

When you solve an equation, you use reasoning to select properties of equality that produce simpler equivalent equations until you find a solution. The steps below provide a general guideline for solving equations.

Take note

### Concept Summary Solving Equations

- Step 1** Use the Distributive Property to remove any grouping symbols. Use properties of equality to clear decimals and fractions.
- Step 2** Combine like terms on each side of the equation.
- Step 3** Use the properties of equality to get the variable terms on one side of the equation and the constants on the other.
- Step 4** Use the properties of equality to solve for the variable.
- Step 5** Check your solution in the original equation.



## Lesson Check

### Do you know HOW?

Solve each equation. Check your answer.

- 1.  $3x + 4 = 5x - 10$
- 2.  $5(y - 4) = 7(2y + 1)$
- 3.  $2a + 3 = \frac{1}{2}(6 + 4a)$
- 4.  $4x - 5 = 2(2x + 1)$

5. **Printing** Pristine Printing will print business cards for \$.10 each plus a setup charge of \$15. The Printing Place offers business cards for \$.15 each with a setup charge of \$10. What number of business cards costs the same from either printer?

### Do you UNDERSTAND?

**Vocabulary** Match each equation with the appropriate number of solutions.

- 6.  $3y - 5 = y + 2y - 9$       A. infinitely many
- 7.  $2y + 4 = 2(y + 2)$       B. one solution
- 8.  $2y - 4 = 3y - 5$       C. no solution

9. **Writing** A student solved an equation and found that the variable was eliminated in the process of solving the equation. How would the student know whether the equation is an identity or an equation with no solution?



## Practice and Problem-Solving Exercises



### Practice

Solve each equation. Check your answer.

- 10.  $5x - 1 = x + 15$
- 11.  $4p + 2 = 3p - 7$
- 12.  $6m - 2 = 2m + 6$
- 13.  $3 + 5q = 9 + 4q$
- 14.  $8 - 2y = 3y - 2$
- 15.  $3n - 5 = 7n + 11$
- 16.  $2b + 4 = -18 - 9b$
- 17.  $-3c - 12 = -5 + c$
- 18.  $-n - 24 = 5 - n$

See Problem 1.