

Finding the slope of a line using the Slope Formula

$$\text{Slope Formula} = \frac{\Delta y}{\Delta x} = \frac{y_1 - y_2}{x_1 - x_2}$$

$$(x_1, y_1) \quad (x_2, y_2)$$

- (1) Find the slope of the line containing the points $(1, 4)$ and $(2, 5)$.

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{5-4}{2-1} = \frac{1}{1} = 1$$

$$x_1 y_1 \quad x_2 y_2$$

does not matter which point you start with

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{4-5}{1-2} = \frac{-1}{-1} = 1$$

- (2) Find the slope of the line containing the points $(-5, 1)$ and $(0, -6)$.

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{1-(-6)}{-5-0} = \frac{7}{-5}$$

$$x_1 y_1 \quad x_2 y_2$$

graph will decrease

- (3) Find the slope of the line containing the points $(2, 5)$ and $(6, 5)$.

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{5-5}{2-6} = \frac{0}{-4} = 0$$

$$x_1 y_1 \quad x_2 y_2$$

graph \longleftrightarrow

- (4) Find the slope of the line containing the points $(-2, 3)$ and $(-2, 8)$.

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{3-8}{-2-(-2)} = \frac{-5}{0}$$

$$x_1 y_1 \quad x_2 y_2$$

undefined graph \updownarrow

- (5) Find the value of y so that the line passing through the points $(2, -15)$ and $(5, y)$ has a slope of

$$\frac{4}{5}$$

$$\text{slope} = \frac{\Delta y}{\Delta x}$$

$$\frac{4}{5} = \frac{-15-y}{2-5}$$

$$x_1 y_1 \quad x_2 y_2$$

$$\frac{4}{5} = \frac{-15-y}{2-5}$$

$$-12 = 5(-15-y)$$

$$-12 = -75 - 5y$$

$$-12 + 63 = -5y \quad y = \frac{-63}{5}$$

- (6) Find the value of x so that the line passing through the points $(x, 15)$ and $(10, 7)$ has a slope of

$$-\frac{1}{2}$$

$$\text{slope} = \frac{\Delta y}{\Delta x}$$

$$-\frac{1}{2} = \frac{15-7}{x-10}$$

$$-\frac{1}{2} = \frac{8}{x-10}$$

$$16 = -(x-10)$$

$$16 = -x + 10$$

$$6 = -x$$

$$x = -6$$