LESSON MAKER PRO

One Input, One Output

Decide when a relation is a function.

GRADE 8 · 8.AF.D.13

8.AF.D.13 "Determine whether a relation is a function, defining a function as a rule that assigns to each input (independent value) exactly one output (dependent value), and given a graph, table, mapping, or set of ordered pairs."

NAME _____ DATE _____

THE FUNCTION RULE

A function gives each input exactly one output. Check repeated inputs: if the outputs differ, the relation is not a function. Different inputs may share an output.

WORKED EXAMPLE

Is the relation in the table a function?

Input	Output
7	4
9	2
7	4

1. Input 7 appears twice.
2. Its output is 4 both times.
3. No input has two different outputs.

Answer: Yes, it is a function.

PRACTICE 4 problems

1 Is {(0, 1), (3, 5), (0, 6)} a function? Explain briefly.

ANSWER _____

2 Is {(1, 6), (3, 6), (5, 8)} a function?

ANSWER _____

3 Is {(1, 3), (1, 3), (5, 8)} a function? Explain briefly.

ANSWER _____

4 Remove one pair from {(0, 1), (3, 5), (0, 6)} to make a function. Which pair could you remove?

ANSWER _____

APPLY IT Show your work

1 A game sets a coin reward for each level. Does the table show a function from level to coins? Explain.

GAME REWARDS

Level	Coins
1	10
3	12
3	14
5	16

ANSWER _____

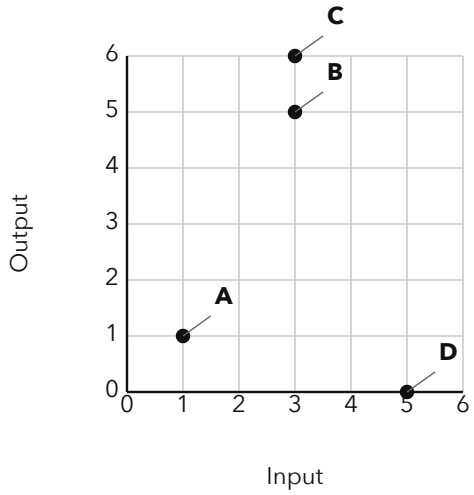
2 At a skate park, a sensor records these (minute, riders) pairs: (0, 6), (1, 8), (3, 8). Are the riders a function of the minute? Explain.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Which single point could you erase to make the graphed relation a function? Give every possible answer.



WORK SPACE AND ANSWER

ANSWER KEY

One Input, One Output

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Is {(0, 1), (3, 5), (0, 6)} a function? Explain briefly.	**No. Input 0 has outputs 1 and 6.**
2	Is {(1, 6), (3, 6), (5, 8)} a function?	**Yes.**
3	Is {(1, 3), (1, 3), (5, 8)} a function? Explain briefly.	**Yes. The repeated input 1 has the same output both times.**
4	Remove one pair from {(0, 1), (3, 5), (0, 6)} to make a function. Which pair could you remove?	**(0, 1) or (0, 6).**

PART 2 · APPLY IT

1. **No. Level 3 has two different coin rewards, 12 and 14.** Check the repeated level. It is paired with two different rewards.
2. **Yes. Each minute has exactly one number of riders.** The inputs are all different. Two inputs sharing an output does not break the function rule.

CHALLENGE

Erase B or C. They share input 3 but have different outputs.

For practice problem 4, accept either listed pair. For the challenge, students must name both possible points.