

# 8-7 Intercepts (Pages 406–410)

The **x-intercept** for a linear graph is the x-coordinate of the point where the graph crosses the x-axis and can be found by letting  $y = 0$ . The **y-intercept** is the y-coordinate of the point where the graph crosses the y-axis and can be found by letting  $x = 0$ .

|                             |  |
|-----------------------------|--|
| <b>Slope-Intercept Form</b> | When a linear equation is written in the form $y = mx + b$ , it is in <b>slope-intercept form</b> . $y = mx + b$ <div style="display: flex; justify-content: center; gap: 20px;"> <div style="text-align: center;"> <math>\uparrow</math><br/>slope                 </div> <div style="text-align: center;"> <math>\uparrow</math><br/>y-intercept                 </div> </div> |
|-----------------------------|--|

## EXAMPLES

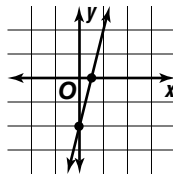
**A** Find the x-intercept and the y-intercept for the graph of  $y = 4x - 2$ . Then graph the line.

x-intercept  
 Let  $y = 0$ .  
 $0 = 4x - 2$   
 $2 = 4x$   
 $x = \frac{2}{4}$  or  $\frac{1}{2}$

y-intercept  
 Let  $x = 0$ .  
 $y = 4(0) - 2$   
 $y = 0 - 2$  or  $-2$   
 y-intercept:  $-2$

x-intercept:  $\frac{1}{2}$

Graph the ordered pair for each intercept:  $(\frac{1}{2}, 0)$  and  $(0, -2)$ . Then draw the line that contains them.



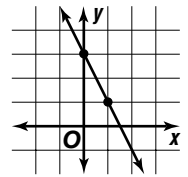
**B** Graph the equation  $y = -2x + 3$  using the slope and y-intercept.

$y = -2x + 3$  is in slope-intercept form,  $y = mx + b$ , where  $m = -2$  and  $b = 3$ .

The y-intercept is 3, so the graph contains the point  $(0, 3)$ .

The slope is  $-2$  or  $\frac{-2}{1}$ .  $\frac{-2}{1} = \frac{\text{change in } y}{\text{change in } x}$

Starting at  $(0, 3)$ , go to the right 1 unit and down 2 units to the point  $(1, 1)$ . Draw the line that contains these two points.



## PRACTICE

Find the x-intercept and the y-intercept for the graph of each equation. Then graph the line.

1.  $y = 2x - 3$

2.  $y = -x + 1$

3.  $y = \frac{2}{3}x - 4$

4.  $y = -\frac{1}{2}x + 2$

5.  $y = 3x - 2$

6.  $y = -2x + 4$

Graph each equation using the slope and y-intercept.

7.  $y = -x + 3$

8.  $y = \frac{1}{3}x + 2$

9.  $y = 2x - 1$



**10. Standardized Test Practice** Which of the following is the x-intercept for the graph of  $y = 3x - 6$ ?

**A**  $-6$

**B**  $2$

**C**  $-2$

**D**  $6$

Answers: 1–9. See Answer Key. 10. B