c = 0.40(m - 500) + 39.99$$

describes the monthly charge, c , in dollars in terms of m , the total number of minutes used. Which of the following statements best describes this function?

- F. If the total number of minutes used is more than 500, then every minute beyond 500 costs 40 cents.
G. Every minute used costs 40 cents, regardless of the total number of minutes used.
H. The first 500 minutes used costs 40 cents each, after which there is an additional charge of \$39.99.
J. If the total number of minutes used is more than 500, then every minute used costs 40 cents.
23. The table below shows the dollar value of an antique item over time.

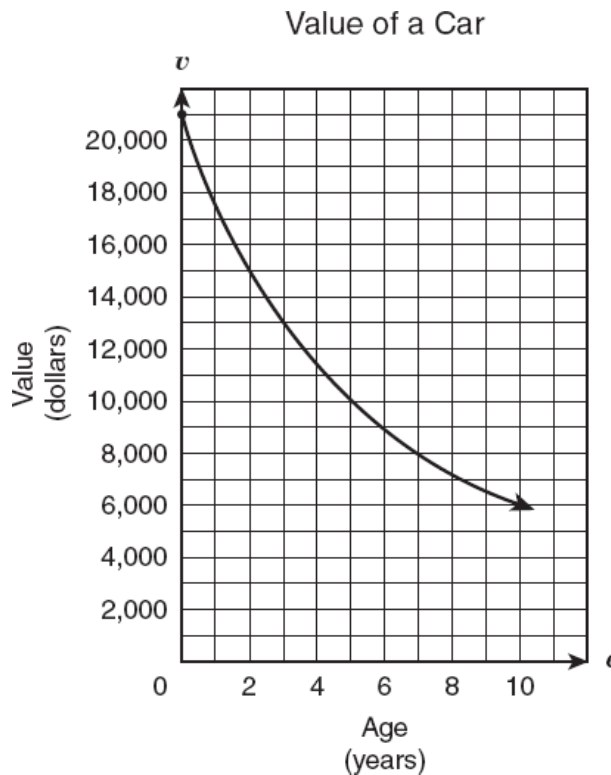
Value of an Antique Item over Time

Year	Value (dollars)
1960	2000
1975	4000
1990	6000
2005	8000

Based on the information in the table, what was the approximate value of this item in 1980?

- A. \$4300
B. \$4700
C. \$5000
D. \$4500

24. The graph below shows the relationship between the value of a car in dollars and the age of the car in years.



According to the graph, which of the following statements appears to be true?

- F. The value of the car decreased by \$1,000 per year.
- G. The value of the car decreased by \$2,000 per year.
- H. The value of the car decreased more from Year 9 to Year 10 than in any other year.
- J. The value of the car decreased more from Year 0 to Year 1 than in any other year.

25. Gina did a research project on how age affects sleep patterns. She concluded that as people age, they sleep fewer hours until a point in adulthood when the number of hours remains constant. Gina also found that after the age of 70 the amount of time spent sleeping increases slightly. Which graph best shows the results of Gina's research?

