

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

CHALLENGE

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.

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

- $C(h)=4h+7$; $C(5)=\$27$** Use $4h+7$ because the hourly cost is 4 and the starting fee is 7. Substitute $h=5$ to get 27.
- 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.