

Function Detective Files

Track inputs and outputs.

GRADE 8 • 8.PFA.2.a

8.PFA.2.a "Determine whether a relation, represented by a set of ordered pairs, a table, or a graph of discrete points is a function. Sets are limited to no more than 10 ordered pairs."

NAME _____

DATE _____

ONE INPUT, ONE OUTPUT

A relation is a function when every input has exactly one output. An output may be paired with more than one input. Check whether any input repeats with different outputs.

WORKED EXAMPLE

Is $\{(-8, 15), (-6, 15), (-3, 2)\}$ a function?

1. List the inputs: -8, -6, -3.
2. Each input appears once.
3. Output 15 repeats, but repeated outputs are allowed.

Answer: Yes. It is a function.

PRACTICE 6 problems

- 1** Decide whether $\{(4, 9), (7, 1), (4, 0), (10, 5)\}$ is a function.

ANSWER _____

- 2** Decide whether this table represents a function.
- | | | | | |
|---|---|----|----|----|
| x | 0 | 1 | 5 | 9 |
| y | 7 | 10 | 10 | 14 |

ANSWER _____

- 3** A graph has these discrete points: $\{(-7, 4), (0, 12), (7, 4), (0, 14)\}$. Does the graph represent a function?

ANSWER _____

- 4** Decide whether this table represents a function.
- | | | | | |
|---|---|----|---|----|
| x | 1 | 5 | 1 | 12 |
| y | 7 | 10 | 0 | 14 |

ANSWER _____

- 5** Decide whether $\{(-9, 1), (-4, 7), (4, 12), (10, 1)\}$ is a function.

ANSWER _____

- 6** A graph has these discrete points: $\{(0, 5), (5, 9), (7, 0), (12, 14)\}$. Does the graph represent a function?

ANSWER _____

APPLY IT Show your work

- 1** An esports club assigns each player a practice station. The record is {(Nia, 11), (Omar, 13), (Priya, 11), (Seth, 5)}. Does the relation from player to station number represent a function? Explain.

WORK SPACE

ANSWER _____

- 2** A streaming app records the relation from song title to playlist code: {(Pulse, 4), (Nova, 7), (Pulse, 10), (Drift, 12)}. Does this relation represent a function? Explain.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A relation has these pairs: {(1, 9), (5, 0), (7, 12), (10, 9)}. Write one ordered pair that could be added to make the relation no longer a function. Then explain why.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Decide whether $\{(4, 9), (7, 1), (4, 0), (10, 5)\}$ is a function.	No. It is not a function because input 4 has outputs 9 and 0.
2	Decide whether this table represents a function. $x \mid 0 \mid 1 \mid 5 \mid 9$ $y \mid 7 \mid 10 \mid 10 \mid 14$	Yes. It is a function.
3	A graph has these discrete points: $\{(-7, 4), (0, 12), (7, 4), (0, 14)\}$. Does the graph represent a function?	No. It is not a function because input 0 has outputs 12 and 14.
4	Decide whether this table represents a function. $x \mid 1 \mid 5 \mid 1 \mid 12$ $y \mid 7 \mid 10 \mid 0 \mid 14$	No. It is not a function because input 1 has outputs 7 and 0.
5	Decide whether $\{(-9, 1), (-4, 7), (4, 12), (10, 1)\}$ is a function.	Yes. It is a function.
6	A graph has these discrete points: $\{(0, 5), (5, 9), (7, 0), (12, 14)\}$. Does the graph represent a function?	Yes. It is a function.

PART 2 • APPLY IT

- Yes. It is a function because each player is assigned one station number.** Check the player names as inputs.
No player name is paired with more than one station number.
- No. It is not a function because Pulse is paired with playlist codes 4 and 10.** Check the song titles as inputs.
Pulse repeats with different playlist codes.

CHALLENGE

(1, 4). The relation would not be a function because input 1 would have outputs 9 and 4.

Accept equivalent explanations that identify one input paired with different outputs. For the challenge, accept any existing input paired with an output different from its listed output.