Lesson 3-5

Example 1 **Solve Two-Step Equations**

a. Solve $3x - 4 = 11$. Check your solution.

$3x - 4 = 11$	Write the equation.
$3x - 4 + 4 = 11 + 4$	Undo subtraction. Add 4 to each side.
$3x = 15$	Simplify.
$\frac{3x}{3} = \frac{15}{3}$	Undo multiplication. Divide each side by 3.
$x = 5$	Simplify.

CHECK

$3x - 4 = 11$	Write the equation.
$3(5) - 4 \stackrel{?}{=} 11$	Check to see whether this statement is true.
$11 = 11$ ✓	The statement is true.

b. Solve $8 + \frac{y}{3} = 14$.

$8 + \frac{y}{3} = 14$	Write the equation.
$8 - 8 + \frac{y}{3} = 14 - 8$	Undo addition. Subtract 8 from each side.
$\frac{y}{3} = 6$	Simplify.
$3\left(\frac{y}{3}\right) = 3(6)$	Undo division. Multiply each side by 3.
$y = 18$	Simplify.
The solution is 18.	Check your solution.

Example 2 **Use an Equation to a Solve Problem**

PRODUCTION **The monthly cost to run a small company that produces paper products combines a flat cost of $1,250 with a variable cost of $5 per unit produced. The total cost for the month of April is $11,250. Solve $1250 + 5x = 11250$ to find out how many units were produced in April.**

$1250 + 5x = 11250$	Write the equation.
$1250 + 5x - 1250 = 11250 - 1250$	Subtract 1250 from each side.
$5x = 10000$	Simplify.
$\frac{5x}{5} = \frac{10000}{5}$	Divide each side by 5.
$x = 2000$	Simplify.

The solution is 2,000. Therefore, 2000 units were produced in April.

Example 3 **Equations with Negative Coefficients**

Solve $6 = 9 - x$.

$6 = 9 - x$	Write the equation.
$6 = 9 - 1x$	Identity Property; $x = 1x$
$6 = 9 + (-1x)$	Definition of subtraction
$6 = -1x + 9$	Commutative Property
$6 - 9 = -1x + 9 - 9$	Add –9 to each side.
$-3 = -1x$	Simplify.
$\frac{-3}{-1} = \frac{-1x}{-1}$	Divide each side by –1.
$3 = x$	Simplify.
The solution is 3.	Check your solution.

Example 4 **Combine Like Terms Before Solving**

Solve $3w - 7w - 11 = 25$

$3w - 7w - 11 = 25$	Write the equation.
$-4w - 11 = 25$	Combine like terms, $3w$ and $-7w$.
$-4w + (-11) = 25$	Definition of subtraction
$-4w + (-11) + 11 = 25 + 11$	Add 11 to each side.
$-4w = 36$	Simplify.
$\frac{-4w}{-4} = \frac{36}{-4}$	Divide each side by –4.
$w = -9$	Simplify.
The solution is –9.	Check your solution.