

1. Which table represents an exponential function?

A.

x	0	1	2	3	4
y	5	6	7	8	9

B.

x	0	1	2	3	4
y	22	44	66	88	110

C.

x	0	1	2	3	4
y	5	13	21	29	37

D.

x	0	1	2	3	4
y	3	9	27	81	243

2. Which statement is true about the graphs of exponential functions?

- A. The graphs of exponential functions never exceed the graphs of linear and quadratic functions.
- B. The graphs of exponential functions always exceed the graphs of linear and quadratic functions.
- C. The graphs of exponential functions eventually exceed the graphs of linear and quadratic functions.
- D. The graphs of exponential functions eventually exceed the graphs of linear functions but not quadratic functions.

3. Which statement BEST describes the comparison of the function values for $f(x)$ and $g(x)$?

x	$f(x)$	$g(x)$
0	0	-10
1	2	-9
2	4	-6
3	6	-1
4	8	6

- A. The values of $f(x)$ will always exceed the values of $g(x)$.
- B. The values of $g(x)$ will always exceed the values of $f(x)$.
- C. The values of $f(x)$ exceed the values of $g(x)$ over the interval $[0, 5]$.
- D. The values of $g(x)$ begin to exceed the values of $f(x)$ within the interval $[4, 5]$.

4. If the parent function is $f(x) = mx + b$, what is the value of the parameter m for the line passing through the points $(-2, 7)$ and $(4, 3)$?

- A. -9
- B. $-\frac{3}{2}$
- C. -2
- D. $-\frac{2}{3}$

5. Which function is modeled in this table?

x	$f(x)$
1	8
2	40
3	200
4	1,000

- A. $f(x) = x + 7$
- B. $f(x) = 5x + 8$
- C. $f(x) = (8)^x$
- D. $f(x) = \frac{8}{5}(5)^x$

6. If $f(12) = 4(12) - 20$, which function gives $f(x)$?

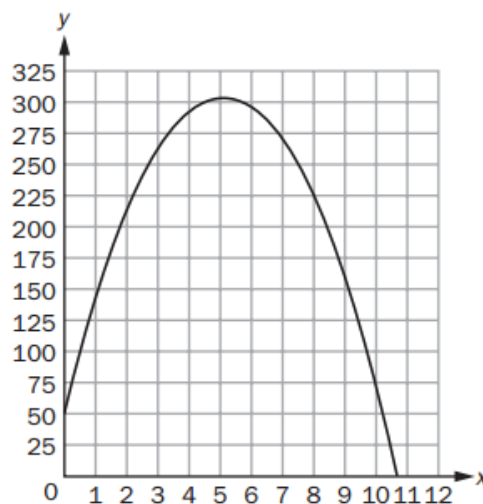
- A. $f(x) = 4x^2 - 20$
- B. $f(x) = 4^x - 20$
- C. $f(x) = 4x - 20$
- D. $f(x) = 4x^2 + 12x - 20$

7. A sample of 1,000 bacteria becomes infected with a virus. Each day, one-fourth of the bacteria sample dies due to the virus. A biologist studying the bacteria models the population of the bacteria with the function $P(t) = 1,000(0.75)^t$, where t is the time, in days.

What is the range of this function in this context?

- A. any real number such that $t \geq 0$
- B. any whole number such that $t \geq 0$
- C. any real number such that $0 \leq P(t) \leq 1,000$
- D. any whole number such that $0 < P(t) \leq 1,000$

8. The graph shows the height, y , in meters, of a rocket above sea level in terms of the time, t , in seconds, since it was launched. The rocket landed at sea level.



What does the x -intercept represent in this situation?

- A. the height from which the rocket was launched
- B. the time it took the rocket to return to the ground
- C. the total distance the rocket flew while it was in flight
- D. the time it took the rocket to reach the highest point in its flight

9. Larry creates Function 1 is two linear functions of x . Function 1 is represented by the table below.

Function 1

x	1	4	7	9	10
y	4	10	16	20	22

Function 2 is described by the equation below.

Function 2: $y = 3x - 1$

Which statement about the functions is true?

- A. The y -intercept of function 1 is greater than the y -intercept of function 2.
- B. The value of function 1 is less than the value of function 2 for every value of x .
- C. The rate of change of function 1 is greater than the rate of change of function 2.
- D. The rate of change of function 1 varies, while the rate of change of function 2 remains constant.

10. Limousine Company P and Company R both charge a rental fee plus an additional charge per hour.

- The equation $y = 50 + 30x$ models the total cost (in dollars), y , of renting a limousine from Company P for x hours.
- The table below shows the cost to rent a limousine from Company R for different lengths of time.

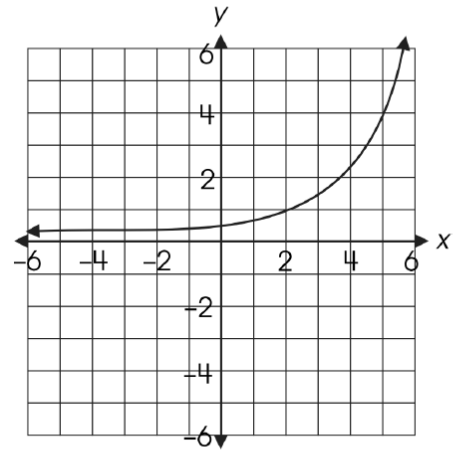
Company R

Time (hours)	1	2	3	4	5
Total Cost	\$100	\$125	\$150	\$175	\$200

Which statement accurately compares the per hour charges of the two companies?

- A. Company P charges \$5 less per hour than Company R.
- B. Company P charges \$5 more per hour than Company R.
- C. Company P charges \$25 less per hour than Company R.
- D. Company P charges \$25 more per hour than Company R.

11. A relationship is shown.



As the value of y decreases, what happens to the value of x ?

- A. The value of x decreases.
- B. The value of x increases.
- C. The value of x stays the same.
- D. The value of x increases and decreases.

- 12.

Use the two functions below to answer the question.

Function A

$$y = \frac{1}{4}x - \frac{2}{3}$$

Function B

x	y
2	-8
4	-9
6	-10
8	-11

Which statement about the slopes of the functions is true?

- A. The slopes of both functions are negative.
- B. The slopes of both functions are positive.
- C. The slope of function A is negative and the slope of function B is positive.
- D. The slope of function A is positive and the slope of function B is negative.

13. Jerry goes to a theme park to ride the roller coasters. The theme park charges an entry fee in addition to a fee for each roller coaster ride. The table below represents the total price for two different numbers of roller coaster rides

Theme Park

Number of Roller Coaster Rides	Total Price
5	\$35
11	\$59

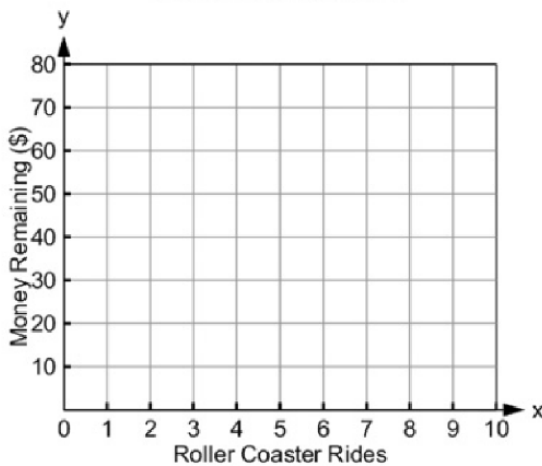
- a) What are the prices, in dollars, for the entry fee and for each roller coaster ride?

entry fee: \$

one roller coaster ride: \$

- b) Jerry has \$70 when he goes to the theme park. He only spends the money on the entry fee and roller coaster rides. On the grid shown below, draw a graph showing the amount of money Jerry has remaining after he enters the theme park and as he rides the roller coasters in the theme park.

Jerry's Money Remaining



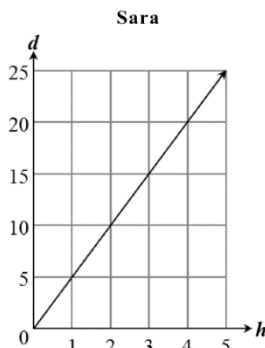
- c) Explain how the y-intercept and the slope of the function in **part a)** differs from the y-intercept and the slope of the function in **part b)**. Be sure to indicate what each represents in your explanation.

14. The table shows the relationship between the number of hours, h , John has been hiking and the total distance, d , he has traveled in kilometers.

John

h	0	1	2	3	4	5
d	0	4	8	12	16	20

The graph shows the distance Sara hiked over the same time period.



Who hikes faster?

- A. Sara
 B. John
 C. They hike at the same rate
 D. There is not enough information to determine