

# Function Notation and Evaluating Functions

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_ / 26

## Quick Review

**Function notation** replaces  $y$  with  $f(x)$  (read “ $f$  of  $x$ ”). The letter names the function; the input goes in parentheses. To **evaluate**  $f(a)$ , substitute  $a$  for every  $x$  in the rule and simplify. To **solve**  $f(x) = k$ , set the rule equal to  $k$  and solve. Other letters like  $g$ ,  $h$ , or  $p$  can name functions too. The notation looks scarier than it is:  $f(3)$  just means “use 3 as the input.” The parentheses are not multiplication — they’re holding the input.

## PRACTICE

Evaluate each function or solve for the unknown.

- |   |   |
|---|---|
| 1. $f(x) = 4x - 9$ ; $f(5)$ _____                 | 11. $f(x) = ax + b$ ; $f(0)$ _____              |
| 2. $g(x) = x^2 + 2$ ; $g(-3)$ _____               | 12. $f(x) = 2x^2 + x - 3$ ; $f(1)$ _____        |
| 3. $h(x) = -2x + 7$ ; $h(0)$ _____                | 13. $f(x) = 5x + 2$ ; $f(-1)$ _____             |
| 4. $f(x) = 3x^2 - x$ ; $f(2)$ _____               | 14. $f(x) =  x - 3 $ ; $f(-2)$ _____            |
| 5. $p(x) = \frac{x + 6}{2}$ ; $p(8)$ _____        | 15. $g(x) = \sqrt{x + 9}$ ; $g(7)$ _____        |
| 6. $g(x) = 7 - 3x$ ; $g(-4)$ _____                | 16. $f(x) = x^3$ ; $f(-2)$ _____                |
| 7. $f(x) = 2x + 5$ ; $f(x) = 17$ , $x = ?$ _____  | 17. $f(x) = 4x$ ; solve $f(x) = 0$ _____        |
| 8. $g(x) = x^2 - 1$ ; $g(x) = 24$ , $x = ?$ _____ | 18. $g(x) = 2x + 7$ ; solve $g(x) = g(3)$ _____ |
| 9. $h(x) = -x + 10$ ; $h(x) = 3$ , $x = ?$ _____  | 19. $f(x) = x^2$ ; $f(a + 1)$ _____             |
| 10. $f(x) = 6x$ ; $f(x) = 42$ , $x = ?$ _____     | 20. $f(x) = 3x - 1$ ; $f(f(2))$ _____           |

## VISUAL PRACTICE

Use the graph, table, chart, or diagram to answer the question.

21. Use the table to find  $f(2)$ .

$x$	-1	0	2	4
$f(x)$	5	3	7	11

Answer: \_\_\_\_\_

22. Use the table to find  $f(-2)$ .

$x$	-2	0	1	3
$f(x)$	9	5	2	-4

Answer: \_\_\_\_\_

## Word Problems

23. A phone plan’s monthly cost is  $C(m) = 0.10m + 25$ , where  $m$  is minutes used. Find the cost for 120 minutes. How many minutes for a \$40 budget? \_\_\_\_\_
24. The height of a ball is modeled by  $h(t) = -16t^2 + 48t + 4$  feet, where  $t$  is the time in seconds after it is thrown. Find  $h(1)$  and  $h(2)$  and state what the outputs mean. \_\_\_\_\_
25. A delivery driver charges  $f(d) = 2.50 + 1.75d$  for  $d$  miles. Find the cost of a 6-mile delivery. If the customer paid \$15, how many miles? \_\_\_\_\_
26. A lab starts with 100 bacteria, and the count doubles every hour according to  $B(t) = 100 \cdot 2^t$ . How many bacteria are there at  $t = 3$  hours, and what does  $B(0)$  represent? \_\_\_\_\_



## Answer Keys

- |  |   |
|--|---|
| <p>1. <input type="text" value="11"/></p> <p>2. <input type="text" value="11"/></p> <p>3. <input type="text" value="7"/></p> <p>4. <input type="text" value="10"/></p> <p>5. <input type="text" value="7"/></p> <p>6. <input type="text" value="19"/></p> <p>7. <input type="text" value="x = 6"/></p> <p>8. <input type="text" value="x = ±5"/></p> <p>9. <input type="text" value="x = 7"/></p> <p>10. <input type="text" value="x = 7"/></p> <p>11. <input type="text" value="b"/></p> <p>12. <input type="text" value="0"/></p> <p>13. <input type="text" value="-3"/></p> | <p>14. <input type="text" value="5"/></p> <p>15. <input type="text" value="4"/></p> <p>16. <input type="text" value="-8"/></p> <p>17. <input type="text" value="x = 0"/></p> <p>18. <input type="text" value="x = 3"/></p> <p>19. <input type="text" value="a&lt;sup&gt;2&lt;/sup&gt; + 2a + 1"/></p> <p>20. <input type="text" value="14"/></p> <p>21. <input type="text" value="7"/></p> <p>22. <input type="text" value="9"/></p> <p>23. <input type="text" value="\$37; 150 min"/></p> <p>24. <input type="text" value="h(1) = 36, h(2) = 36"/></p> <p>25. <input type="text" value="\$13; 7.14 miles"/></p> <p>26. <input type="text" value="B(3) = 800, B(0) = 100"/></p> |
|--|---|

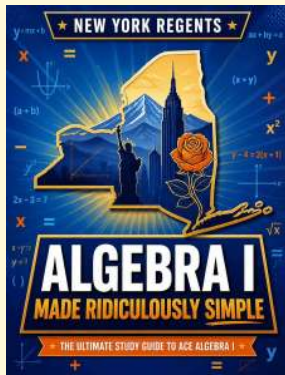
### Step-by-Step Tutor Notes

1. Put the given value into the expression first, then simplify from the inside out. Substitute:  $f(5) = 4(5) - 9 = 20 - 9 = 11$ . That confirms the final answer is 11.
2. Put the given value into the expression first, then simplify from the inside out. Substitute (in parentheses!):  $g(-3) = (-3)^2 + 2 = 9 + 2 = 11$ . That confirms the final answer is 11.
3.  $h(0) = -2(0) + 7 = 0 + 7 = 7$ . (Using 0 as the input usually gives the  $y$ -intercept.)
4. Focus on the main idea of the problem, then simplify carefully.  $f(2) = 3(2)^2 - 2 = 3(4) - 2 = 12 - 2 = 10$ . So the answer is 10.
5. Start with the definition the problem is testing, then apply it directly.  $p(8) = \frac{8+6}{2} = \frac{14}{2} = 7$ . So the answer is 7.
6.  $g(-4) = 7 - 3(-4) = 7 + 12 = 19$ . Watch the sign —  $-3$  times  $-4$  is positive.
7. Move carefully through the arithmetic; one clean operation usually unlocks the next one. Set equal:  $2x + 5 = 17$ . Subtract 5:  $2x = 12$ . Divide:  $x = 6$ . After simplifying, the answer is  $x = 6$ .
8.  $x^2 - 1 = 24$ , so  $x^2 = 25$ . Two solutions:  $x = 5$  or  $x = -5$  (squaring loses sign info).
9. For a table question, slow down and locate the exact row, column, or cell before calculating.  $-x + 10 = 3 \Rightarrow -x = -7 \Rightarrow x = 7$ . This gives  $x = 7$ .
10. Work one inverse operation at a time and keep both sides balanced. Divide both sides by 6:  $x = 7$ . After simplifying, the answer is  $x = 7$ .
11. Focus on the main idea of the problem, then simplify carefully.  $f(0) = a(0) + b = b$ . The  $y$ -intercept is always  $f(0)$ . So the answer is  $b$ .
12. Use the structure of the expression to find the important point, then check that it fits the context.  $f(1) = 2(1) + 1 - 3 = 2 + 1 - 3 = 0$ . (A zero at  $x = 1$ ). That leads to 0.
13. Use the clue in the question first, then let the arithmetic finish the job.  $f(-1) = 5(-1) + 2 = -5 + 2 = -3$ . So the answer is  $-3$ .
14. Start with the definition the problem is testing, then apply it directly.  $f(-2) = |-2 - 3| = |-5| = 5$ . Absolute value strips the sign. So the answer is 5.
15. This is a good place to slow down, check the notation, and simplify cleanly.  $g(7) = \sqrt{7+9} = \sqrt{16} = 4$ . So the answer is 4.
16. Use the clue in the question first, then let the arithmetic finish the job.  $f(-2) = (-2)^3 = -8$ . Negative cubed stays negative. So the answer is  $-8$ .
17.  $4x = 0$ , so  $x = 0$ . (The only zero of a non-horizontal line through the origin is at  $x = 0$ .)
18.  $g(3) = 2(3) + 7 = 13$ . So solve  $2x + 7 = 13$ :  $x = 3$ . (A one-to-one function maps each output back to one input.)
19. Substitute  $a + 1$  for  $x$ :  $f(a + 1) = (a + 1)^2 = a^2 + 2a + 1$ . (Expanding by FOIL.)
20. Inside first:  $f(2) = 3(2) - 1 = 5$ . Now  $f(5) = 3(5) - 1 = 14$ . (Composing means feeding the output back as the input.)
21. Read the table by matching the correct row and column first, then use the count or total that fits the question. Look in the row for  $x = 2$ . The matching function value is 7. This gives 7.
22. This is a good place to slow down, check the notation, and simplify cleanly. When  $x = -2$ , the table gives  $f(x) = 9$ . So the answer is 9.
23. Evaluate  $C(120) = 0.10(120) + 25 = 12 + 25 = 37$ . For \$40: set  $0.10m + 25 = 40$ , so  $0.10m = 15$ , giving  $m = 150$  minutes.
24.  $h(1) = -16(1)^2 + 48(1) + 4 = -16 + 48 + 4 = 36$  ft.  $h(2) = -16(4) + 48(2) + 4 = -64 + 96 + 4 = 36$  ft. (Same height because the ball passes that level on the way up and again on the way down.)
25.  $f(6) = 2.50 + 1.75(6) = 2.50 + 10.50 = 13.00$ . For \$15:  $2.50 + 1.75d = 15$ , so  $1.75d = 12.50$ , giving  $d \approx 7.14$  miles.
26.  $B(3) = 100 \cdot 2^3 = 100 \cdot 8 = 800$ .  $B(0) = 100 \cdot 2^0 = 100 \cdot 1 = 100$ . (Any nonzero number to the 0 power is 1.)



Scan Me

## Want a Full Algebra 1 Textbook? Try Our New York Regents Made Simple Book!



### New York Regents Algebra I Made Ridiculously Simple

The friendly, step-by-step Algebra 1 textbook  
Plain-English explanations, guided practice, and review support.



Scan Me

Full Lessons Inside

Concepts  
Practice  
Mastery

**Important:** All our test books contain **unique, completely different tests** from each other! Each book offers fresh practice questions—no repeats!

#### 5 Practice Tests

- ✓ 5 complete practice tests with detailed explanations
- ✓ Perfect foundation for Regents test preparation
- ✓ Builds confidence and test-taking skills
- ✓ High-quality questions aligned with state standards

Start your practice journey!

#### 6 Practice Tests

- ✓ 6 complete practice tests with detailed explanations
- ✓ **Unique tests**—different from the 5 tests book
- ✓ Perfect for more practice after mastering 5 tests
- ✓ Builds even more confidence and test-taking skills
- ✓ Same high-quality questions aligned with standards

Take your practice to the next level!

#### 7 Practice Tests

- ✓ 7 complete practice tests for maximum preparation
- ✓ **Unique tests**—different from 5 and 6 tests books
- ✓ The most comprehensive practice for Algebra 1
- ✓ Ideal for students aiming for top scores
- ✓ Extensive practice builds mastery and confidence

Go all the way with comprehensive practice!

☐ STUDENT FAVORITE • Master Algebra I From the Ground Up ☐



### Algebra I for Beginners

Written by a top math teacher & aligned with national and state Algebra I courses. From linear equations to graphing quadratics — explained the easy way.

- ✓ **Complete coverage** of every Algebra I concept — perfect companion to these worksheets
- ✓ **Step-by-step explanations** with worked examples on every topic
- ✓ **QR codes in every chapter** for free video lessons & bonus practice
- ✓ **2 full-length practice tests** with detailed answer keys

- ✓ 100% Guaranteed
- ✓ Lifetime Support
- ✓ Trusted by Teachers

Start Your Algebra Journey Today! →

★ STUDENT'S #1 CHOICE ★

Teacher-recommended • 12,000+ Happy Students

↓ PDF EDITION



Scan Me

Instant download • any device

☐ PAPERBACK



Scan Me

Paperback on Amazon

Hold it in your hands

Pair these free worksheets with *Algebra I for Beginners* and you have a complete self-paced course — concept lessons, daily practice, and full exam-style reviews, all in one path. →

[EffortlessMath.com/product/algebra-i-for-beginners](https://EffortlessMath.com/product/algebra-i-for-beginners)