

"Worksheet Solutions: Finding the Slope and Intercepts of a Linear Equation"

Given the linear equation $3x + 4y = 8$.

To find the x-intercept, put 0 in for y and solve for x.

$$3x + 4(0) = 8$$

$$3x = 8$$

$$x = 8/3 \qquad \text{The x-intercept is } (8/3, 0).$$

To find the y-intercept, put 0 in for x and solve for y.

$$3(0) + 4y = 8$$

$$4y = 8$$

$$y = 2 \qquad \text{The y-intercept is } (0, 2).$$

To find the slope, solve the equation for y.

$$3x + 4y = 8$$

$$4y = 8 - 3x$$

$$y = 2 - (3/4)x \qquad \text{The slope is the coefficient in front of x. The slope here is } -3/4.$$

For each of the following linear equations, find the x- and y- intercepts and the slope of the linear equation. Using the intercepts, graph the linear equation.

1) $12x + 6y = 24$

$$x = 2$$

$$\text{x-intercept is } (2, 0)$$

$$y = 4$$

$$\text{y-intercept is } (0, 4)$$

$$\text{slope} = -12/6 = -2$$

2) $3x - 6y = -12$

$$x = -4$$

$$\text{x-intercept is } (-4, 0)$$

$$y = 2$$

$$\text{y-intercept is } (0, 2)$$

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

3) $10x + 5y = 8$

$$x = 8/10 = 4/5 = 0.8$$

$$\text{x-intercept is } (0.8, 0)$$

$$y = 8/5 = 1.6$$

$$\text{y-intercept is } (0, 1.6)$$

$$\text{slope} = -10/5 = -2$$

4) $-2x - 4y = 16$

$$x = -8$$

$$\text{x-intercept is } (-8, 0)$$

$$y = -4$$

$$\text{y-intercept is } (0, -4)$$

$$\text{slope} = 2/-4 = -1/2$$

5) $3y = -15$

No x-intercept

$$y = -5$$

$$\text{y-intercept is } (0, -5)$$

$$\text{slope} = 0$$

6) $ax + by = c$

$$x = c/a$$

$$\text{x-intercept is } (c/a, 0)$$

$$y = c/b$$

$$\text{y-intercept is } (0, c/b)$$

$$\text{slope} = -a/b$$