

## Lesson 2-3

### Example 1 Subtract a Positive Integer

Find each difference.

a.  $4 - 9$

$$\begin{aligned} 4 - 9 &= 4 + (-9) && \text{To subtract 9, add } -9. \\ &= -5 && \text{Simplify.} \end{aligned}$$

b.  $-6 - 7$

$$\begin{aligned} -6 - 7 &= -6 + (-7) && \text{To subtract 7, add } -7. \\ &= -13 && \text{Simplify.} \end{aligned}$$

### Example 2 Subtract a Negative Integer

Find each difference.

a.  $5 - (-2)$

$$\begin{aligned} 5 - (-2) &= 5 + 2 && \text{To subtract } -2, \text{ add } +2. \\ &= 7 \end{aligned}$$

b.  $-8 - (-3)$

$$\begin{aligned} -8 - (-3) &= -8 + 3 && \text{To subtract } -3, \text{ add } +3. \\ &= -5 \end{aligned}$$

### Example 3 Subtract Integers to Solve Problems

**BUSINESS** A company's annual report states that the largest monthly profit for the year was \$12,500 and the largest monthly loss was -\$6,250. Find the difference between the largest monthly profit and the largest monthly loss.

**Explore** You know the largest monthly profit and the largest monthly loss. You need to find the difference between them.

**Plan** To find the difference, subtract the loss from the profit.

**Solve**  $12,500 - (-6,250) = 12,500 + 6,250$  To subtract  $-6,250$ , add  $+6,250$ .  
 $= 18,750$  Add 12,500 and 6,250.

The difference in monthly profit and loss is \$18,750.

**Examine** The difference between  $+\$12,500$  and  $-\$6,250$  must be  $12,500 + 6,250$  or \$18,750. The answer appears to be reasonable.

**Example 4 Evaluate Algebraic Expressions**

**a. Evaluate  $m - (-3)$  if  $m = 8$ .**

$$\begin{aligned} m - (-3) &= 8 - (-3) \\ &= 8 + 3 \\ &= 11 \end{aligned}$$

Write the expression. Replace  $x$  with 8.  
To subtract  $-3$ , add its additive inverse, 3.  
Add 8 and 3.

**b. Evaluate  $a - b$  if  $a = -6$  and  $b = -2$ .**

$$\begin{aligned} a - b &= -6 - (-2) \\ &= -6 + 2 \\ &= -4 \end{aligned}$$

Replace  $a$  with  $-6$  and  $b$  with  $-2$ .  
To subtract  $-2$ , add 2.  
Add  $-6$  and 2.

**c. Evaluate  $x + y - z$  if  $x = 11$ ,  $y = -7$ , and  $z = -5$ .**

$$\begin{aligned} x + y - z &= 11 + (-7) - (-5) \\ &= 4 - (-5) \\ &= 4 + 5 \\ &= 9 \end{aligned}$$

Replace  $x$  with 11,  $y$  with  $-7$ , and  $z$  with  $-5$ .  
Add 11 and  $-7$ .  
To subtract  $-5$ , add 5.  
Add 4 and 5.