4.3 Graph Using Intercepts

Goal • Graph a linear equation using intercepts.

Your Notes

> **VOCABULARY**
>
> *x*-intercept
>
> _____
>
> *y*-intercept

Example 1   *Find the intercepts of the graph of an equation*

Find the *x*-intercept and the *y*-intercept of the graph of $8x - 2y = 32$.

Solution

1. Substitute ____ for *y* and solve for *x*.

$$8x - 2y = 32$$ **Write original equation.**

$$8x - 2(\underline{\quad}) = 32$$ **Substitute ____ for *y*.**

$$x = \frac{\boxed{}}{\boxed{}} = \underline{\quad}$$ **Solve for ____.**

2. Substitute ____ for *x* and solve for *y*.

$$8x - 2y = 32$$ **Write original equation.**

$$8(\underline{\quad}) - 2y = 32$$ **Substitute ____ for *x*.**

$$y = \frac{\boxed{}}{\boxed{}} = \underline{\qquad}$$ **Solve for ____.**

The *x*-intercept is ____ . The *y*-intercept is _____ .

✔ *Checkpoint* **Find the *x*-intercept and *y*-intercept of the graph of the equation.**

1. $2x + 3y = 18$	**2.** $-12x - 4y = 36$

Example 2 *Use intercepts to graph an equation*

Graph $3.5x + 2y = 14$. Label the points where the line crosses the axis.

Solution

Step 1 Find the _____ .

$$3.5x + 2y = 14 \qquad \qquad 3.5x + 2y = 14$$

$$3.5x + 2(\underline{}) = 14 \qquad 3.5(\underline{}) + 2y = 14$$

$$x = \frac{\boxed{}}{\boxed{}} = \underline{} \qquad \qquad y = \frac{\boxed{}}{\boxed{}} = \underline{}$$

Step 2 Plot the points that correspond to the intercepts.

The *x*-intercept is ___ , so plot the point _____ .

The *y*-intercept is ___ , so plot the point _____ .

Step 3 _____ the points by drawing a line through them.
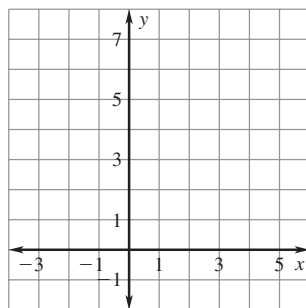
CHECK

You can check the graph of the equation by using a third point. When $x = 2$, $y =$ _____ , so the ordered pair _____ is a third solution of the equation. You can see that _____ lies on the graph, so the graph is correct.

Example 3   *Use a graph to find the intercepts*

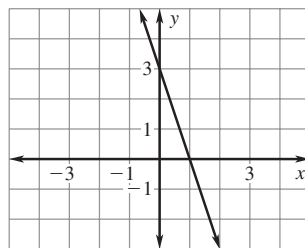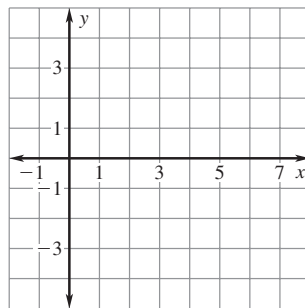**Identify the *x*-intercept and *y*-intercept of the graph.**
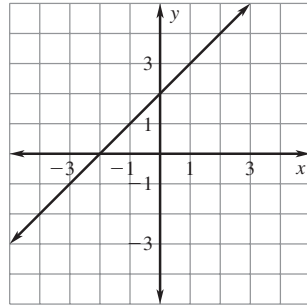
Solution

To find the *x*-intercept, look to see where the graph crosses the _____. The *x*-intercept is _____. To find the *y*-intercept, look to see where the graph crosses the _____. The *y*-intercept is ____.

✔ *Checkpoint* **Complete the following exercises.**

3. Graph $2x - 7y = 14$. Label the points where the line crosses the axes.