

What's Going On?

Checking In

Minds on

Polynomial Recap

Action!

20 Questions

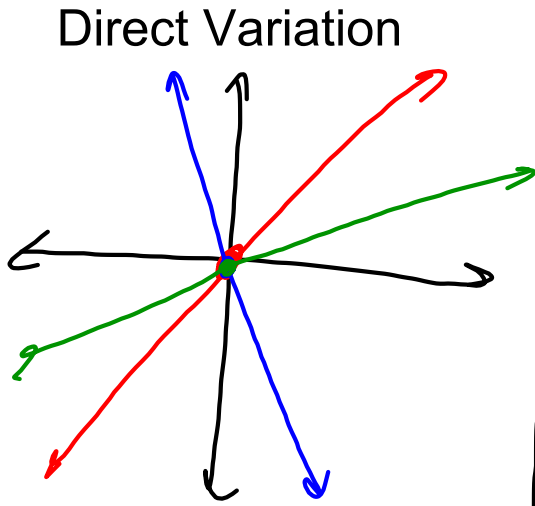
Consolidation

Perimeter and Area

Learning Goal - I will review our Polynomial unit and will be able to problem solve with polynomials and equations.

Minds on

Linear Relations

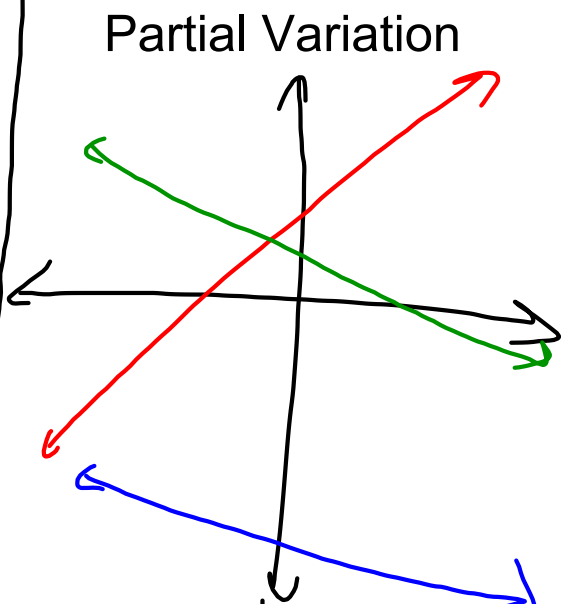


Direct Variation

- goes through $(0,0)$
origin

- initial value = 0
- y-intercept = 0

- $y = -2x$
 $y = \frac{3}{2}x + 0$
 $C = 1.25h$
 $y = mx$



Partial Variation

- does not go through origin
 - initial $\neq 0$
 - y-intercept $\neq 0$

- $y = -3x + 7$
 $y = \frac{1}{2}x - 1$
 $C = 1.5j + 0.1$

$y = mx + b$
 $* b \neq 0$

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Linear Relations

Which relation is not a direct variation

A. $y = 3x$

B. $y = -7x + 0$

C. $y = x$

D. $y = x + 0.1$

$$H = 3t + 500$$

Determine the **type of variation** (Partial or Direct) shown in each relationship. (2 marks)

a) A hiker starts 500 m above sea level and climbs at a rate of 3m/s.

Partial

b) Frank burned 200 kJ of energy by skipping rope for 5 minutes.

Direct

$$\text{Rate of Change} = \frac{200 \text{ kJ}}{5 \text{ min}} = 40 \text{ kJ/min}$$

$$E = 40t$$

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Initial Value

The value of the dependent variable (y) when the independent variable (x) is 0.

Rate of Change

The rise over the run with units!
Values of y divided by values of x .

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A banquet hall charges a flat rate of \$300 plus \$20 per guest.

✗ Independent Variable: # of guests
✗ Dependent Variable: cost of hall (\$)

Rate of Change: \$20/guest

Initial Value: \$300

$$C = 20g + 300$$

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Jackson receives a base salary of \$200 and \$50 for every audio system he sells.

Independent Variable: # systems sold (s)

Dependent Variable: Earnings (E)

Rate of Change: \$50/system

Initial Value: \$200

$$E = 50s + 200$$

$$y = mx + b$$

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Linear Relations

Slope

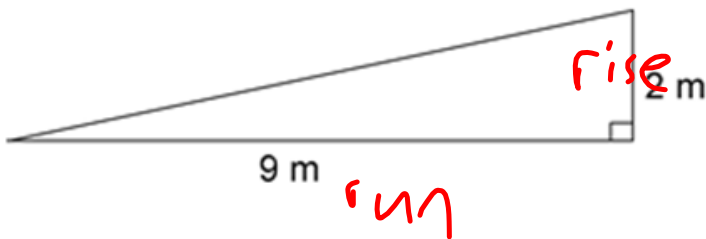
$$\frac{\text{rise}}{\text{run}} \quad \text{or} \quad \text{rise} \div \text{run}$$

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

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Linear Relations

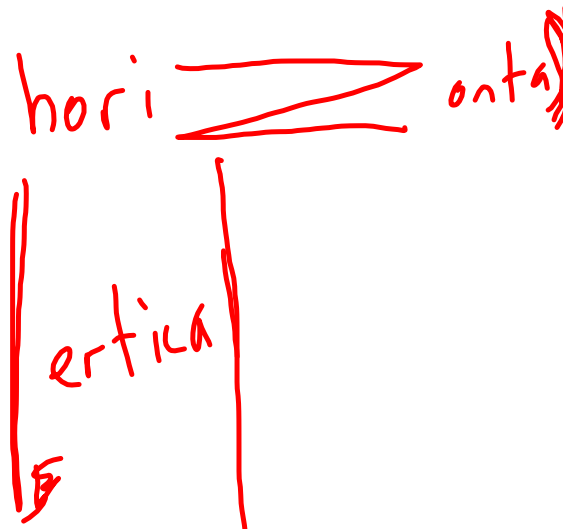
What is the slope of this ramp?



- A. 4.5
- B. $\frac{9}{2}$
- C. $\frac{2}{9}$**
- D. 5

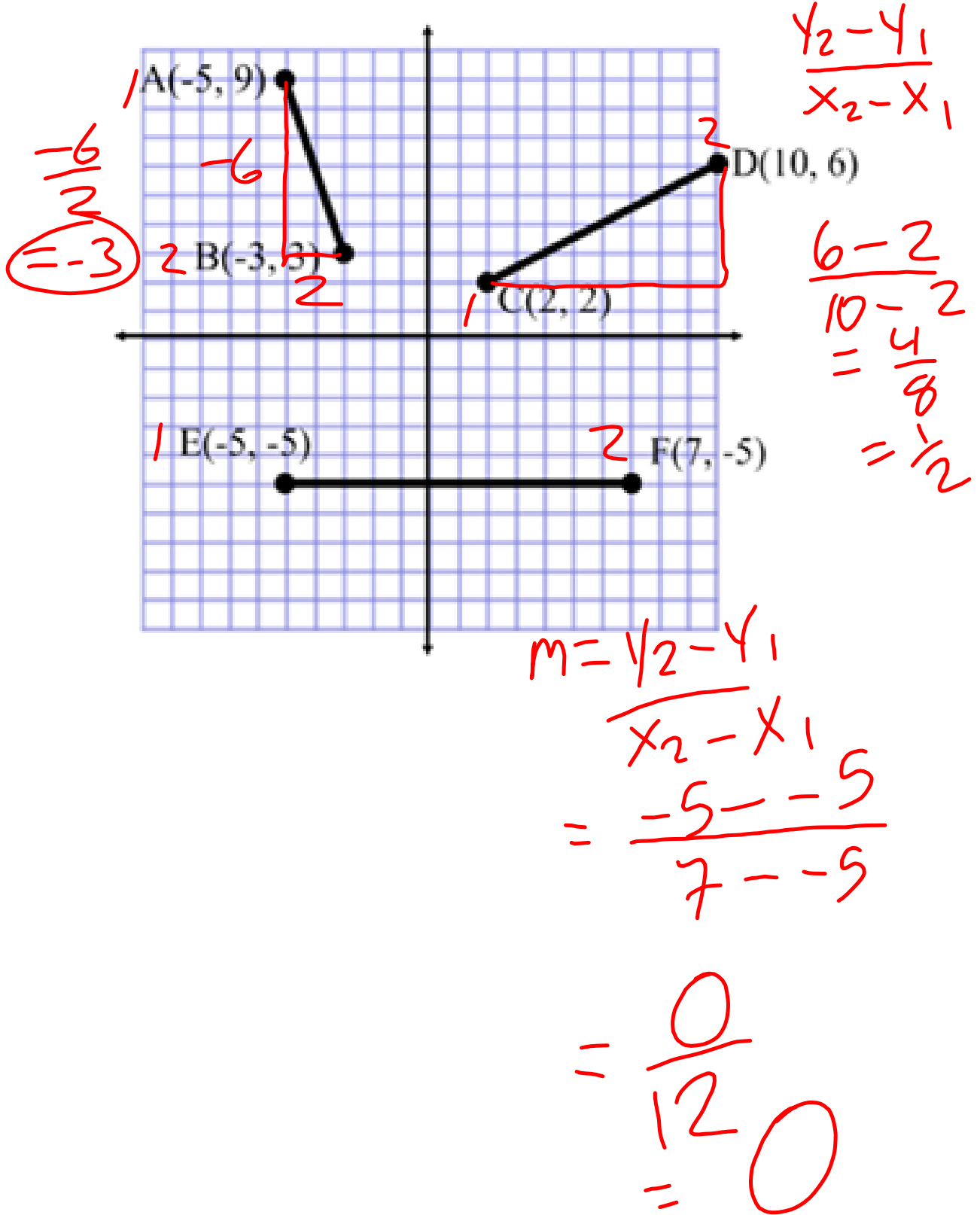
A horizontal line has a slope of

- A. Undefined
- B. -1
- C. 0**
- D. +1



Minds on

Linear Relations



Minds on

Linear Relations

A line goes through the points (4, 5) and (-4, 3).

Determine the slope of this line. (3 marks)

$$\begin{array}{cc} \textcircled{2} & \textcircled{1} \\ (4, 5) & \text{and } (-4, 3) \\ x_2 \ y_2 & x_1 \ y_1 \end{array}$$

$$m = \frac{(5) - (3)}{(4) - (-4)}$$

$$= \frac{2}{8}$$

$$= \frac{1}{4}$$

$$\left(\begin{array}{c} 5 \\ x_1 \end{array} , \begin{array}{c} -3 \\ y_1 \end{array} \right) \text{ and } \left(\begin{array}{c} -1 \\ x_2 \end{array} , \begin{array}{c} -7 \\ y_2 \end{array} \right)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \begin{array}{l} \leftarrow \text{rise} \\ \leftarrow \text{run} \end{array}$$

$$\begin{aligned} m &= \frac{-7 - (-3)}{-1 - 5} \\ &= \frac{-4}{-6} \\ &= \frac{4}{6} \\ &= \frac{2}{3} \end{aligned}$$