Function Fact Check

Combine two functions and check the value.

A1P.AF.E.17.a "Use arithmetic operations to combine different types of standard functions to write and evaluate functions."

NAME _____ DATE _____

CORRECT VALUE

Substitute the input into each function, then use the operation shown. The statement is a match when its value is correct.

If $p(x)=\sqrt{x}$ and $q(x)=x+2$, then $(p+q)(16)=22$.

INCORRECT VALUE

The statement is a mismatch when its value is not correct. Check each function value before combining them.

If $p(x)=\sqrt{x}$ and $q(x)=x+2$, then $(p-q)(25)=32$ is a mismatch because $5-27=-22$.

1 SORT

8 items

For Part 1, let $f(x)=3x-2$ and $g(x)=x^2+1$ and circle MATCH or MISMATCH for each statement; for Part 2, pick one item from each category and show how you checked it.

1.	$(f+g)(-2)=-3$	MATCH MISMATCH
2.	$(fg)(0)=-2$	MATCH MISMATCH
3.	$(f-g)(1)=3$	MATCH MISMATCH
4.	$(f/g)(2)=4/5$	MATCH MISMATCH
5.	$(g-f)(3)=-3$	MATCH MISMATCH
6.	$(f-g)(-1)=-7$	MATCH MISMATCH
7.	$(g/f)(4)=17/10$	MATCH MISMATCH
8.	$(f+g)(-3)=1$	MATCH MISMATCH

2 PROVE IT

Explain your thinking

Pick one item from each category and show how you checked it.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

For Part 3, use f and g to write one new MATCH statement and one new MISMATCH statement at inputs not used in Part 1.

MATCH

MISMATCH

CHALLENGE

Find all real inputs x for which (f+g)(x)=39, and show how you know.

ANSWER KEY

Function Fact Check

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	$(f+g)(-2)=-3$	**MATCH**	$f(-2)=-8$ and $g(-2)=5$, so the sum is -3.
2	$(fg)(0)=-2$	**MATCH**	$f(0)=-2$ and $g(0)=1$, so the product is -2.
3	$(f-g)(1)=3$	**MISMATCH**	$f(1)=1$ and $g(1)=2$, so the difference is -1.
4	$(f/g)(2)=4/5$	**MATCH**	$f(2)=4$ and $g(2)=5$, so the quotient is $4/5$.
5	$(g-f)(3)=-3$	**MISMATCH**	$g(3)=10$ and $f(3)=7$, so the difference is 3.
6	$(f-g)(-1)=-7$	**MATCH**	$f(-1)=-5$ and $g(-1)=2$, so the difference is -7.
7	$(g/f)(4)=17/10$	**MATCH**	$g(4)=17$ and $f(4)=10$, so the quotient is $17/10$.
8	$(f+g)(-3)=1$	**MISMATCH**	$f(-3)=-11$ and $g(-3)=10$, so the sum is -1.

PART 2 · PROVE IT

Task: Pick one item from each category and show how you checked it.
Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **MATCH**: $(f+g)(6)=53$
- **MISMATCH**: $(fg)(-4)=238$

Challenge: $x^2+3x-1=39$, so $x^2+3x-40=(x+8)(x-5)=0$. The inputs are -8 and 5.

For the Part 3 samples, $f(6)+g(6)=16+37=53$, while $f(-4)g(-4)=(-14)(17)=-238$, not 238. Part 2 explanations should show both function values and the operation used.