LESSON 3.3

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Practice with Examples

For use with pages 145–152

GOAL **Use two or more transformations to solve an equation and use multi-step equations to solve real-life problems**

EXAMPLE 1 Solving a Linear Equation

Solve $-3x - 4 = 5$.

SOLUTION

To isolate the variable x, undo the subtraction and then the multiplication.

$-3x - 4 = 5$	Write original equation.
$-3x - 4 + 4 = 5 + 4$	Add 4 to each side.
$-3x = 9$	Simplify.
$\frac{-3x}{-3} = \frac{9}{-3}$	Divide each side by -3.
$x = -3$	Simplify.

The solution is -3. Check this in the original equation.

Exercises for Example 1

Solve the equation.

1. $5y + 8 = -2$

2. $7 - 6m = 1$

3. $\frac{x}{4} - 1 = 5$

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EXAMPLE 2 Using the Distributive Property and Combining Like Terms

Solve $y + 5(y + 3) = 33$.

SOLUTION

$y + 5(y + 3) = 33$	Write original equation.
$y + 5y + 15 = 33$	Use distributive property.
$6y + 15 = 33$	Combine like terms.
$6y + 15 - 15 = 33 - 15$	Subtract 15 from each side.
$6y = 18$	Simplify.
$\frac{6y}{6} = \frac{18}{6}$	Divide each side by 6.
$y = 3$	Simplify.

The solution is 3. Check this in the original equation.

Exercises for Example 2

Solve the equation.

4. $4x - 8 + x = 2$

5. $6 - (b + 1) = 9$

6. $10(z - 2) = 1 + 4$

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EXAMPLE 3 Solving a Real-Life Problem

The sum of the ages of two sisters is 25. The second sister's age is 5 more than three times the first sister's age n. Find the two ages.

SOLUTION

First sister's age (n) + Second sister's age $(3n + 5) = 25$

Solve $n + (3n + 5) = 25$.

$n + (3n + 5) = 25$	Write real-life equation.
$4n + 5 = 25$	Combine like terms.
$4n + 5 - 5 = 25 - 5$	Subtract 5 from each side.
$4n = 20$	Simplify.
$\frac{4n}{4} = \frac{20}{4}$	Divide each side by 4.
$n = 5$	Simplify.

The first sister's age is 5. The second sister's age is $3(5) + 5 = 20$.

Exercises for Example 3

7. A parking garage charges \$3 plus \$1.50 per hour. You have \$12 to spend for parking. Write and solve an equation to find the number of hours that you can park.

8. As a lifeguard, you earn \$6 per day plus \$2.50 per hour. Write and solve an equation to find how many hours you must work to earn \$16 in one day.