



Name \_\_\_\_\_ Date \_\_\_\_\_

## Solving Equations (Pages 86–89)

You can solve equations involving integers in the same way that you solved equations involving whole numbers.

### Solving Equations

- Ask yourself “What has been done to the variable?”
- Undo what has been done to the variable by using the inverse operation.
- Addition and subtraction undo each other. Undo these first. Multiplication and division undo each other. Undo these second.
- Do the same thing to each side of the equation to get the variable alone on one side.

### EXAMPLES

**A** Solve  $-4a - 2 = -6$ .

$$\begin{aligned} -4a - 2 &= -6 \\ -4a - 2 + 2 &= -6 + 2 && \text{First add 2 to} \\ -4a &= -4 && \text{each side.} \\ \frac{-4a}{-4} &= \frac{-4}{-4} && \text{Divide each side} \\ a &= 1 && \text{by } -4. \end{aligned}$$

**B** Solve  $\frac{b}{-7} = -8$ .

$$\begin{aligned} \frac{b}{-7} &= -8 \\ \frac{b}{-7} \cdot (-7) &= (-8)(-7) && \text{Multiply each side by } -7. \\ b &= 56 \end{aligned}$$

### Try These Together

1. Solve  $y + 8 = 23$ .

*HINT: What undoes the added 8?*

2. Solve  $-50 = g + 33$ .

*HINT: How can you get  $g$  by itself on one side?*

### PRACTICE

Solve each equation. Check your solution.

3.  $5k = -20$

4.  $\frac{h}{40} = -4$

5.  $-8d = -72$

6.  $x - 12 = -3$

7.  $\frac{p}{-49} = -7$

8.  $t - (-26) = 47$

9.  $-12 = \frac{s}{144}$

10.  $7a - 6 = 64$

11.  $2c + 15 = 29$

Write an equation for each problem and solve.

12. 5 times a number minus 7 is 23. What is the number?

13. A number divided by eight plus 14 is 12. What is the number?

14. **Life Science** There are 32 different species of dolphins around the world. The number of species of sharks is 16 more than 11 times the number of species of dolphins. Find the number of species of sharks.



15. **Standardized Test Practice** Solve  $x - (-52) = 63$ .

**A** 11

**B** 115

**C** -11

**D** -115

Answers: 1. 15 2. -83 3. -4 4. -160 5. 9 6. 9 7. 343 8. 21 9. -1,728 10. 10 11. 7 12. 5n - 7 = 23; 6  
13.  $\frac{8}{7} + 14 = 12; -16$  14. 368 15. A