

# Function Notation and Evaluating Functions

## Algebra 1 • Section 4.2

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 12

### Quick Review and Helpful Hints

A function pairs each input with exactly one output. Pay attention to what the input means, what rule is being applied, and whether the question asks for a value, a rule, a domain, or an interpretation.

▷ **Example:** For  $f(x) = 2x + 5$ , find  $f(4)$ .

**Work:** Replace  $x$  with 4:  $f(4) = 2(4) + 5 = 13$ .

★ **Answer:** 13

### ◆ Practice Problems

Solve each problem. Show enough work that another student could follow your thinking.

1. For  $f(x) = 3x - 2$ , find  $f(5)$ . \_\_\_\_\_

6. For  $a(t) = 12 + 6t$ , find  $a(0)$ . \_\_\_\_\_

2. For  $g(x) = x^2 + 4$ , find  $g(-3)$ . \_\_\_\_\_

7. For  $m(n) = 4n - 1$ , find  $m(n + 2)$ . \_\_\_\_\_

3. For  $h(x) = 2x + 7$ , solve  $h(x) = 19$ . \_\_\_\_\_

8. If  $f(2) = 9$  for  $f(x) = ax + 1$ , find  $a$ . \_\_\_\_\_

4. For  $p(x) = 5 - x$ , find  $p(8)$ . \_\_\_\_\_

9. For  $r(x) = \frac{x}{3} + 5$ , find  $r(12)$ . \_\_\_\_\_

5. For  $f(x) = x^2 - 2x$ , find  $f(4)$ . \_\_\_\_\_

10. For  $q(x) = 2x^2 + 1$ , find  $q(-2)$ . \_\_\_\_\_

### ◆ Word Problems

11. A car wash uses  $C(w) = 8w + 12$ . Find the cost for  $w = 6$  washes. \_\_\_\_\_

12. A plant height is  $H(d) = 15 + 2d$ . What does  $H(10)$  mean and equal? \_\_\_\_\_



## Answer Keys

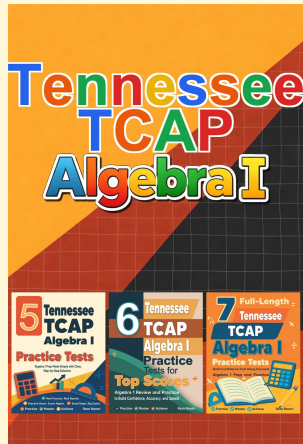
- |            |                              |
|------------|------------------------------|
| 1. 13      | 7. $4n + 7$                  |
| 2. 13      | 8. 4                         |
| 3. $x = 6$ | 9. 9                         |
| 4. -3      | 10. 9                        |
| 5. 8       | 11. \$60                     |
| 6. 12      | 12. Height after 10 days; 35 |

### Step-by-Step Explanations

- $f(5)$  just means 'use 5 as  $x$ ':  $3(5) - 2$  lands you at 13.
- Wrap that negative in parentheses so the square stays positive:  $(-3)^2 + 4 = 9 + 4 = 13$ .
- Here you know the output and want the input. Set  $2x + 7 = 19$ , peel off 7, divide by 2.
- Slide 8 into the  $x$  spot:  $5 - 8$  dips below zero to  $-3$ .
- Swap in 4 everywhere:  $4^2 - 2(4)$  is  $16 - 8$ , which leaves 8.
- With  $t = 0$ , the  $6t$  piece vanishes completely, so only the starting 12 remains.
- The input is a whole expression now. Put  $n+2$  in:  $4(n+2) - 1 = 4n + 8 - 1 = 4n + 7$ .
- You're told  $x = 2$  gives 9, so  $9 = 2a + 1$ . That makes  $2a = 8$ , and  $a = 4$ .
- Send 12 through:  $12/3$  is 4, then add 5 to reach 9.
- Square first, then multiply:  $(-2)^2$  is 4, doubled is 8, plus 1 gives 9.
- $w$  counts washes, so put in 6:  $8(6) + 12$  adds up to a \$60 bill.
- The input is days, so  $H(10)$  asks the height at day 10:  $15 + 2(10) = 35$ .



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