LESSON MAKER PRO

Function Power Check

Practice evaluating and comparing function rules.

GRADE 8 · 8.F.A

CCSS.Math.Content.8.F.A "Define, evaluate, and compare functions."

NAME _____ DATE _____

THE BIG IDEA

A function gives each input exactly one output. To evaluate a function, replace the input variable with the given value and simplify. To compare linear functions, compare their starting values and rates of change.

WORKED EXAMPLE

Evaluate p(n)=6n+1 when n=2.

1. Replace n with 2: p(2)=6(2)+1.
2. Multiply: p(2)=12+1.
3. Add: p(2)=13.

Answer: p(2)=13

PRACTICE 6 problems

1 Is this relation a function? {(0, 7), (4, 15), (8, 23)}. Write yes or no and explain.

ANSWER _____

2 Evaluate q(x)=5x-8 when x=4.

ANSWER _____

3 The rule is r(t)=-4t+7. What input t gives r(t)=-9?

ANSWER _____

4 Find the rate of change in this table: x: 0, 5, 10; y: -4, 11, 26.

ANSWER _____

5 Function f is f(x)=4x-9. Function g has this table: x: 0, 5, 10; y: 7, 22, 37. Which function has the greater rate of change?

ANSWER _____

6 Write a rule for the function in this table: x: 0, 4, 8; y: -7, 5, 17.

ANSWER _____

APPLY IT Show your work

1 A skate park rents a scooter for $7 plus $4 for each hour. Write a function C(h) for the cost, then find the cost for 5 hours.

WORK SPACE

ANSWER _____

2 Plan A costs $8 each month plus $5 per song downloaded. Plan B costs $14 each month plus $3 per song downloaded. In one month, how many songs make the costs equal? What is the equal cost?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Function A has this table: x: 0, 4, 8; y: 7, 19, 31. Function B is y=4x+9. For nonnegative inputs, which function has greater outputs? Explain your reasoning.

WORK SPACE AND ANSWER

ANSWER KEY

Function Power Check

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Is this relation a function? {(0, 7), (4, 15), (8, 23)}. Write yes or no and explain.	**Yes. Each input has exactly one output.**
2	Evaluate q(x)=5x-8 when x=4.	**q(4)=12**
3	The rule is r(t)=-4t+7. What input t gives r(t)=-9?	**t=4**
4	Find the rate of change in this table: x: 0, 5, 10; y: -4, 11, 26.	**3**
5	Function f is f(x)=4x-9. Function g has this table: x: 0, 5, 10; y: 7, 22, 37. Which function has the greater rate of change?	**f**
6	Write a rule for the function in this table: x: 0, 4, 8; y: -7, 5, 17.	**y=3x-7**

PART 2 · APPLY IT

1. **C(h)=4h+7; C(5)=$27** Use 4h+7 because the hourly cost is 4 and the starting fee is 7. Substitute h=5 to get 27.
2. **3 songs; $23** Set the costs equal: 8+5d=14+3d. Solve for d=3, then substitute to find a cost of 23.

CHALLENGE

Function B. It starts higher and has a greater rate of change, so it stays greater for every nonnegative input.

Accept equivalent rule forms such as y=-7+3x. For comparison explanations, accept language that identifies both the higher starting value and the greater rate of change.