**1 EXAMPLE** Use a number line to simplify each expression.

a. $3 + (-5)$
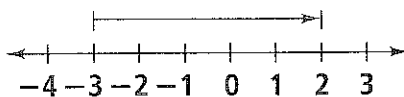$3 + (-5) = -2$

$-3 -2 -1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4$
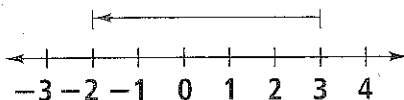
Start at 3.
Move left 5 units.

b. $-3 + 5$
$-3 + 5 = 2$

$-4 -3 -2 -1 \quad 0 \quad 1 \quad 2 \quad 3$

Start at −3.
Move right 5 units.

c. $-3 + (-5)$
$-3 + (-5) = -8$

$-8 \quad -6 \quad -4 \quad -2 \quad 0$
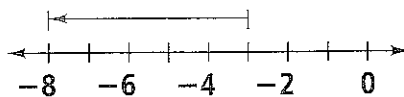
Start at −3.
Move left 5 units.

**2 EXAMPLE** Simplify each expression.

a. $12 + (-23) = -11$

The difference of the absolute values is 11. The negative addend has the greater absolute value, so the sum is negative.

b. $-6.4 + (-8.6) = -15.0$

Since both addends are negative, add their absolute values. The sum is negative.

**3 EXAMPLE** The water level in a lake rose 6 inches and then fell 11 inches. Write an addition statement to find the total change in water level.

$6 + (-11) = -5$  The water level fell 5 inches.

**4 EXAMPLE** Evaluate $3.6 + (-t)$ for $t = -1.7$.

$3.6 + (-t) = 3.6 + [-(-1.7)]$  Substitute −1.7 for $t$.
$\qquad = 3.6 + [1.7]$  −(−1.7) means the opposite of −1.7, which is 1.7.
$\qquad = 5.3$  Simplify.

**5 EXAMPLE** A scuba diver who is 88 ft below sea level begins to ascend to the surface.

a. Write an expression to represent the diver's depth below sea level after rising any number of feet.

Relate: 88 ft below sea level    plus    feet diver rises

Define: Let $r$ = the number of feet the diver rises.

Write:              $-88$        $+$        $r$

$-88 + r$

b. Find the new depth of the scuba diver after rising 37 ft.

$-88 + r = -88 + 37$   Substitute 37 for $r$.

      $= -51$        Simplify.

The scuba diver is 51 ft below sea level.

**6 EXAMPLE** Add $\begin{bmatrix} -6 & 8.6 & 11 \\ 2.3 & 5 & -3 \end{bmatrix} + \begin{bmatrix} 7 & -5.4 & -2 \\ 11.1 & 3 & -1 \end{bmatrix}$

$\begin{bmatrix} -6 & 8.6 & 11 \\ 2.3 & 5 & -3 \end{bmatrix} + \begin{bmatrix} 7 & -5.4 & -2 \\ 11.1 & 3 & -1 \end{bmatrix}$

$= \begin{bmatrix} -6 + 7 & 8.6 + (-5.4) & 11 + (-2) \\ 2.3 + 11.1 & 5 + 3 & -3 + (-1) \end{bmatrix}$   Add corresponding elements.

$= \begin{bmatrix} 1 & 3.2 & 9 \\ 13.4 & 8 & -4 \end{bmatrix}$   Simplify.