



GRADE 8 · EXPRESSIONS & EQUATIONS · HOMEWORK

WHY SLOPE IS CONSTANT

Today's goal: I can use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane and derive the equation $y = mx$ for a line through the origin and $y = mx + b$ for a line intercepting the vertical axis at b .



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



Extra Spicy

Pi the Owl

WATCH MR DJ SOLVE

State the slope and y-intercept of $y = 7x - 1$.

1 $m = 7, b = -1$.

Answer: **slope 7, intercept -1**



REMEMBER One line, one slope. $y = mx + b$: m tilts, b shifts. Proportional needs $b = 0$.



FAMILY CORNER

No need to remember this math yourself! Ask your student to teach you Mr DJ's example, then try the first Mild problem together.



MILD

Tan the Turtle: Slow and steady. Warm up!

1 Find the slope through $(0,4)$ and $(3,13)$.

Answer



OOPS ALERT

Careful on #1! The slip Mr DJ sees most: Inverted.



☹☹ **MEDIUM**

Digit the Fox: Stretch your brain.

- 2 A line through the origin passes through (5,20). Write its equation.

Answer

- 3 A line has slope -2 and crosses the y -axis at 9. Write its equation.

Answer

- 4 Are $y = 5x + 2$ and $y = 5x - 2$ parallel? What is the vertical gap between them?

Answer



☹☹☹ **SPICY**

Blaze the Dragon: Bring the heat!

- 5 Explain why picking two points far apart does not give a bigger slope.

Answer

6 Which is steeper, $y = 6x - 10$ or $y = 3x + 10$? Explain.

Answer



EXTRA SPICY

Pi the Owl: Big-brain challenge.

7 Jo says $y = 4x + 1$ is proportional because it is a straight line. Correct her.

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