

Algebra 2 2.3

Find rate of change

Determine slope of a line

ordered pair
rate of change
slope
constant

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

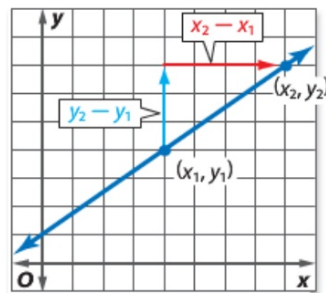
Quiz 2.1-2.2

activ: whiteboards

2 Slope The **slope** of a line is the ratio of the change in the y -coordinates to the corresponding change in the x -coordinates. The slope of a line is the same as its rate of change.

Suppose a line passes through points at (x_1, y_1) and (x_2, y_2) .

$$\text{Slope} = \frac{\text{change in } y\text{-coordinates}}{\text{change in } x\text{-coordinates}} = \frac{y_2 - y_1}{x_2 - x_1}$$



CCSS REGULARITY Find the rate of change for each set of data.

x	Time (min)	2	4	6	8	10
y	Distance (ft)	12	24	36	48	60

x/y

+12

$$\frac{3}{2}$$

$$1.5$$

$$\frac{60-12}{10-2} = \frac{48}{8} = \frac{6}{1}$$

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Find the slope of the line that passes through each pair of points.

4. $(3, 2), (8, 12)$

5. $(-1, 4), (3, -8)$

6. $(-2, -5), (-7, 10)$

$$m = \frac{12-2}{8-3} = \frac{10}{5} = \underline{2} \quad (2, 6) \quad (5, 6) \quad \begin{array}{l} \text{horiz} \\ \frac{6-6}{5-2} = \frac{0}{3} \end{array}$$

$$(3, 5) \quad (3, 8) \quad \frac{8-5}{3-3} = \frac{3}{0} = \begin{array}{l} \text{not defined} \\ \text{undefined} \\ \text{vert} \end{array}$$

$$\boxed{y = mx + b}$$

m (slope)
y = mx + b

$$\frac{0}{2} =$$

Determine the rate of change for each equation.

23. $6y = 8x - 40$

$$\frac{6}{6} \quad \frac{8}{6} \quad \frac{-40}{6}$$

$$y = \frac{4}{3}x - \frac{20}{3}$$

$$m = \frac{4}{3}$$

24. $-2y - 16x = 41$

$$+16x \quad +16x$$

$$-2y = 16x + 41$$

$$\frac{-2y}{-2} = \frac{16x}{-2} + \frac{41}{-2}$$

$$y = -8x - \frac{41}{2}$$

$$m = -8$$

•

26. $20x + 85y = 120$

27. $\frac{3}{2}x - \frac{5}{4}y = 15$

$$y = mx + B$$

$$3 = 2 \cdot 3 + B$$

$$-6 = -6 + B$$

$$y = 2x - 3$$

$$y = 2 \cdot 6 - 3$$

$$y = 9$$

Find the value of r so that the line that passes through each pair of points has the given slope.

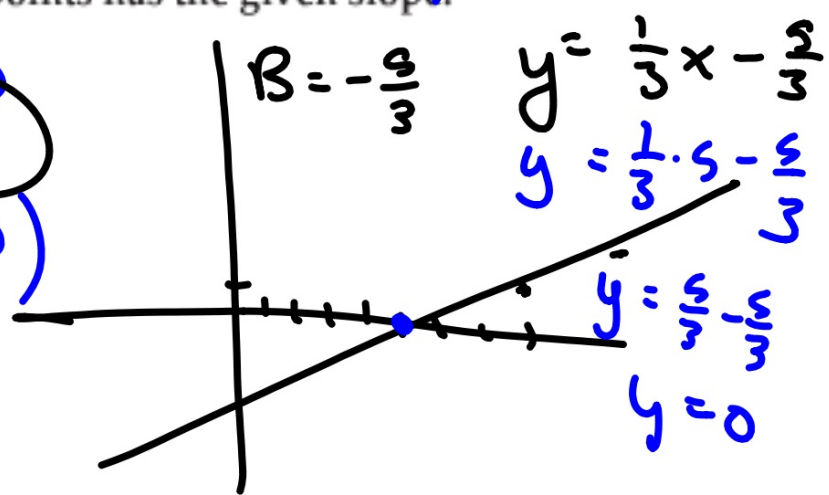
31. $(6, r), (3, 3), m = 2$

32. $(8, 1), (5, r), m = \frac{1}{3}$

$$1 = \frac{1}{3} \cdot 8 + B$$

$$-\frac{5}{3} = \frac{8}{3} + B$$

$$(5, 0)$$



1. Write the equation $y=mx+b$ using m and (x,y)
2. Answer the question

Connect 4
(if time)

