LESSON MAKER PRO

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

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.

WORK SPACE AND ANSWER

ANSWER KEY

Function Face-Off

GRADE 8 · MA.8.F.1

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

1. **Club A has 2 more points.** A(5) = 3(5) + 4 = 19. Club B has 17 points, so Club A has 2 more points.
2. **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.