The Slope of a Line

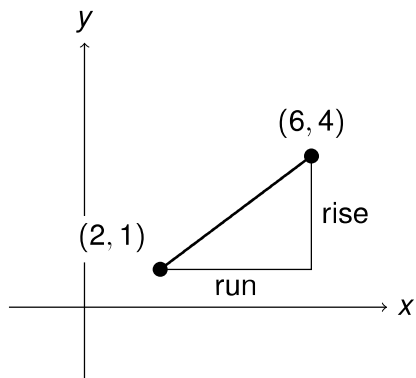UNIVERSITY OF MINNESOTA

Preliminaries and Objectives

Preliminaries
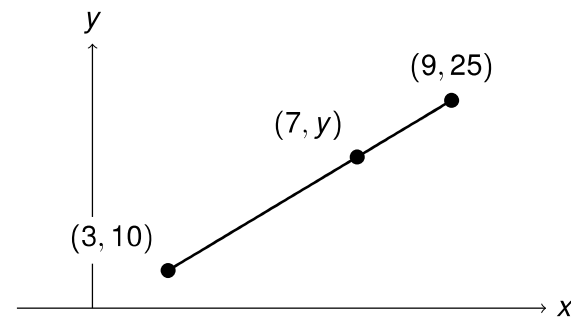
- Rates of Change

Objectives

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

The Slope Formula

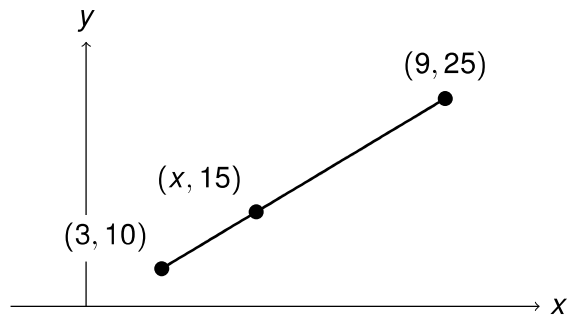$$\text{slope} = \frac{4 - 1}{6 - 2} = \frac{3}{4}$$

Interpolation

x	y
3	10
7	
9	25

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

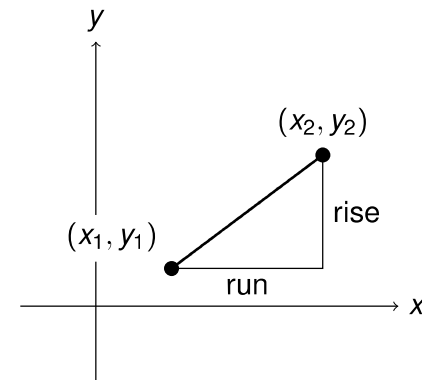## Finding Missing Input Value

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

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

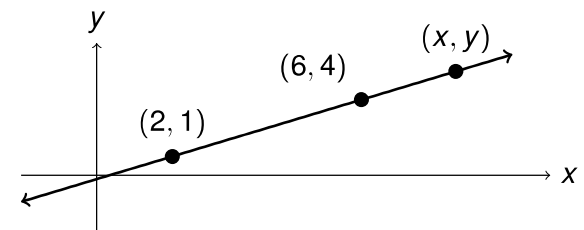## Credits

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Narration: Mike Weimerskirch
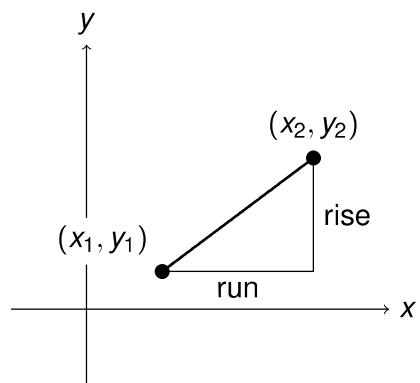
Graphic Design: Mike Weimerskirch

Point-Point Form of a Line

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

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

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