

# 4.3 Graph Using Intercepts

TEKS A.5.B, A.6.B,  
A.6.E, A.7.C

**Before**

You graphed a linear equation using a table of values.

**Now**

You will graph a linear equation using intercepts.

**Why**

So you can find a submersible's location, as in Example 5.



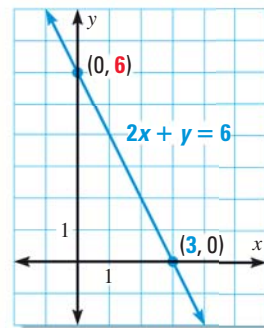
## Key Vocabulary

- **x-intercept**
- **y-intercept**

You can use the fact that two points determine a line to graph a linear equation. Two convenient points are the points where the graph crosses the axes.

An **x-intercept** of a graph is the  $x$ -coordinate of a point where the graph crosses the  $x$ -axis. A **y-intercept** of a graph is the  $y$ -coordinate of a point where the graph crosses the  $y$ -axis.

To find the  $x$ -intercept of the graph of a linear equation, find the value of  $x$  when  $y = 0$ . To find the  $y$ -intercept of the graph, find the value of  $y$  when  $x = 0$ .



## EXAMPLE 1 Find the intercepts of the graph of an equation

Find the  $x$ -intercept and the  $y$ -intercept of the graph of  $2x + 7y = 28$ .

### Solution

To find the  $x$ -intercept, substitute 0 for  $y$  and solve for  $x$ .

$$2x + 7y = 28 \quad \text{Write original equation.}$$

$$2x + 7(0) = 28 \quad \text{Substitute 0 for } y.$$

$$x = \frac{28}{2} = 14 \quad \text{Solve for } x.$$

To find the  $y$ -intercept, substitute 0 for  $x$  and solve for  $y$ .

$$2x + 7y = 28 \quad \text{Write original equation.}$$

$$2(0) + 7y = 28 \quad \text{Substitute 0 for } x.$$

$$y = \frac{28}{7} = 4 \quad \text{Solve for } y.$$

► The  $x$ -intercept is 14. The  $y$ -intercept is 4.



## GUIDED PRACTICE for Example 1

Find the  $x$ -intercept and the  $y$ -intercept of the graph of the equation.

1.  $3x + 2y = 6$

2.  $4x - 2y = 10$

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