

NAME _____

Module 9 Using Functions
Lesson 2 Evaluating Functions



**independent
practice**

For the set of ordered pairs $\{(0, -1), (-1, 2), (2, 3), (4, 0), (3, 4)\}$, name the output associated with the given input.

1. input: 2 output: **3** _____
 2. input: 3 output: **4** _____
 3. input: 0 output: **-1** _____
 4. input: 4 output: **0** _____

For the set of ordered pairs $\{(0, -5), (6, -2), (-5, 3), (-2, 0), (3, 6)\}$, name the input associated with the given output.

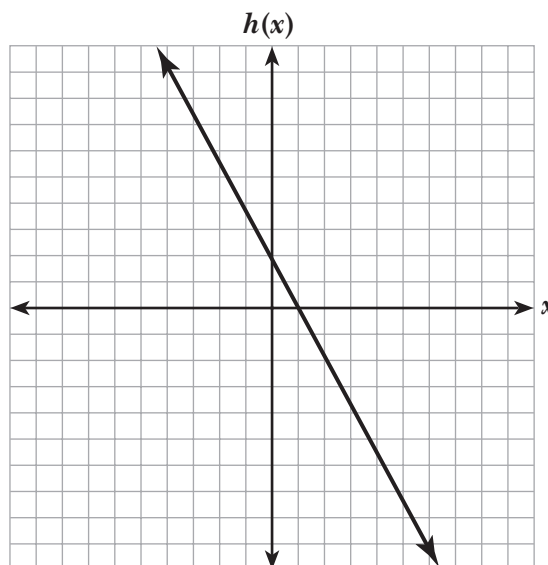
5. output: -2 input: **6** _____
 6. output: 3 input: **-5** _____
 7. output: 6 input: **3** _____
 8. output: 0 input: **-2** _____

Evaluate.

9. $t(2)$ if $t(x) = -x + 4$ **2** _____
 10. $d(-6)$ if $d(x) = x + 8$ **2** _____
 11. $c(-1)$ if $c(x) = x^2 - 3x + 2$ **6** _____
 12. $h(4)$ if $h(x) = x^2 - 4x - 2$ **-2** _____
 13. $g(5)$ if $g(x) = 10$ **10** _____
 14. $f(-3)$ if $f(x) = 0$ **0** _____
 15. $h(4)$ if $h(x) = \sqrt{x^2 - 7}$ **3** _____
 16. $g(-2)$ if $g(x) = \sqrt{5x + 11}$ **1** _____
 17. $m(2)$ if $m(x) = \frac{3x}{x - 4}$ **-3** _____
 18. $s(-4)$ if $s(x) = \frac{x - 5}{x + 5}$ **-9** _____

Use the graph of $h(x)$ to find each value.

19. $h(-1) =$ **4** _____
 20. $h(0) =$ **2** _____
 21. $h(2) =$ **-2** _____
 22. $h(3) =$ **-4** _____
 23. Use the graph of $h(x)$ to write the equation of the line as a function. **$h(x) = -2x + 2$**



Use the equation found in exercise 23 on previous page to evaluate the function at the given function values. Then, use the graph to find the given values and compare answers.

24. $h(-2) = 6$ 25. $h(1) = 0$ 26. $h(4) = -6$ 27. $h(-3) = 8$

Journal

1. Explain how to identify the output associated with a given input when given a set of ordered pairs. Explain how to identify the input associated with a given output when given a set of ordered pairs.
2. In a function, is it possible for a given output to be associated with more than one input? Explain.
3. After missing a day of class, a student reads the notation $f(x)$ as “ f times x .” Explain and correct their mistake.
4. To find the number of tires, t , needed to build c cars, a car manufacturer wrote the function $t(c) = 5t$ to show that each car requires five tires (including a spare). Identify and correct the error in the use of function notation.
5. Explain what is meant by a *constant function*. How is a constant function evaluated? Give examples to support your explanation.

Cumulative Review

For each table, use the rule to find the missing values.

1. rule: $y = x$

x	y
1	1
4	4
-3	-3
0	0

2. rule: $y = x + 4$

x	y
0	4
4	8
2	6
-2	2

3. rule: $y = x^2 + 1$

x	y
0	1
3	10
± 2	5
± 4	17

4. rule: $y = |x| + 4$

x	y
-4	8
-1	5
± 3	7
± 1	5

5. rule: $y = \sqrt{x}$

x	y
1	1
4	2
9	3
25	5

6. rule: $y = \frac{x}{4}$

x	y
4	1
10	$\frac{5}{2}$
2	$\frac{1}{2}$
16	4

Find the slope of the line containing the given pair of points.

7. $(3, -4)$ and $(-2, 0)$ $m = -\frac{4}{5}$

8. $(-3, 1)$ and $(3, 4)$ $m = \frac{1}{2}$

Write the equation of the line through the given pair of points.

9. $(0, 2)$ and $(4, 4)$ $y = \frac{1}{2}x + 2$

10. $(3, 5)$ and $(2, 7)$ $y = -2x + 11$

Possible Journal Response

1. The inputs are the first elements in the ordered pairs; the outputs are the second elements. To identify the output associated with a given input, find an ordered pair with a first element equal to the given input. The output associated with that input is the second element of the ordered pair. To identify the input associated with a given output, find an ordered pair with a second element equal to the given output. The input associated with that output is the first element of the ordered pair.
2. Yes. An output can be associated with more than one input, but any given input can be associated with only one output.
3. The student assumed that the parentheses indicated multiplication. The function notation, $f(x)$, is read "f of x."
4. The function should be $t(c) = 5c$. The input variable, c , should appear in the expression on the right side of the function equation. The manufacturer used the output variable, t , instead.
5. A constant function is a function with an unchanging output value. The output is the same, regardless of the input. To evaluate a constant function, no computation is necessary. The output for any input in the constant function $f(x) = c$ is always c . For example, in the function $f(x) = 3$, the output is always 3.

