LESSON 2.4
Notes

GOAL
Solve multi-step equations.

EXAMPLE 1
Solve an equation by combining like terms

Solve $17x - 11x + 8 = 20$.
Solution

$17x - 11x + 8 = 20$	Write original equation.
$6x + 8 = 20$	Combine like terms.
$6x + 8 - 8 = 20 - 8$	Subtract 8 from each side.
$6x = 12$	Simplify.
$\frac{6x}{6} = \frac{12}{6}$	Divide each side by 6.
$x = 2$	Simplify.

Exercises for Example 1

Solve the equation. Check your solution.

1. $9x - 13x + 7 = 31$
2. $13 - 5x + 8x = -2$
3. $15x - 9 - 8x = 12$
4. $18 - 2x - 4x = -24$

EXAMPLE 2
Solve an equation using the distributive property

Solve $4x + 3(2x - 1) = 17$.

Solution

METHOD 1 Show All Steps

$4x + 3(2x - 1) = 17$

$4x + 6x - 3 = 17$

$10x - 3 = 17$

$10x - 3 + 3 = 17 + 3$

$10x = 20$

$\frac{10x}{10} = \frac{20}{10}$

$x = 2$

METHOD 2 Do Some Steps Mentally

$4x + 3(2x - 1) = 17$

$4x + 6x - 3 = 17$

$10x - 3 = 17$

$10x = 20$

$x = 2$

Exercises for Example 2

Solve the equation. Check your solution.

5. $3(x - 4) + 4x = 16$

6. $9x - 6(3x - 3) = 9$

7. $-2x + 7(3x - 1) = 31$

8. $5(2x + 8) - 6x = 16$

EXAMPLE 3

Multiply by a reciprocal to solve an equation

Solve $(5x - 4) = 12.$

Solution

$\frac{3}{4}(5x - 4) = 12$	Write original equation.
$\frac{4}{3} \cdot \frac{3}{4}(5x - 4) = \frac{4}{3} \cdot 12$	Multiply each side, the reciprocal of $\frac{3}{4}$
$5x - 4 = 16$	Simplify.
$5x = 20$	Subtract 4 from each side.
$x = 4$	Simplify.

Exercises for Example 3

Solve the equation. Check your solution.

$\frac{1}{2}$

9. $(x - 11) = 9$

10. $-\frac{3}{2}(2y + 6) = 15$

11. $-15 = \frac{5}{7}(4z - 1)$

12. $36 = -\frac{3}{4}(5m + 12)$

Answer Key

Lesson 2.4

Study Guide

1. $x = -6$
2. $x = -5$
3. $x = 3$
4. $x = 7$
5. $x = 4$
6. $x = 1$
7. $x = 2$
8. $x = -6$
9. $x = 29$
10. $y = -8$
11. $z = -5$
12. $m = -12$