

- 1 In which of the given situations is the independent event underlined?
- A number of bricks; height of the wall
  - B gallons of fuel consumed; length of an airplane flight
  - C total cost to hire an electrician; electrician's hourly cost
  - D speed of a car; distance traveled in 3 hours

- 2 Which is the *dependent* variable in the function  $d = f(k) = 3k + 4$ ?

- F  $f$
- G  $d$
- H  $k$
- J 3

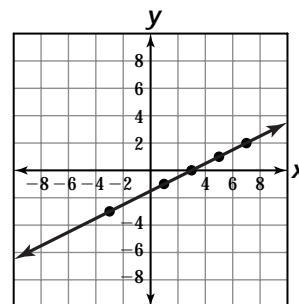
- 3 Which is the *independent* variable in the function  $f(k) = 3(k^2 + 4)$ ?

- A  $f$
- B  $h$
- C  $k$
- D 4

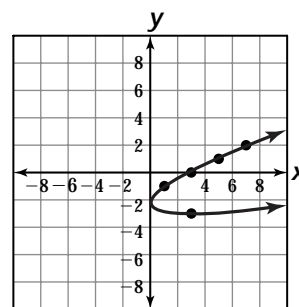
- 4 Which of the following represents the graph of the pattern in the table?

$x$	$f(x)$
-3	-3
1	-1
3	0
5	1
7	2

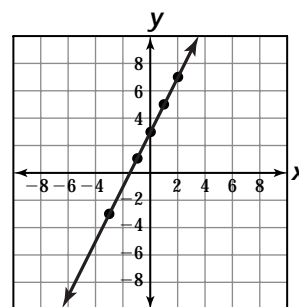
F



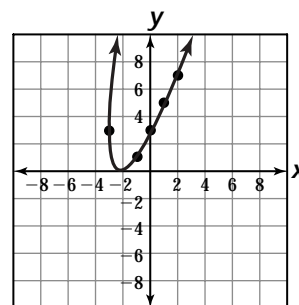
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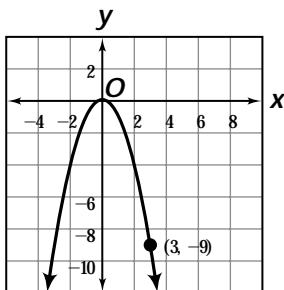
J



- 5 Write an equation for the relationship between the values in the table.

$x$	$y$
-4	-4
0	4
2	8
6	16

- A  $y = -2x + 4$   
 B  $y = 2x + 4$   
 C  $y = -2x - 4$   
 D  $y = 2x - 4$
- 6 This is the graph of which equation?



- F  $y = x^2 - 10$   
 G  $y \geq x^2$   
 H  $y \leq -x^2$   
 J  $y = -x^2$
- 7 Let  $f(x) = 3x + 2$  and  $g(x) = x - 3$ . What is  $f(g(2))$ ?
- A -1  
 B 0  
 C 1  
 D 2

- 8 The cost  $C(m)$  of a call from Houston to San Antonio is a function of the cost of the first minute of the call, \$0.40, and the cost of each additional minute  $m$ . Which function models the rule for a 10-minute call?

- F  $C(m) = \$0.40m$   
 G  $C(m) = \$0.40 + 9m$   
 H  $C(m) = \$0.40 + 10m$   
 J  $C(m) = \$0.40m + 10$

- 9 The total cost  $c$  of hiring an architect to design a building is \$2,000 plus \$3.00 per square foot  $s$  of the final building. Which equation shows that function?

- A  $f(s) = 2,000 + 3c$   
 B  $f(c) = 3(2,000 + s)$   
 C  $c = f(s) = 2,000 + 3s$   
 D  $f(s) = 3(2,000 - c)$

- 10 In the equation  $y = f(x) = 2x^2 - 3x^2$ , as  $x$  increases,

- F  $y$  increases.  
 G  $y$  decreases.  
 H  $y$  does not change.  
 J  $y$  decreases then increases.

- 11 Which table below represents the increase in population for each state?

**1950 Population**  
(rounded to the nearest hundred thousand)

State	Population
Arkansas	1,900,000
Indiana	3,900,000
Michigan	6,400,000

Source: Bureau of the Census, U.S. Dept. of Commerce

**1990 Population**  
(rounded to the nearest hundred thousand)

State	Population
Arkansas	2,400,000
Indiana	5,500,000
Michigan	9,300,000

Source: Bureau of the Census, U.S. Dept. of Commerce

**A Population Increase of States**

State	Population Increase
Arkansas	43,000,000
Indiana	94,000,000
Michigan	157,000,000

**B Population Increase of States**

State	Population Increase
Arkansas	50,000
Indiana	160,000
Michigan	290,000

**C Population Increase of States**

State	Population Increase
Arkansas	1,500,000
Indiana	1,600,000
Michigan	2,900,000

**D Population Increase of States**

State	Population Increase
Arkansas	500,000
Indiana	1,600,000
Michigan	2,900,000

**Questions 12 and 13 are open-ended griddable items.**

- 12 The length (in feet) of a panpipe is inversely proportional to its pitch (in hertz). The inverse variation is modeled by the equation  $p = \frac{495}{l}$ .

Find the length in feet required to produce a pitch of 220 hertz.

- 13 A certain medication for dogs recommends that a dog be given 3 milliliters per 10 pounds of body weight. What is the recommended dosage for a dog that weighs 45 pounds?

