

Function Face-Off

Evaluate and compare rules, tables, and relationships.

GRADE 8 • MA.8.F.1

MA.8.F.1 "Define, evaluate and compare functions."

NAME _____

DATE _____

FUNCTION CHECK

A function gives exactly one output for each input. To evaluate a function, replace x with the given input and simplify. To compare functions, find their outputs for the same input.

WORKED EXAMPLE

Evaluate $m(x) = 8x - 6$ when $x = 7$.

1. Replace x with 7: $m(7) = 8(7) - 6$.
2. Multiply: $m(7) = 56 - 6$.
3. Subtract: $m(7) = 50$.

Answer: $m(7) = 50$

PRACTICE 6 problems

- 1** Evaluate $f(x) = 3x + 2$ when $x = 4$.

ANSWER _____

- 2** Evaluate $g(x) = x/5 + 3$ when $x = 10$.

ANSWER _____

- 3** Does this table define a function? Input: 1, 2, 3 Output: 4, 10, 16

ANSWER _____

- 4** Use the table to find $h(4)$. Input: 0, 2, 4 Output: 11, 15, 19

ANSWER _____

- 5** Function p has rule $p(x) = 2x + 1$. Function q has this table. Input: 1, 5 Output: 7, 13 At $x = 5$, which function has the greater output? By how much?

ANSWER _____

- 6** Does this relation define a function? Input: 2, 5, 2 Output: 4, 12, 13

ANSWER _____

APPLY IT Show your work

- 1** Two gaming clubs track points earned after x completed challenges. Club A uses $A(x) = 3x + 4$. Club B has this table. Challenges: 1, 3, 5 Points: 5, 11, 17 After 5 challenges, which club has more points, and how many more?

WORK SPACE

ANSWER _____

- 2** Rina is choosing a monthly music plan. Plan P costs $P(x) = 2x + 9$ dollars for x downloaded albums. Plan Q has this table. Albums: 0, 4, 9 Cost in dollars: 9, 15, 25 If Rina downloads 4 albums, which plan costs less, and by how much?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Function R has rule $R(x) = 3x + 2$. Function S has rule $S(x) = x + 12$. Find the input where the functions have the same output. Then state that common output.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Evaluate $f(x) = 3x + 2$ when $x = 4$.	$f(4) = 14$
2	Evaluate $g(x) = x/5 + 3$ when $x = 10$.	$g(10) = 5$
3	Does this table define a function? Input: 1, 2, 3 Output: 4, 10, 16	Yes, it defines a function.
4	Use the table to find $h(4)$. Input: 0, 2, 4 Output: 11, 15, 19	$h(4) = 19$
5	Function p has rule $p(x) = 2x + 1$. Function q has this table. Input: 1, 5 Output: 7, 13 At $x = 5$, which function has the greater output? By how much?	q has the greater output by 2.
6	Does this relation define a function? Input: 2, 5, 2 Output: 4, 12, 13	No, it does not define a function because input 2 has two outputs.

PART 2 • APPLY IT

- Club A has 2 more points.** $A(5) = 3(5) + 4 = 19$. Club B has 17 points, so Club A has 2 more points.
- Plan Q costs \$2 less.** $P(4) = 2(4) + 9 = 17$. Plan Q costs \$15, so Plan Q costs \$2 less.

CHALLENGE

$x = 5$; $R(5) = S(5) = 17$

Accept equivalent evaluation work and clear statements of comparison. For function identification, require that each input has only one output.