

**9-3**

**Study Guide and Intervention**

**Solving Subtraction Equations**

**Addition Property of Equality** If you add the same number to each side of an equation, the two sides remain equal.

$$\begin{array}{r} 5 = 5 \\ +3 = +3 \\ \hline 8 = 8 \end{array}$$

**EXAMPLE 1** Solve  $x - 2 = 1$  using models.

$x - 2 = 1$

$x - 2 + 2 = 1 + 2$

$x = 3$

The solution is 3.

**EXAMPLE 2** Solve  $b - 3 = -5$ .

$$\begin{array}{r} b - 3 = -5 \\ +3 = +3 \\ \hline b + 0 = -2 \\ b = -2 \end{array}$$

Write the equation.  
Add 3 from each side to undo the addition of 3 on the left.  
Simplify.

**Check**  $b - 3 = -5$  Write the original equation.  
 $-2 - 3 \stackrel{?}{=} -5$  Replace  $b$  with  $-2$ .  
 $-5 = -5 \checkmark$  This sentence is true.

**EXERCISES**

Solve each equation. Use models if necessary. Check your solution.

- |                  |                  |                  |
|------------------|------------------|------------------|
| 1. $a - 2 = 3$   | 2. $b - 1 = 7$   | 3. $c - 4 = 4$   |
| 4. $-2 = x - 4$  | 5. $z - 6 = -3$  | 6. $g - 3 = -4$  |
| 7. $-9 + w = 1$  | 8. $v - 8 = 5$   | 9. $-7 = y - 5$  |
| 10. $u - 3 = -4$ | 11. $-2 = t - 9$ | 12. $f - 6 = -3$ |

Lesson 9-3

**Practice: Word Problems****Solving Subtraction Equations**

1. **BIRDS** A house cat, Sophie, scared away 5 birds when she arrived on the porch. If 3 birds remain, write and solve an equation to find how many birds were on the porch before Sophie arrived.

2. **APPLES** David brought apples to school one day. After giving one to each of his 5 closest friends, David had 6 apples left. Write and solve an equation to find how many apples David brought to school.

3. **BASKETBALL** The basketball team is practicing after school. Four students have to leave early. If 12 basketball players remain, write and solve an equation to find how many students are on the basketball team.

4. **MARBLES** Virginia's mother gave her marbles for her birthday. Virginia lost 13 of them. If she has 24 marbles left, write and solve an equation to find how many her mother gave her.

5. **MONEY** Claudio went for a walk. While he was walking, \$1.35 fell out of his pocket. When he returned home, he counted his money and had \$2.55 left. Write and solve an equation to find how much money was in Claudio's pocket when he started his walk.

6. **HANG GLIDING** Aida was hang gliding. After losing 35 feet in altitude, she was gliding at 125 feet. Write and solve an equation to find her height when she started hang gliding.

7. **SHARKS** The average great hammerhead shark is 11.5 feet long. The average great hammerhead shark is 13.5 feet shorter than the average whale shark. Write and solve an equation to find the length of the average whale shark.

8. **JOKES** At a party, Tex told 17 fewer knock-knock jokes than he did riddles. If he told 23 knock-knock jokes, write and solve an equation to find how many riddles Tex told at the party.