

Algebra - January 3, 2012
Lesson 5-1A - Slope/Rate of Change

Simplify each expression.

$$\frac{7-3}{3-1} = \frac{4}{2} = \boxed{2}$$

$$\frac{3-5}{6-0} = \frac{-2}{6} = \boxed{\frac{-1}{3}}$$

$$\frac{8 + (+4)}{3-7} = \frac{12}{-4} = \boxed{-3}$$

$$\frac{-1-2}{0-5} = \frac{-3}{-5} = \boxed{\frac{3}{5}}$$

$$\frac{-6 + (+4)}{-2-6} = \frac{-2}{-8} = \boxed{\frac{1}{4}}$$

$$\frac{0-1}{1-0} = \frac{-1}{1} = \boxed{-1}$$

King Goujian of Yue and
King Fu Cha of Wu.

勾踐



King Goujian of Yue and
King Fu Cha of Wu.

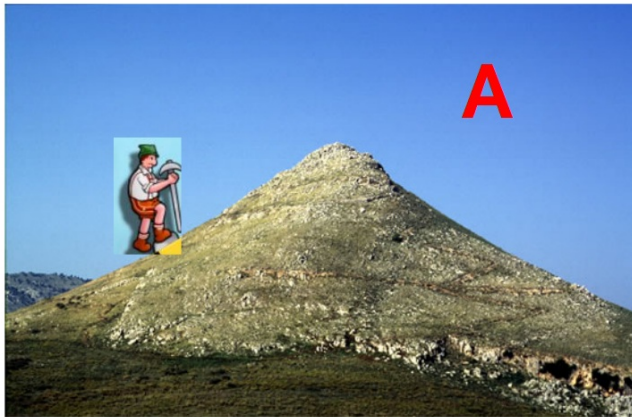
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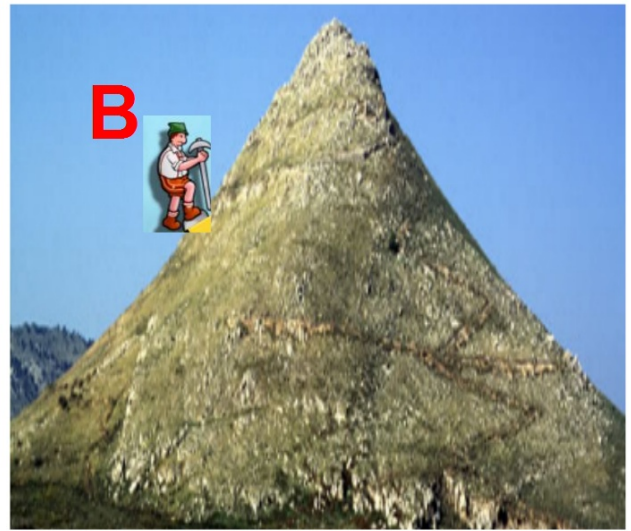
1) Think of a goal for during high school,
and a goal for after high school.

2) What do you need to do to reach that goal?

After 100 steps, who would be higher?
Slope?
Steep?



←-----→
500 ft



←-----→
500 ft

After each step, which hiker's height is changing faster?



A



500 ft

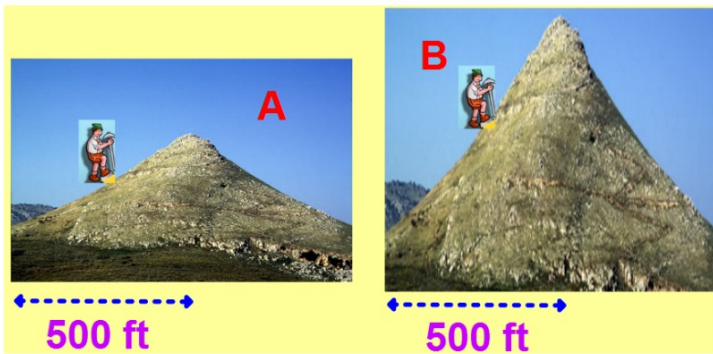


B



500 ft

Rate of Change: Comparing two variables



Steps	Height (feet)
10	20
11	22
12	24
13	26

*
rate of change = $\frac{\text{change in the dependent variable}}{\text{change in the independent variable}}$

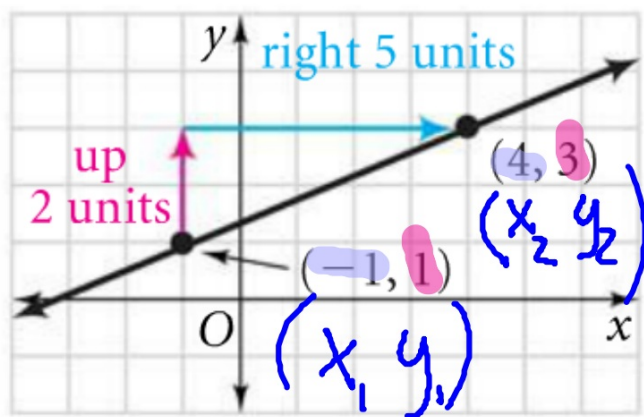
*
The slope of a line is its rate of change.

$$\text{slope} = \frac{\text{vertical change}}{\text{horizontal change}} = \frac{\text{rise}}{\text{run}}$$

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

Find the slope of the line.



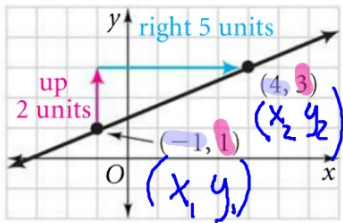
$$\begin{aligned} \text{slope} &= \frac{\text{rise}}{\text{run}} \\ &= \frac{3 - 1}{4 - (-1)} \\ &= \frac{2}{5} \end{aligned}$$

The slope of the line is $\frac{2}{5}$.

slope = $\frac{\text{vertical change}}{\text{horizontal change}} = \frac{\text{rise}}{\text{run}}$

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

Find the slope of the line.

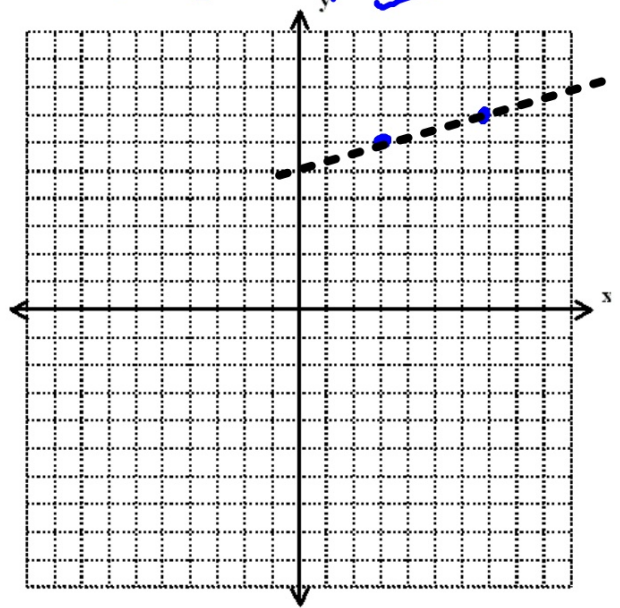


$$\begin{aligned} \text{slope} &= \frac{\text{rise}}{\text{run}} \\ &= \frac{3 - 1}{4 - (-1)} \\ &= \frac{2}{5} \end{aligned}$$

The slope of the line is $\frac{2}{5}$.

$$\begin{array}{cc} x_1 & y_1 & x_2 & y_2 \\ (3, 6) & & (7, 7) & \end{array}$$

$$\frac{7-6}{7-3} = \frac{1}{4}$$



$$\text{slope} = \frac{\text{vertical change}}{\text{horizontal change}} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

