

Name: \_\_\_\_\_

## Finding Intercepts of Linear Equations

**Intercepts** are points on a graph where a line intersects the  $x$ -axis and/or the  $y$ -axis.

$$x\text{-intercept: } y = 0 \longrightarrow (4,0)$$

$$y\text{-intercept: } x = 0 \longrightarrow (0,4)$$

To find the intercepts from an equation, first substitute 0 for  $x$  and solve for  $y$ . Then substitute 0 for  $y$  and solve for  $x$ .

|                 |                |                   |                |  |                |
|-----------------|----------------|-------------------|----------------|--|----------------|
| <b>example:</b> | $x + 2y = 7$   | $\longrightarrow$ | $0 + 2y = 7$   |  | $x + 2(0) = 7$ |
|                 |                |                   | $y = 3.5$      |  | $x = 7$        |
|                 |                |                   | $\downarrow$   |  | $\downarrow$   |
| x-intercept:    | <u>(7,0)</u>   |                   |                |  | <u>(7,0)</u>   |
| y-intercept:    | <u>(0,3.5)</u> |                   | <u>(0,3.5)</u> |  |                |

Solve to find the  $x$ -intercept and  $y$ -intercept for each equation.

1.  $2x + 9y = 18$

$x$ -intercept: \_\_\_\_\_

$y$ -intercept: \_\_\_\_\_

2.  $-5x + 4y = 20$

$x$ -intercept: \_\_\_\_\_

$y$ -intercept: \_\_\_\_\_

## Finding Intercepts of Linear Equations

3.  $-3x + 2y = 12$

x-intercept: \_\_\_\_\_

y-intercept: \_\_\_\_\_

4.  $2x + 8y = -4$

x-intercept: \_\_\_\_\_

y-intercept: \_\_\_\_\_

5.  $-8x + 6y = 24$

x-intercept: \_\_\_\_\_

y-intercept: \_\_\_\_\_

6.  $5x - 3y = -15$

x-intercept: \_\_\_\_\_

y-intercept: \_\_\_\_\_

# ANSWER KEY

## Finding Intercepts of Linear Equations

1.  $2x + 9y = 18$

x-intercept:           **(9,0)**          

y-intercept:           **(0,2)**          

$$2(0) + 9y = 18$$

$$9y = 18$$

$$y = 2$$

$$(0,2)$$

$$2x + 9(0) = 18$$

$$2x = 18$$

$$x = 9$$

$$(9,0)$$

2.  $-5x + 4y = 20$

x-intercept:           **(-4,0)**          

y-intercept:           **(0,5)**          

$$-5(0) + 4y = 20$$

$$4y = 20$$

$$y = 5$$

$$(0,5)$$

$$-5x + 4(0) = 20$$

$$-5x = 20$$

$$x = -4$$

$$(-4,0)$$

3.  $-3x + 2y = 12$

x-intercept:           **(-4,0)**          

y-intercept:           **(0,6)**          

$$-3(0) + 2y = 12$$

$$2y = 12$$

$$y = 6$$

$$(0,6)$$

$$-3x + 2(0) = 12$$

$$-3x = 12$$

$$x = -4$$

$$(-4,0)$$

4.  $2x + 8y = -4$

x-intercept:           **(-2,0)**          

y-intercept:           **(0,-0.5)**          

$$2(0) + 8y = -4$$

$$8y = -4$$

$$y = -0.5$$

$$(0,-0.5)$$

$$2x + 8(0) = -4$$

$$2x = -4$$

$$x = -2$$

$$(-2,0)$$

5.  $-8x + 6y = 24$

x-intercept:           **(-3,0)**          

y-intercept:           **(0,4)**          

$$-8(0) + 6y = 24$$

$$6y = 24$$

$$y = 4$$

$$(0,4)$$

$$-8x + 6(0) = 24$$

$$-8x = 24$$

$$x = -3$$

$$(-3,0)$$

6.  $5x - 3y = -15$

x-intercept:           **(-3,0)**          

y-intercept:           **(0,5)**          

$$5(0) - 3y = -15$$

$$-3y = -15$$

$$y = 5$$

$$(0,5)$$

$$5x - 3(0) = -15$$

$$5x = -15$$

$$x = -3$$

$$(-3,0)$$