



GRADE 8 · FUNCTIONS · PRACTICE

LINEAR AND NON-LINEAR

Today's goal: I can interpret the equation $y = mx + b$ as defining a linear function whose graph is a straight line and give examples of functions that are not linear.



Pick your peppers!

Everyone does Mild & Medium. Then climb as high as you can.



Mild

Tan the Turtle



Medium

Digit the Fox



Spicy

Blaze the Dragon

WATCH MR DJ SOLVE

Is $y = -3x + 8$ linear?

- 1 Form $y = mx + b$, $m = -3$.
- 2 A negative rate is still constant, so still a line — it just falls.

Answer: **yes**



REMEMBER

Linear means a constant rate. Equal differences prove it only when the x-steps are equal too.



MILD

Tan the Turtle: Slow and steady. Warm up!

- 1 x: 0,1,2,3 → y: 5,8,11,14. Linear?

Answer



OOPS ALERT

Careful on #1! The slip Mr DJ sees most: Fine for most; the check on x-steps is the habit being built.



MEDIUM

Digit the Fox: Stretch your brain.

2 $x: 0, 1, 2, 3 \rightarrow y: 1, 2, 4, 8$. Linear?

Answer

3 $x: 2, 4, 8 \rightarrow y: 7, 11, 19$. Linear? Show the rates.

Answer

4 Is $y = 3/x$ linear? Is it a function?

Answer

5 Sketch a function that increases the whole way and is NOT linear.

Answer

- 6 Give an equation that is a function, is not linear, and is not $y = x^2$.

Answer



SPICY

Blaze the Dragon: Bring the heat!

- 7 Explain why “the y-values go up by the same amount” is not enough on its own.

Answer

- 8 A table steps unevenly in x. Describe the test you would use.

Answer



How did this sheet feel?

☐ Easy for me ☐ Just right ☐ Made me think

Stuck? Watch Mr DJ explain it

Step-by-step video lessons on YouTube: [youtube.com/@MathWithMrDJ](https://www.youtube.com/@MathWithMrDJ)

Brain break: daily puzzles

Three new math puzzles every day, free: puzzles.mathwithmrdj.com