

Functional Notation Practice

Use the following information to answer the first question.

A math student was given a function and asked to find $f(8)$. Consider the possible meanings of this notation.

Statement 1	This means the largest value of x is 8.
Statement 2	This means that since $x = 8$, then $y = 8$.
Statement 3	This means find the value of y when $x = 8$.
Statement 4	This means find the value of x when $y = 8$.

1. The correct statement is

- A) 1 B) 2 C) 3 D) 4

2. If the point $(-2,7)$ is on the graph of a linear function, then

- A) $f(7) = -2$ B) $f(-2) = 7$ C) $f(-2) = -2 + 7$ D) $f(7) = 7 + -2$

3. If $f(x) = -\left(\frac{2}{3}\right)x + 4$, then $f(-9)$ is equal to _____.

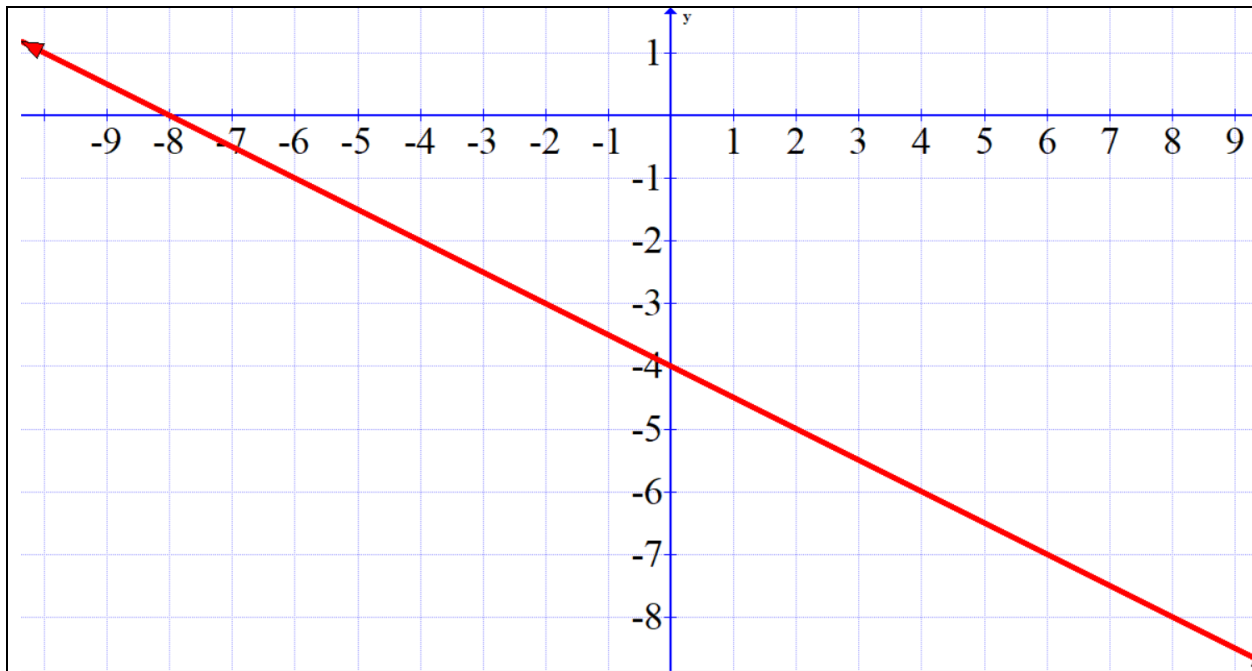
Use the following information to answer the next question.

A math student was told that the relationship between the independent variable (x) and the dependent variable (y) is such that given any x , multiply it by 10 and add 6, to get y . In functional notation, the student knew that the relationship can be written symbolically by $f(x) = 10x + 6$.

4. If $f(x) = 36$, then the value of x is

- A) 3 B) 366 C) 10 D) 6

Use the following graph to answer the next question.



5. The correct statement is

A) $f(0) = -8$

B) $f(-4) = -1$

C) $f(2) = -5$

D) $f(6) = -8$

6. If the point (5,7) is on the function $f(x) = \left(\frac{4}{5}\right)x + K$, then the value of K is _____.

Use the following information to answer the next question.

Recalling that 'f' doesn't always have to be the letter to indicate a function, a math teacher gave her students two functions not using either an equation or a graph. As a list of ordered pairs, $h(x) = \{(-1, -11), (2, -5), (5, 1), (7, 5), (10, 11), (15, 21)\}$
As a table of values, $j(x) =$

x	y
-4	14
-1	5
3	-7
6	-16
11	-29

The following statements are made.

Statement 1	$h(5) = 1$
Statement 2	$h(10) < h(2)$
Statement 3	$j(-1) = -7$
Statement 1	$j(-4) > j(11)$

7. The two true statements are

- A) 1 and 2 B) 3 and 4 C) 1 and 4 D) 2 and 3

Use the following information to answer the next question.

A car is being lowered onto a barge to be shipped abroad. The car is lowered at a constant rate of 1.75 feet per second, starting from a height of 66.5 feet above the barge. A function to describe this scenario is $h(s) = 66.5 - 1.75s$, where h is the height above the barge and s is the time in seconds.

8. A) Determine $h(12)$.

B) Explain what the answer in A) above means in this context.

C) How long does it take for the car to be loaded onto the barge?

Functional Notation Practice Solutions

Use the following information to answer the first question.

A math student was given a function and asked to find $f(8)$. Consider the possible meanings of this notation.

Statement 1	This means the largest value of x is 8.
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Statement 3	This means find the value of y when $x = 8$.
Statement 4	This means find the value of x when $y = 8$.

1. The correct statement is

A) 1

B) 2

C) 3

D) 4

Solution

The correct answer is C.

2. If the point $(-2,7)$ is on the graph of a linear function, then

A) $f(7) = -2$

B) $f(-2) = 7$

C) $f(-2) = -2 + 7$

D) $f(7) = 7 + -2$

Solution

Since the point $(-2,7)$ is on the graph, we know that when $x = -2$, then $y = 7$. The functional notation representing this is $f(-2) = 7$.

The correct answer is B.

3. If $f(x) = -\left(\frac{2}{3}\right)x + 4$, then $f(-9)$ is equal to 10.

Solution

We are asked to determine the value of the function, f , when $x = -9$. Since $f(x)$ is the same as y , we can rewrite the equation as,

$$y = -\left(\frac{2}{3}\right)x + 4$$

Substitute $x = -9$ into this equation and solve for y .

$$y = -\left(\frac{2}{3}\right)(-9) + 4$$

$$y = \frac{18}{3} + 4$$

$$y = 6 + 4$$

$$y = 10$$

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A math student was told that the relationship between the independent variable (x) and the dependent variable (y) is such that given any x , multiply it by 10 and add 6, to get y . In functional notation, the student knew that the relationship can be written symbolically by $f(x) = 10x + 6$.

4. If $f(x) = 36$, then the value of x is

A) 3

B) 366

C) 10

D) 6

Solution

$$f(x) = 10x + 6.$$

Substitute 36 for $f(x)$.

$$36 = 10x + 6.$$

Solve for x .

$$36 - 6 = 10x + 6 - 6$$

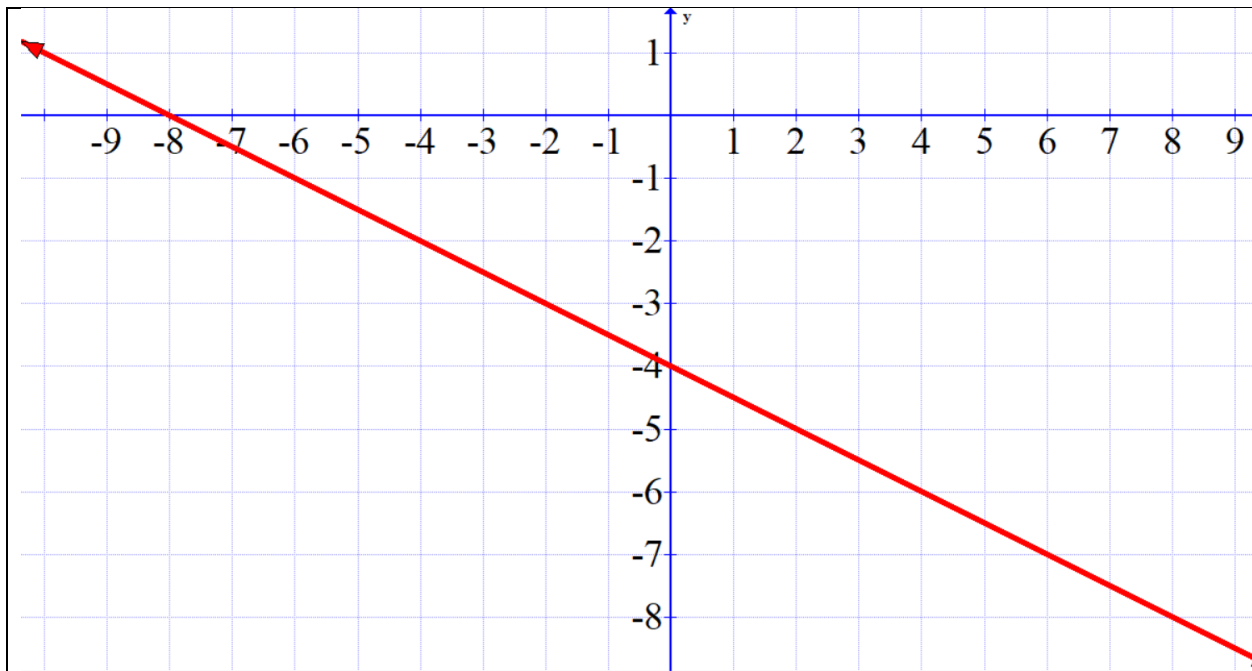
$$30 = 10x$$

$$\frac{30}{10} = \frac{10x}{10}$$

$$3 = x$$

The correct answer is A.

Use the following graph to answer the next question.



5. The correct statement is

A) $f(0) = -8$

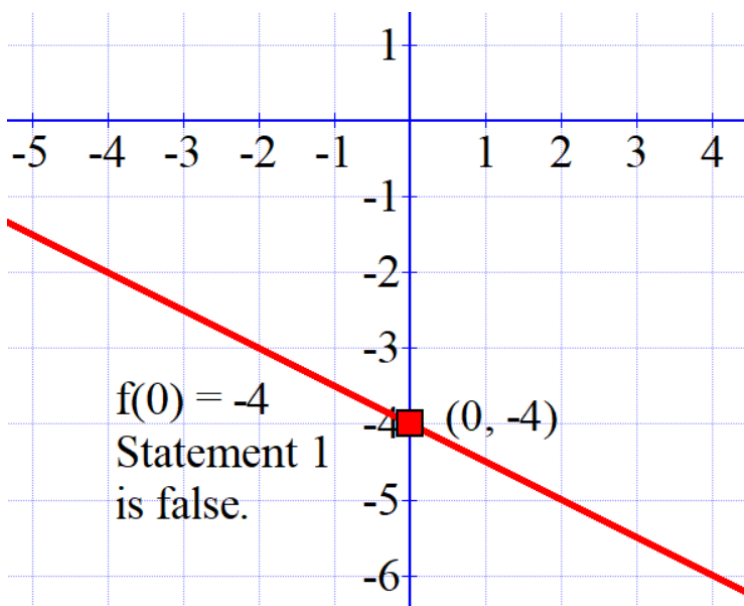
B) $f(-4) = -1$

C) $f(2) = -5$

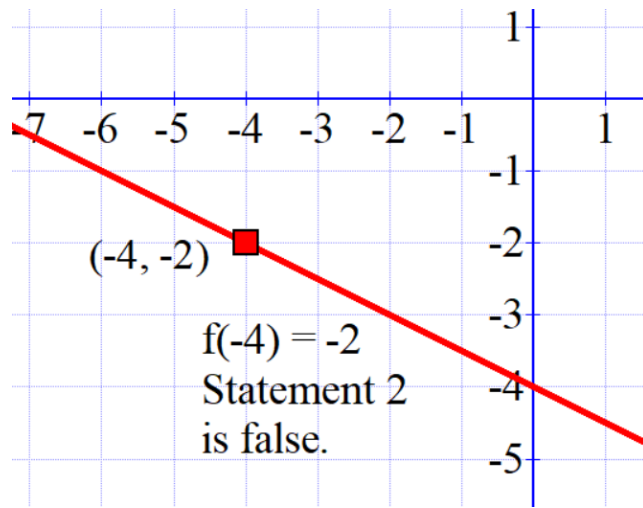
D) $f(6) = -8$

Solution

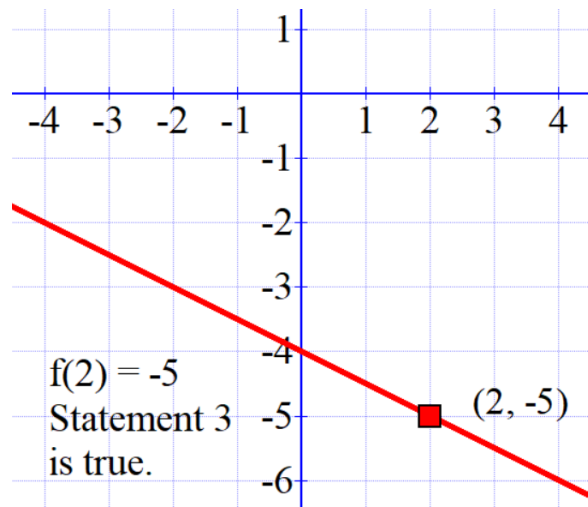
Statement 1



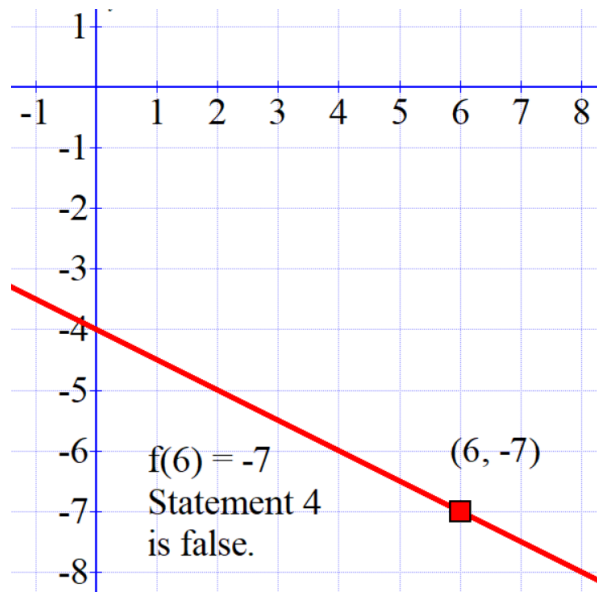
Statement 2



Statement 3



Statement 4



The correct answer is C.

6. If the point (5,7) is on the function $f(x) = \left(\frac{4}{5}\right)x + K$, then the value of K is 3.

Solution

When a point lies on a function, we know that substituting for the coordinates for x and y into the equation will satisfy the equation.

$$f(x) = \left(\frac{4}{5}\right)x + K$$

Since y is the same as f(x),

$$y = \left(\frac{4}{5}\right)x + K$$

Substitute the point (5,7).

$$7 = \left(\frac{4}{5}\right)(5) + K$$

$$7 = 4 + K$$

$$3 = K$$

The value of K is 3

Use the following information to answer the next question.

Recalling that 'f' doesn't always have to be the letter to indicate a function, a math teacher gave her students two functions not using either an equation or a graph. As a list of ordered pairs, $h(x) = \{(-1, -11), (2, -5), (5, 1), (7, 5), (10, 11), (15, 21)\}$
As a table of values, $j(x) =$

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The following statements are made.

Statement 1	$h(5) = 1$
Statement 2	$h(10) < h(2)$
Statement 3	$j(-1) = -7$
Statement 1	$j(-4) > j(11)$

7. The two true statements are

A) 1 and 2

B) 3 and 4

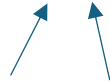
C) 1 and 4

D) 2 and 3

Solution

Statement 1

$h(x) = \{(-1, -11), (2, -5), (5, 1), (7, 5), (10, 11), (15, 21)\}$



In function h , when $x = 5$, $y = 1$. Thus, $h(5) = 1$. This statement is true.

Statement 2

$h(x) = \{(-1, -11), (2, -5), (5, 1), (7, 5), (10, 11), (15, 21)\}$



In function h , $h(10) = 11$, and $h(2) = -5$

Since 11 is not less than -5, this statement is false.

Statement 3

x	y
-4	14
-1	5
3	-7
6	-16
11	-29

In function j , $j(-1) = 5$. This statement is false.

Statement 4

x	y
-4	14
-1	5
3	-7
6	-16
11	-29

In function j , $j(-4) = 14$ and $j(11) = -29$.

Since $14 > -29$, this statement is true.

The correct answer is C.

Use the following information to answer the next question.

A car is being lowered onto a barge to be shipped abroad. The car is lowered at a constant rate of 1.75 feet per second, starting from a height of 66.5 feet above the barge. A function to describe this scenario is $h(s) = 66.5 - 1.75s$, where h is the height above the barge and s is the time in seconds.

8. A) Determine $h(12)$.

Solution

Substitute 12 for s into the equation.

$$h(12) = 66.5 - 1.75(12)$$

$$h(12) = 45.5$$

B) Explain what the answer in A) above means in this context.

Solution

After 12 seconds, the car is 45.5 feet above the barge.

C) How long does it take for the car to be loaded onto the barge?

Solution

When the car is loaded onto the barge, the height above the barge is 0.

$$0 = 66.5 - 1.75s$$

$$1.75s = 66.5$$

$$s = 38$$

It takes 38 seconds for the car to be loaded onto the barge.