

Line Check

Decide which functions have a constant rate of change.

GRADE 8 • MA.8.F.1.2

MA.8.F.1.2 "Given a function defined by a graph or an equation, determine whether the function is a linear function. Given an input-output table, determine whether it could represent a linear function."

NAME _____

DATE _____

SPOT A LINEAR FUNCTION

A linear function has a constant rate of change. Its equation can be written $y = mx + b$, and its graph is a straight line. In a table, compare the changes in y and x . The rate must stay the same.

WORKED EXAMPLE

Is $y = 4x + 3$ a linear function?

1. Check whether the equation has the form $y = mx + b$.
2. Here, $m = 4$ and $b = 3$.
3. The slope is constant.

Answer: Yes, $y = 4x + 3$ is linear.

PRACTICE 6 problems

1 Is $y = -2x + 7$ a linear function?

ANSWER _____

2 Is $y = x^2 + 2$ a linear function?

ANSWER _____

3 Could this table represent a linear function?
 $x: 0, 2, 5$ $y: 1, 5, 11$

ANSWER _____

4 Could this table represent a linear function?
 $x: -2, 0, 2, 5$ $y: 8, 6, 4, 1$

ANSWER _____

5 A graph is a straight line through $(0, 2)$, $(2, 7)$, and $(6, 17)$. Is the function linear?

ANSWER _____

6 A graph connects the points $(0, 0)$, $(2, 5)$, and $(6, 11)$ with line segments. Is the function linear?

ANSWER _____

APPLY IT Show your work

- 1** In a video game, your coin total is $C = 2x + 12$, where x is the number of quests you finish. Is C a linear function of x ?

WORK SPACE

ANSWER _____

- 2** A student tracks a tablet battery during a long trip. Could this table represent a linear function of time? Time in hours: 0, 2, 5, 7 Battery percent: 100, 84, 66, 50

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Could this table represent a linear function? Explain your reasoning. x : -5, -1, 2, 8 y : -9, -1, 5, 17

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Is $y = -2x + 7$ a linear function?	Yes, it is linear.
2	Is $y = x^2 + 2$ a linear function?	No, it is not linear.
3	Could this table represent a linear function? x: 0, 2, 5 y: 1, 5, 11	Yes, it could represent a linear function.
4	Could this table represent a linear function? x: -2, 0, 2, 5 y: 8, 6, 4, 1	Yes, it could represent a linear function.
5	A graph is a straight line through (0, 2), (2, 7), and (6, 17). Is the function linear?	Yes, it is linear.
6	A graph connects the points (0, 0), (2, 5), and (6, 11) with line segments. Is the function linear?	No, it is not linear.

PART 2 • APPLY IT

- Yes, $C = 2x + 12$ is linear.** The equation has the form $y = mx + b$. Each completed quest adds the same number of coins.
- No, the table could not represent a linear function.** The rate of change is not constant across the time intervals.

CHALLENGE

Yes. Each change in y is twice the matching change in x , so the rate of change is constant.

Accept equivalent statements such as “constant rate” or “same slope” for linear functions. For table items, students may compare rates using any pair of consecutive points.