

# Function Input Quest

*Read, evaluate, and interpret function notation.*

**HIGH SCHOOL • HSF-IF.A**

**CCSS.Math.Content.HSF-IF.A** "Understand the concept of a function and use function notation"

NAME \_\_\_\_\_

DATE \_\_\_\_\_

## INPUTS AND OUTPUTS

A function gives exactly one output for each input. In  $f(x)$ ,  $x$  names the input, and  $f(x)$  names the output. To find  $f(a)$ , replace  $x$  with  $a$  and simplify.

## WORKED EXAMPLE

If  $h(x) = 2x + 7$ , find  $h(6)$ .

1. Start with  $h(x) = 2x + 7$  and substitute  $x = 6$ .
2.  $h(6) = 2(6) + 7$ .
3.  $h(6) = 12 + 7 = 19$ .

**Answer:  $h(6) = 19$**

## PRACTICE 6 problems

**1** If  $f(x) = 4x + 1$ , find  $f(8)$ .

**ANSWER** \_\_\_\_\_

**2** If  $p(x) = 5x - 9$ , find  $p(-4)$ .

**ANSWER** \_\_\_\_\_

**3** A table shows values of  $r$ . When  $x = -8$ ,  $r(x) = 13$ . When  $x = 0$ ,  $r(x) = 15$ . When  $x = 9$ ,  $r(x) = -1$ . Find  $r(9)$ .

**ANSWER** \_\_\_\_\_

**4** If  $s(x) = x/3 + 8$ , find  $s(15)$ .

**ANSWER** \_\_\_\_\_

**5** A relation has the pairs  $(1, 10)$ ,  $(5, 14)$ , and  $(9, 18)$ . Does this relation define a function?

**ANSWER** \_\_\_\_\_

**6** In  $k(10) = -8$ , identify the input and the output.

**ANSWER** \_\_\_\_\_

## APPLY IT Show your work

- 1** A music app charges \$8 each month plus \$3 for each downloaded album. The total cost is  $C(a) = 8 + 3a$ , where  $a$  is the number of albums downloaded. Find  $C(13)$ .

WORK SPACE

ANSWER \_\_\_\_\_

- 2** In a game, you begin with 10 coins and earn 15 coins for each completed level. Your coin total is  $B(l) = 10 + 15l$ , where  $l$  is the number of completed levels. Find  $B(9)$ .

WORK SPACE

ANSWER \_\_\_\_\_

## CHALLENGE One step up

### CHALLENGE

A relation has the pairs  $(1, 8)$ ,  $(9, 14)$ , and  $(1, 15)$ . Is the relation a function? Explain your reasoning.

---

---

## PART 1 • PRACTICE

| # | PROBLEM                                                                                                                             | ANSWER                                         |
|---|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 1 | If $f(x) = 4x + 1$ , find $f(8)$ .                                                                                                  | <b><math>f(8) = 33</math></b>                  |
| 2 | If $p(x) = 5x - 9$ , find $p(-4)$ .                                                                                                 | <b><math>p(-4) = -29</math></b>                |
| 3 | A table shows values of $r$ . When $x = -8$ , $r(x) = 13$ . When $x = 0$ , $r(x) = 15$ . When $x = 9$ , $r(x) = -1$ . Find $r(9)$ . | <b><math>r(9) = -1</math></b>                  |
| 4 | If $s(x) = x/3 + 8$ , find $s(15)$ .                                                                                                | <b><math>s(15) = 13</math></b>                 |
| 5 | A relation has the pairs $(1, 10)$ , $(5, 14)$ , and $(9, 18)$ . Does this relation define a function?                              | <b>Yes, each input has exactly one output.</b> |
| 6 | In $k(10) = -8$ , identify the input and the output.                                                                                | <b>Input: 10; output: -8.</b>                  |

## PART 2 • APPLY IT

1. **\$47** Substitute 13 for  $a$ :  $C(13) = 8 + 3(13) = 47$ .
2. **145 coins** Substitute 9 for  $l$ :  $B(9) = 10 + 15(9) = 145$ .

## CHALLENGE

**No. The input 1 has two different outputs, 8 and 15.**

Accept equivalent function-notation statements, such as 33 for  $f(8) = 33$ . For the challenge, students must state that one input cannot have more than one output.