**EXAMPLE 2** **Write an equation given two points**

**Write an equation of the line that passes through (−2, 5) and (2, −1).**

**Solution**

**STEP 1** **Calculate** the slope.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - 5}{2 - (-2)} = \frac{-6}{4} = -\frac{3}{2}$$

**ANOTHER WAY**

You can also find the $y$-intercept using the coordinates of the other given point, (2, −1):

$y = mx + b$

$-1 = -\frac{3}{2}(2) + b$

$2 = b$

**STEP 2** **Find** the $y$-intercept. Use the slope and the point (−2, 5).

$y = mx + b$      **Write slope-intercept form.**

$5 = -\frac{3}{2}(-2) + b$      **Substitute $-\frac{3}{2}$ for $m$, −2 for $x$, and 5 for $y$.**

$2 = b$      **Solve for $b$.**

**STEP 3** **Write** an equation of the line.

$y = mx + b$      **Write slope-intercept form.**

$y = -\frac{3}{2}x + 2$      **Substitute $-\frac{3}{2}$ for $m$ and 2 for $b$.**

**TAKS**

**EXAMPLE 3** **TAKS PRACTICE: Multiple Choice**

**Which function has the values $f(2) = 4$ and $f(-2) = -8$?**

**A** $f(x) = 3x - 10$             **B** $f(x) = 3x - 2$

**C** $f(x) = 3x + 2$             **D** $f(x) = 3x + 20$

**ELIMINATE CHOICES**

You can also evaluate each function when $x = 2$ and $x = -2$. Eliminate any choices for which $f(2) \neq 4$ or $f(-2) \neq -8$.

**STEP 1** **Calculate** the slope. Write $f(2) = 4$ as (2, 4) and $f(-2) = -8$ as (−2, −8).

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-8 - 4}{-2 - 2} = \frac{-12}{-4} = 3$$

**STEP 2** **Find** the $y$-intercept. Use the slope and the point (2, 4).

$y = mx + b$      **Write slope-intercept form.**

$4 = 3(2) + b$      **Substitute 3 for $m$, 2 for $x$, and 4 for $y$.**

$-2 = b$      **Solve for $b$.**

**STEP 3** **Write** an equation for the function. Use function notation.

$f(x) = 3x - 2$      **Substitute 3 for $m$ and −2 for $b$.**

▶ The answer is B. Ⓐ **Ⓑ** Ⓒ Ⓓ

✓ **GUIDED PRACTICE**    **for Examples 2 and 3**

**2.** Write an equation of the line that passes through (1, −2) and (−5, 4).

**3.** Write an equation for the linear function with the values $f(-2) = 10$ and $f(4) = -2$.