

# Calculating Slope Between 2 Points

Date Lesson Notes

## Rate of Change:

Change in the y quantity (rise) relative to the change of one x unit (run).

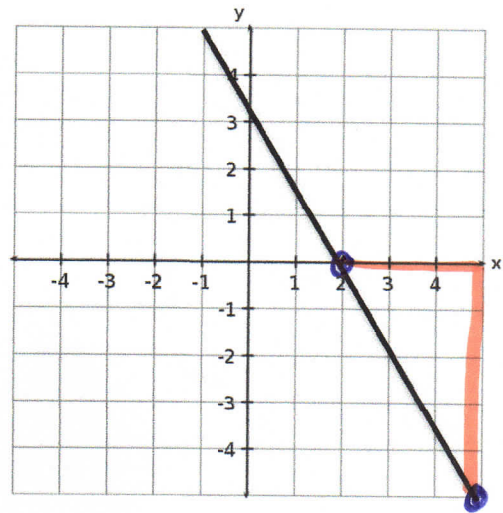
Calculate the slope (the rate of change) of the line:

### Steps:

1. Find any two points on the line.
2. Count the rise and the run between the 2 points.
3. Substitute rise and run into  $m = \frac{\text{rise}}{\text{run}}$  formula.

$$m = \frac{5}{-3}$$

$$m = \frac{-5}{3}$$



Is the slope positive or negative? How do you know by just looking at it?

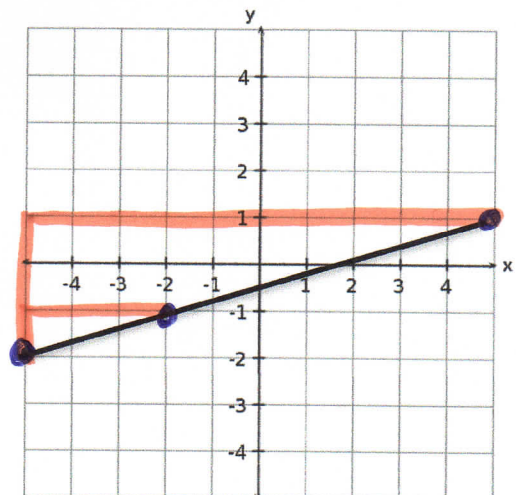
Negative. Looking at the line from left to right, the line slopes down.

### ANOTHER EXAMPLE:

Calculate the slope (rate of change) of the line. Is the slope positive or negative?

$$m = \frac{\text{rise}}{\text{run}}$$
$$= \frac{1}{3}$$

positive slope.

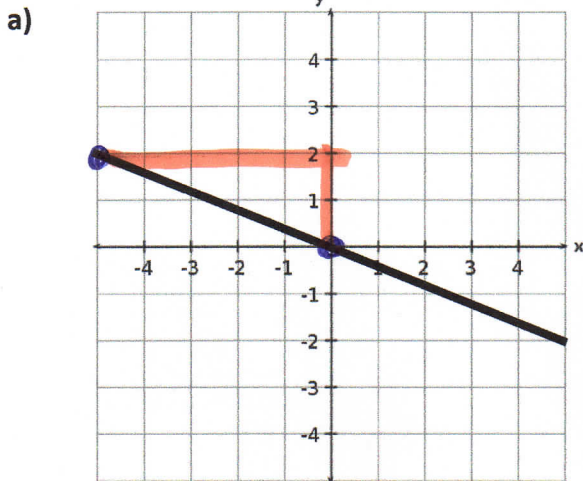


# Calculating Slope Between 2 Points

Date Notes

## PRACTICE QUESTIONS

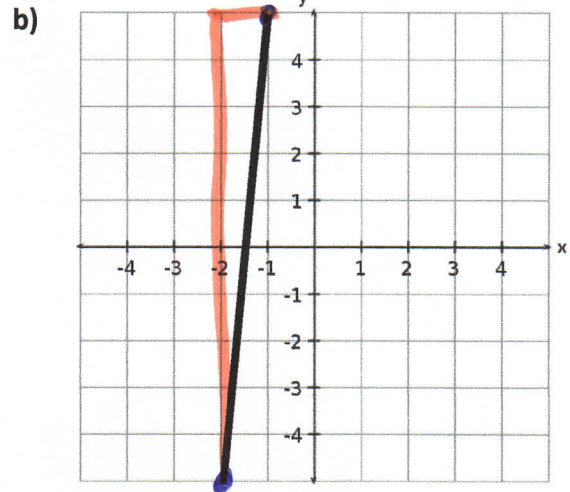
Calculate the slope of the following lines. State whether the slope is positive or negative.



$$m = \frac{2}{-5}$$

$$m = \frac{-2}{5}$$

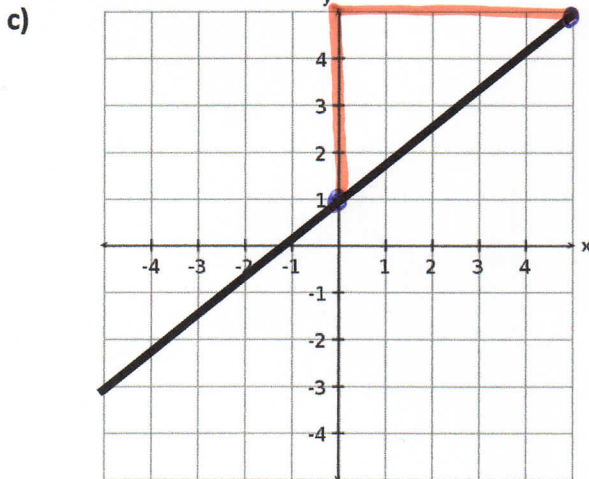
Negative slope.



$$m = \frac{10}{1}$$

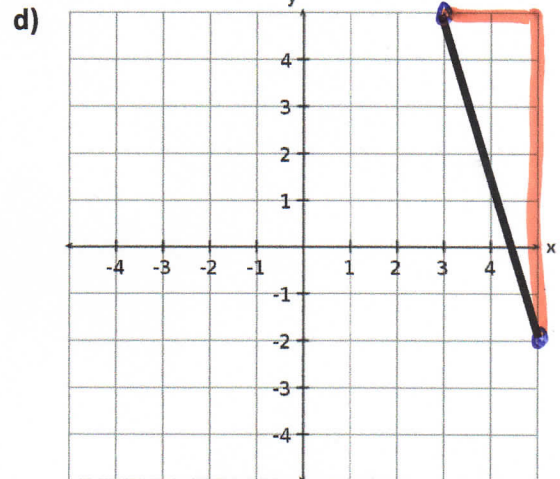
$$m = 10$$

Positive slope.



$$m = \frac{4}{5}$$

positive



$$m = \frac{7}{-2}$$

$$m = \frac{-7}{2}$$

Negative

# Calculating Slope Between 2 Points: Using Formula

Date \_\_\_\_\_

## METHOD 2:

You can also use the following formula to calculate slope if given 2 points.

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

### Steps when using this equation to calculate slope:

1. Assign  $(x_1, y_1)$  to one point and  $(x_2, y_2)$  to the other point on the line.
2. Substitute values into the slope equation.
3. Solve for  $m$  (the slope).

### Examples:

a)  $\begin{matrix} x_1 & y_1 & & x_2 & y_2 \\ (1, 1) & & \text{and} & (3, 4) \end{matrix}$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{4 - 1}{3 - 1}$$

$$m = \frac{3}{2}$$

c)  $\begin{matrix} x_1 & y_1 & & x_2 & y_2 \\ (-2, -2) & & \text{and} & (2, -2) \end{matrix}$

$$m = \frac{-2 - (-2)}{2 - (-2)}$$
$$= \frac{-2 + 2}{2 + 2}$$

$$= \frac{0}{4}$$

$$m = 0$$

Horizontal line

b)  $\begin{matrix} x_1 & y_1 & & x_2 & y_2 \\ (-3, 1) & & \text{and} & (-1, -4) \end{matrix}$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{-4 - 1}{-1 - (-3)}$$

$$= \frac{-5}{-1 + 3}$$

$$m = -\frac{5}{2}$$

d)  $\begin{matrix} x_1 & y_1 & & x_2 & y_2 \\ (3, 3) & & \text{and} & (3, -3) \end{matrix}$

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

$$= \frac{-6}{0}$$

$$= \text{undefined}$$

vertical line.

Homework: "What Do You Call a Duck That Steals?" worksheet