

## Lesson 8-6

### Example 1 Find the Slope and y-intercept

State the slope and y-intercept of the graph of  $y = -\frac{5}{7}x + 4$ .

$$y = -\frac{5}{7}x + 4 \quad \text{Write the original equation.}$$
$$\begin{array}{ccc} \uparrow & & \uparrow \\ y = mx + b & & m = -\frac{5}{7}, b = 4 \end{array}$$

The slope of the graph is  $-\frac{5}{7}$ , and the y-intercept is 4.

### Example 2 Write an Equation in Slope-Intercept Form

State the slope and the y-intercept of the graph  $-3x + y = -7$ .

$$-3x + y = -7 \quad \text{Write the original equation.}$$
$$-3x + 3x + y = -7 + 3x \quad \text{Add } 3x \text{ to each side.}$$
$$y = 3x - 7 \quad \text{Write the equation in slope-intercept form.}$$
$$\begin{array}{ccc} \uparrow & & \uparrow \\ y = mx + b & & m = 3, b = -7 \end{array}$$

The slope of the graph is 3 and the y-intercept is  $-7$ .

### Example 3 Graph an Equation

Graph  $y = \frac{5}{8}x + 2$  using the slope and y-intercept.

**Step 1** Find the slope and y-intercept.

$$\text{slope} = \frac{5}{8} \quad \text{y-intercept} = 2$$

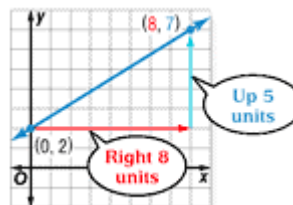
**Step 2** Graph the y-intercept point at  $(0, 2)$ .

**Step 3** Use the slope to locate a second point on the line.

$$m = \frac{5}{8} \leftarrow \begin{array}{l} \text{change in } y : \text{ up 5 units} \\ \text{change in } x : \text{ right 8 units} \end{array}$$

Another point on the line is at  $(8, 7)$

**Step 4** Draw a line through the two points.



**Example 4 Graph an Equation to Solve a Problem**

**RETAIL** A designer coat company has a monthly fixed cost of \$500 and a fixed cost of \$40.00 per coat. The total cost  $y$  can be represented by the equation  $y = 500 + 40x$ , where  $x$  represents the number of coats made.

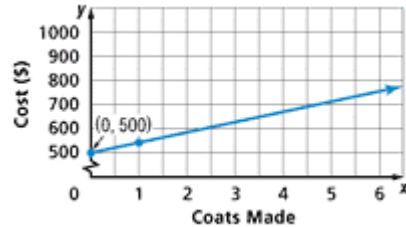
**a. Graph the equation.**

First, find the slope and the  $y$ -intercept.

slope = 40

$y$ -intercept = 500

Plot the point  $(0, 500)$ . Then go up 40 and right 1. Connect these points.



**b. Describe what the  $y$ -intercept and the slope represent.**

The  $y$ -intercept 500 represents the monthly fixed production cost. The slope 40 represents the cost per coat, which is the rate of change.