LESSON MAKER PRO

# Function Face-Off

*Find outputs and compare how functions change.*

**GRADE 7 · 7A.AF.D**

**7A.AF.D** "Explain, evaluate, and compare functions."

NAME _____ DATE _____

## COMPARE AT THE SAME INPUT

A function gives one output for each input. To evaluate a rule, replace x with the input and calculate. To compare functions, use the same input for both, or compare how much each output changes when x increases by 1.

## WORKED EXAMPLE

For f(x) = 7x + 9, find f(11).

1. Replace x with 11: f(11) = 7(11) + 9.
2. Multiply: 7(11) = 77.
3. Add: 77 + 9 = 86.

**Answer: f(11) = 86**

## PRACTICE 6 problems

**1** For f(x) = 2x + 6, find f(8).

**ANSWER** _____

**2** Use the table to find f(2).

**FUNCTION F**

| x | f(x) |
|---|---|
| 0 | 8 |
| 1 | 12 |
| 2 | 16 |
| 3 | 20 |

**ANSWER** _____

**3** At x = 2, which function has the larger output, f(x) = 6x + 1 or g(x) = x + 14? By how much?

**ANSWER** _____

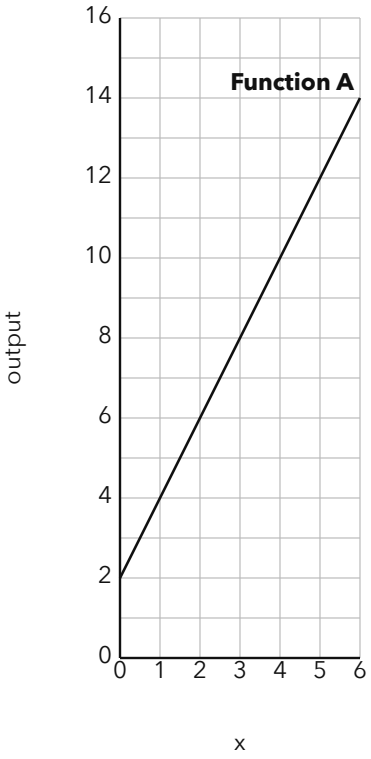
**4** Function A follows the table. Function B has the rule B(x) = 8x + 1. Which function's output grows more when x increases by 1, and by how much more?

**FUNCTION A**

| x | A(x) |
|---|---|
| 0 | 2 |
| 1 | 8 |
| 2 | 14 |

**ANSWER** _____

**5** At x = 6, which has the larger output, Function A on the graph or h(x) = x + 10?




**ANSWER** _____

**6** Write a rule for the function in the table.

**FUNCTION F**

| x | f(x) |
|---|---|
| 0 | 1 |
| 2 | 5 |
| 6 | 13 |

**ANSWER** _____

## APPLY IT Show your work

**1** At a school fair, Photo Booth A charges $2 to start and $2 per print. Photo Booth B charges $8 to start and $1 per print. For 8 prints, which booth costs less, and by how much?

WORK SPACE

**ANSWER** _____

**2** Stream A gains viewers at a steady rate, as shown in the table. Stream B starts with 6 viewers and gains 2 viewers each minute. Which stream has more viewers after 6 minutes, and how many more?

**STREAM A**

| Minutes | Viewers |
|---|---|
| 0 | 10 |
| 2 | 16 |
| 4 | 22 |

**ANSWER** _____

## CHALLENGE One step up

In a game, Team A starts with 18 points and gains 2 points each round. Team B starts with 0 points and gains 5 points each round. After how many rounds will they tie? Which team will lead after 8 rounds? Show calculations to explain both answers.

WORK SPACE AND ANSWER

**ANSWER KEY**

# Function Face-Off

**GRADE 7 · 7A.AF.D**

## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | For f(x) = 2x + 6, find f(8). | **22** |
| 2 | Use the table to find f(2). | **16** |
| 3 | At x = 2, which function has the larger output, f(x) = 6x + 1 or g(x) = x + 14? By how much? | **g has the larger output by 3.** |
| 4 | Function A follows the table. Function B has the rule B(x) = 8x + 1. Which function's output grows more when x increases by 1, and by how much more? | **Function B grows by 2 more per increase of 1 in x.** |
| 5 | At x = 6, which has the larger output, Function A on the graph or h(x) = x + 10? | **h(x)** |
| 6 | Write a rule for the function in the table. | **f(x) = 2x + 1** |

## PART 2 · APPLY IT

1. **Photo Booth B costs $2 less.** Booth A costs $2 + 8($2) = $18. Booth B costs $8 + 8($1) = $16.
2. **Stream A has 10 more viewers.** Stream A gains 3 viewers per minute, so it has 10 + 6(3) = 28 viewers. Stream B has 6 + 6(2) = 18 viewers, a difference of 10.

## CHALLENGE

**They tie after 6 rounds because 18 + 2(6) = 30 and 5(6) = 30. After 8 rounds, Team A has 34 points and Team B has 40 points, so Team B leads.**

Accept equivalent function notation for the rule in Problem 6. For comparison questions, accept calculations that support the stated result.