Function Fact Check

Sort true and false function values.

8A.AF.F.19.a "Use arithmetic operations to combine different types of standard functions to write and evaluate functions."

NAME _____ DATE _____

CORRECT VALUE

Evaluate each function at the given input, then combine the outputs. The stated value matches your result.

If $p(t)=t+7$ and $q(t)=2t$, then $(p+q)(5)=12+10=22$.

INCORRECT VALUE

The stated value does not match the result after you evaluate the functions and combine their outputs.

If $r(s)=s^2+6$ and $k(s)=5s$, then $(r-k)(6)=13$ is wrong because $42-30=12$.

1 SORT

8 items

Using $f(x)=3x-2$ and $g(x)=x^2+1$, circle RIGHT or WRONG for each statement; then choose one item from each group and explain how you checked it.

1.	$(f+g)(2)=9$	RIGHT WRONG
2.	$(fg)(-1)=-10$	RIGHT WRONG
3.	$(f-g)(0)=-1$	RIGHT WRONG
4.	$(f/g)(1)=1/2$	RIGHT WRONG
5.	$(f+g)(-2)=3$	RIGHT WRONG
6.	$(fg)(3)=21$	RIGHT WRONG
7.	$(g-f)(1)=1$	RIGHT WRONG
8.	$(f/g)(0)=-2$	RIGHT WRONG

2 PROVE IT

Explain your thinking

Choose one item from each group and explain how you checked it.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

Using f and g, write one new RIGHT statement and one new WRONG statement at x=4, using a different operation in each; give the correct value for your WRONG statement.

RIGHT _____

WRONG _____

CHALLENGE

Let h(x)=x+4. Write a true equation at x=-3 that combines f, g, and h using at least two operations, and show how you evaluated it.

ANSWER KEY

Function Fact Check

GRADE 8 · 8A.AF.F.19.a

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	(f+g)(2)=9	**RIGHT**	f(2)=4 and g(2)=5, so the sum is 9.
2	(fg)(-1)=-10	**RIGHT**	f(-1)=-5 and g(-1)=2, so the product is -10.
3	(f-g)(0)=-1	**WRONG**	f(0)=-2 and g(0)=1, so the difference is -3.
4	(f/g)(1)=1/2	**RIGHT**	f(1)=1 and g(1)=2, so the quotient is 1/2.
5	(f+g)(-2)=3	**WRONG**	f(-2)=-8 and g(-2)=5, so the sum is -3.
6	(fg)(3)=21	**WRONG**	f(3)=7 and g(3)=10, so the product is 70.
7	(g-f)(1)=1	**RIGHT**	g(1)=2 and f(1)=1, so the difference is 1.
8	(f/g)(0)=-2	**RIGHT**	f(0)=-2 and g(0)=1, so the quotient is -2.

PART 2 · PROVE IT

Task: Choose one item from each group and explain 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)

- **RIGHT**: (f+g)(4)=27 because 10+17=27.
- **WRONG**: (f-g)(4)=7 is WRONG; the correct value is 10-17=-7.

Challenge: (f+g-h)(-3)=-11+10-1=-2.

The sort has five RIGHT items and three WRONG items. For the explanations, accept any two items from opposite categories when the student evaluates both functions and checks the stated value.