

LESSON  
22Slope-Intercept Form  
of an Equation

## Review It!

When you work with the slope-intercept form of an equation, remember these words:

**y-intercept** the  $y$ -coordinate of the point where the line crosses the  $y$ -axis

**slope-intercept form of an equation**

$$y = mx + b$$

slope  $\xrightarrow{\quad}$   $m$   $\xrightarrow{\quad}$   $b$   $\xrightarrow{\quad}$   $y$ -intercept

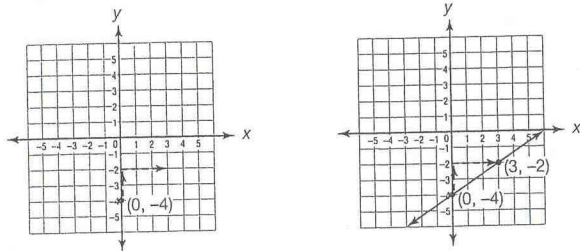
Graph the equation  $y = \frac{2}{3}x - 4$ .

**Step 1** Identify the slope and  $y$ -intercept.

The equation  $y = \frac{2}{3}x - 4$  is in the form  $y = mx + b$ .

The slope  $m$  is  $\frac{2}{3}$ . The  $y$ -intercept  $b$  is  $-4$ .

**Step 2** Graph the equation.



The line crosses the  $y$ -axis at \_\_\_\_\_, so plot a point at  $(0, -4)$ .

Use the slope  $\frac{2}{3}$  to find another point.  $\leftarrow$  .....

Start at  $(0, -4)$ . Move 2 units up (rise) and 3 units right (run).

$0 + 3 =$  \_\_\_\_\_ and  $-4 + 2 =$  \_\_\_\_\_, so plot a point at \_\_\_\_\_.

Draw a line through the points.

So, you graphed the equation  $y = \frac{2}{3}x$ .

**REMEMBER** Slope is  $\frac{\text{rise}}{\text{run}}$ .

## Lesson 22: Slope-Intercept Form of an Equation

## Try It!

For each equation, identify the slope and  $y$ -intercept.

- |                                                                     |                                                                     |
|---------------------------------------------------------------------|---------------------------------------------------------------------|
| 1. $y = 3x + 5$<br>slope: _____<br>$y$ -intercept: _____            | 2. $y = -\frac{2}{7}x - 1$<br>slope: _____<br>$y$ -intercept: _____ |
| 3. $y = \frac{9}{5}x - 11$<br>slope: _____<br>$y$ -intercept: _____ | 4. $y = \frac{7}{3}x + 8$<br>slope: _____<br>$y$ -intercept: _____  |

## Ask Yourself

1.

What is 3 written as a fraction?

$\frac{3}{1}$ , or  $\frac{1}{3}$ ?

Write each equation in slope-intercept form. Then identify the slope and  $y$ -intercept.

- |                         |                          |
|-------------------------|--------------------------|
| 5. $x + y = 9$<br>_____ | 6. $3x + y = 5$<br>_____ |
| slope: _____            | slope: _____             |
| $y$ -intercept: _____   | $y$ -intercept: _____    |

5.

How can you get  $y$  by itself?  
Add  $x$  to both sides,  
or subtract  $x$  from both sides?

Identify the slope and  $y$ -intercept of each line.

- |                       |                       |
|-----------------------|-----------------------|
| 7.                    | 8.                    |
| slope: _____          | slope: _____          |
| $y$ -intercept: _____ | $y$ -intercept: _____ |

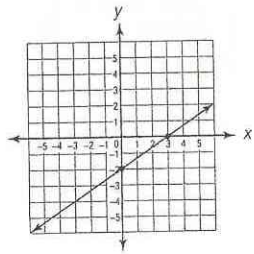
7.

What is the  $y$ -intercept?  
0, or 1?

**On Your Own!**

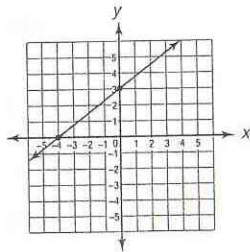
Circle the best answer for each question.

1. What is the
- $y$
- intercept of this line?



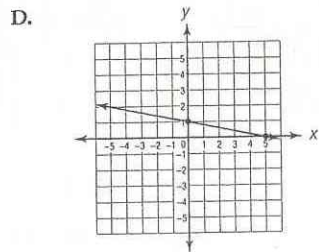
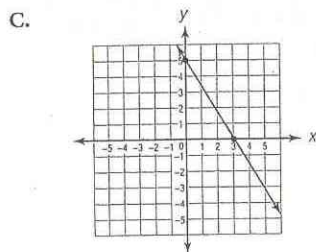
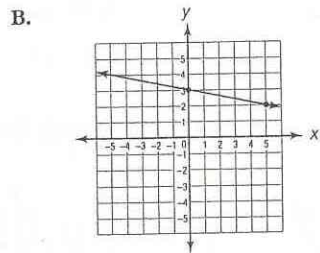
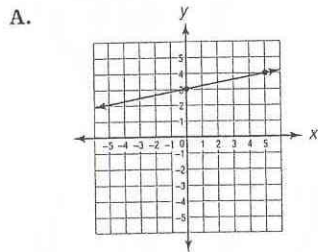
- A. 3                      C.  $\frac{2}{3}$   
 B. 2                      D. -2

2. What is the
- $y$
- intercept of this line?



- A. 4                      C.  $\frac{3}{4}$   
 B. 3                      D. -4

3. Which is the graph of
- $y = \frac{1}{5}x + 3$
- ?



4. Look at the equation
- $2x + y = -1$
- .

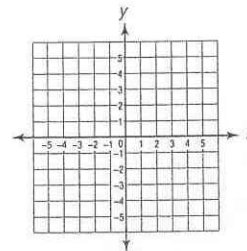
**Part A** Write the equation in slope-intercept form. Identify the slope and the  $y$ -intercept.

slope-intercept form: \_\_\_\_\_

slope: \_\_\_\_\_

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

**Part B** Graph the equation  $2x + y = -1$  on the grid below.

**Math Words**

Fill in the blanks.

5. In the equation
- $y = mx + b$
- ,
- $m$
- is the \_\_\_\_\_ and
- $b$
- is the \_\_\_\_\_.

6. The
- $y$
- coordinate of the point where a line crosses the
- $y$
- axis is the \_\_\_\_\_.