

**Slope of a line****Graphing Linear Equations**

The slope of a line is the number of units a line rises or falls for each unit of horizontal change from left to right on its graph. The slope of a line is represented by the letter  $m$  and can be found given two points  $(x_1, y_1)$  and  $(x_2, y_2)$  on the line using the following formula.

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

If the slope is greater than 0 (which is positive), then the line rises from left to right.

If the slope is less than 0 (which is negative), then the line falls from left to right.

If the slope is equal to 0, then the line is horizontal.

If the slope is undefined, then the line is vertical.

Find the slope of the line passing through the points  $(-5, 6)$  and  $(-3, 10)$ .

$$m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{10 - 6}{-3 - (-5)} = \frac{4}{-3 + 5} = \frac{4}{2} = \frac{2}{1} = 2$$

Thus, since the slope is a positive 2, then we know the line rises from left to right.

Determine whether the line **rises from left to right**, **falls from left to right**, is **vertical**, or is **horizontal**, given the following slopes.

1.  $m = 2$

2.  $m = -5$

3.  $m = 6$

4.  $m = \text{undefined}$

5.  $m = 0$

6.  $m = -7$

Find the slope of the line that passes through each set of points.

7.  $(5, 4), (6, 9)$

8.  $(-3, 4), (-1, 2)$

9.  $(-6, -3), (-2, 9)$

10.  $(-2, -1), (0, 3)$

11.  $(6, -5), (3, 10)$

12.  $(7, 8), (1, -16)$

Sketch the line by plotting the points. Find the **EQUATION** of the line passing through the points.

13.  $(0, 0), (2, 4)$

14.  $(-1, -2), (-3, 6)$

15.  $(4, -5), (5, -10)$

16.  $(-2, 0), (-5, 6)$