The Slope of a Line

UNIVERSITY OF MINNESOTA

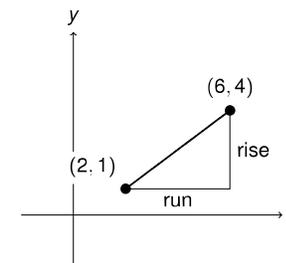## Preliminaries and Objectives

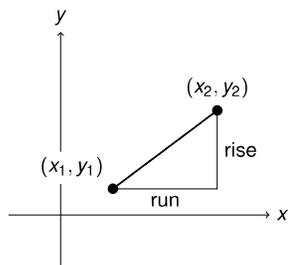Preliminaries

- Rates of Change

Objectives

- Formally define the slope of a line
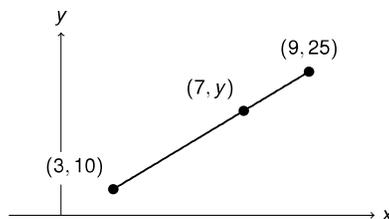- Use the slope to find missing values

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The Slope Formula

$$\text{slope} = \frac{4-1}{6-2} = \frac{3}{4}$$

The Slope Formula

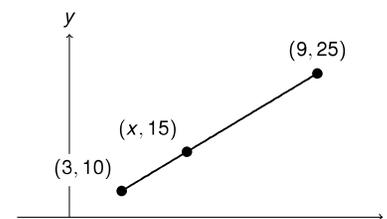$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

Interpolation

x	y
3	10
7	
9	25

$$\text{slope} = \frac{25-10}{9-3} = \frac{15}{6} = \frac{5}{2}$$

Finding Missing Input Value

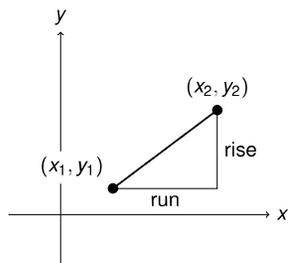| x	y
3	10
	15
9	25

$$\text{slope} = \frac{25-10}{9-3} = \frac{15}{6} = \frac{5}{2}$$

$$\Rightarrow \frac{15-10}{x-3} = \frac{5}{2} \Rightarrow x = 5$$

Recap

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

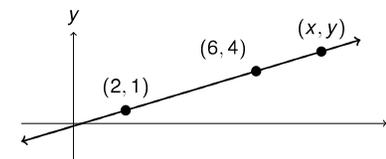## Credits

Written by: Mike Weimerskirch

Narration: Mike Weimerskirch

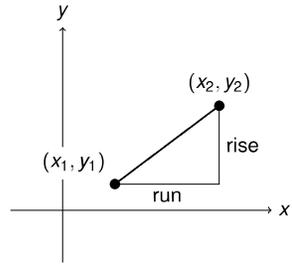Graphic Design: Mike Weimerskirch

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Point-Point Form of a Line

Find the equation of a line passing through the points $(2,1)$ and $(6,4)$.

$$\text{slope} = \frac{4-1}{6-2} = \frac{3}{4} = \frac{y-4}{x-6}$$

Recap

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$$