



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

## Solving Two-Step Equations (Pages 32–36)

In some algebraic equations, two operations, such as addition and multiplication, are performed on a variable. An example is  $2x + 1 = 5$ . Such equations are known as *two-step* equations.

|                                   |  |  |
|-----------------------------------|--|--|
| <b>Solving Two-Step Equations</b> | $\begin{aligned} \text{Solve } 2x + 1 &= 5. \\ 2x + 1 - 1 &= 5 - 1 \\ 2x &= 4 \\ \frac{2x}{2} &= \frac{4}{2} \\ x &= 2 \end{aligned}$  | First, use inverse operations to “undo” any addition or subtraction operations. Then use inverse operations to “undo” any multiplication or division operations. Notice that this is in the opposite order from the order of operations. |
| <b>Distributive Property</b>      | <p>The sum of two addends multiplied by a number is the sum of the products of each addend and the number.</p> $6 \cdot (5 + 7) = (6 \cdot 5) + (6 \cdot 7), \text{ or } a \cdot (b + c) = (a \cdot b) + (a \cdot c)$ <p>You can use the distributive property to solve many two-step equations.</p> |  |

### EXAMPLE

Solve  $3(8 + b) = 27$ .

$$\begin{aligned} 3(8 + b) &= 27 \\ 3 \cdot 8 + 3 \cdot b &= 27 \\ 24 + 3b &= 27 \\ 24 - 24 + 3b &= 27 - 24 \\ 3b &= 3 \\ \frac{3b}{3} &= \frac{3}{3} \\ b &= 1 \end{aligned}$$

*Use the distributive property.*

*Subtract 24 from each side.*

*Divide each side by 3.*

*The solution is 1. Be sure to check your answer.*

### Try These Together

**Solve each equation. Check your solution.**

1.  $2d + 10 = 20$

2.  $3f - 15 = 12$

3.  $9 + 4t = 25$

*HINT: Remember to “undo” operations.*

### PRACTICE

**Solve each equation. Check your solution.**

4.  $30 = 5p + 25$

5.  $2(x - 3) = 8$

6.  $8g - 24 = 8$

7.  $17 + 12r = 41$

8.  $64 = 4s + 16$

9.  $50 = 6z - 10$

10.  $\frac{n}{3} + 8 = 11$

11.  $\frac{m}{15} - 2 = 0$

12.  $5.8 + 3a = 14.8$

13. **Entertainment** At an amusement park, admission for the first 5 people in Bob’s family cost \$20 per person, or \$100 total. The remaining people in the group got in at a lower rate. If Bob’s family is a group of 8, and the total cost was \$145, how much was the admission, per person, for the other three people?



14. **Standardized Test Practice** Find  $n$  if  $4n - 16 = 36$ .

**A** 14

**B** 12

**C** 13

**D** 15

Answers: 1. 5 2. 9 3. 4 4. 1 5. 7 6. 4 7. 2 8. 12 9. 10 10. 9 11. 30 12. 3 13. \$15 each 14. C