LESSON MAKER PRO

One Input, One Output

Test relations shown in equations, tables, and graphs.

GRADE 8 · 8A.AF.F.18

8A.AF.F.18 "Compare and contrast relations and functions represented by equations, graphs, or tables that show related values; determine whether a relation is a function..."

NAME _____ DATE _____

THE FUNCTION TEST

A function gives each input x exactly one output y. In y = f(x), f(x) names the output for input x. If one input has two different outputs, the relation is not a function.

WORKED EXAMPLE

Is the relation in the table a function?

x	y
11	13
11	14
12	15

1. Find the repeated input: 11.
2. Its outputs, 13 and 14, differ.
3. One input has two outputs.

Answer: Not a function.

PRACTICE 4 problems

1 Is y = 2x - 1 a function? Find f(3).

ANSWER _____

2 Is $x = y^2$ a function of x? Explain using x = 1.

ANSWER _____

3 For y = -x + 6, find f(0).

ANSWER _____

4 Is x = 9 a function of x? Explain.

ANSWER _____

APPLY IT Show your work

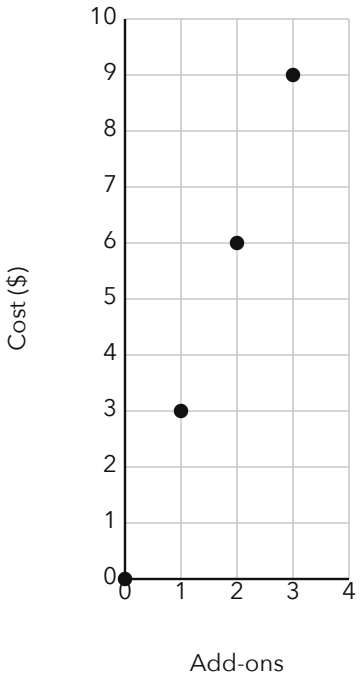
1 An app gives points for watching videos. Is points earned a function of videos watched? Use the table to explain.

VIDEO REWARDS

Videos	Points
0	0
1	6
1	8
3	10

ANSWER _____

2 A game store charges the same price for each add-on. The graph shows total cost. Is cost a function of add-ons bought? Write a rule y = f(x).



ANSWER _____

CHALLENGE One step up

Compare y = 2x + 1 with the table. Which relation is a function? At which listed inputs do all their outputs match?

RELATION B

x	y
0	1
1	3
1	4
2	5

WORK SPACE AND ANSWER

ANSWER KEY

One Input, One Output

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Is y = 2x - 1 a function? Find f(3).	**Yes; f(3) = 5.**
2	Is $x = y^2$ a function of x? Explain using x = 1.	**No. When x = 1, y can be 1 or -1.**
3	For y = -x + 6, find f(0).	**f(0) = 6.**
4	Is x = 9 a function of x? Explain.	**No. The input 9 can have more than one output y.**

PART 2 · APPLY IT

1. **No. Watching 1 video gives either 6 or 8 points in the table.** The input 1 has two different outputs.
2. **Yes; y = f(x) = 3x.** Each plotted input has one output. The cost rises by $3 per add-on.

CHALLENGE

The equation is a function; the table is not, because x = 1 has two outputs. All outputs match at x = 0 and x = 2.

Accept equivalent explanations that identify an input with two different outputs. For the challenge, x = 1 does not qualify because one of its table outputs differs from the equation's output.