When you solve equations that have one operation, you use an inverse operation to isolate the variable. You can also use inverse operations to solve equations that have more than one operation.

$n + 7 = 15$
$\underline{-7 \quad -7}$
$n \quad = \quad 8$

$2x + 3 = 23$
$\underline{-3 \quad -3}$
$2x = 20$

You need to use another operation to isolate x.

It is often a good plan to follow the order of operations in reverse when solving equations that have more than one operation.

Solve. Check each answer.

A. $9c + 3 = 39$

$9c + 3 = 39$

$\underline{\quad -3 \quad -3}$ *Subtract 3 from both sides.*

$9c \quad = 36$

$$\dfrac{9c}{9} = \dfrac{36}{9}$$ *Divide both sides by 9.*

$c = 4$

Additional Example 1A Continued

Check.

$$9c + 3 = 39$$

$$9(4) + 3 \stackrel{?}{=} 39$$ *Substitute 4 for c.*

$$36 + 3 \stackrel{?}{=} 39$$

$$39 \stackrel{?}{=} 39 \quad \checkmark \quad \text{4 is a solution.}$$

Additional Example 1B: Solving Two-Step Equations Using Division

Solve. Check the answer.

B. $-4m - 6 = -34$

$$-4m - 6 = -34$$

$$\underline{\quad\quad + 6 \quad\quad +6}$$ *Add 6 to both sides.*

$$-4m \quad\quad = -28$$

$$\frac{-4m}{-4} = \frac{-28}{-4}$$ *Divide both sides by –4.*

$$m = 7$$

Check.

$$-4m - 6 = -34$$

$$-4(7) - 6 \overset{?}{=} -34 \qquad \text{Substitute 7 for m.}$$

$$-28 - 6 \overset{?}{=} -34$$

$$-34 \overset{?}{=} -34 \checkmark \qquad \text{7 is a solution.}$$

Solve.

C. $6 + \dfrac{y}{5} = 21$

$6 + \dfrac{y}{5} = 21$

$\underline{-6 \qquad\quad -6}$ *Subtract 6 from both sides.*

$\dfrac{y}{5} = 15$

$(5)\,\dfrac{y}{5} = (5)15$ *Multiply both sides by 5.*

$y = 75$

Check.

$$6 + \frac{y}{5} = 21$$

$$6 + \frac{75}{5} = 21 \qquad \textit{Substitute 75 for y.}$$

$$6 + 15 = 21$$

$$21 = 21 \checkmark$$

75 is a solution.

Solve.

D. $\dfrac{x}{7} - 11 = 9$

$$\dfrac{x}{7} - 11 = 9$$

$$\underline{\quad +11 \quad +11 \quad}$$ *Add 11 to both sides.*

$$\dfrac{x}{7} = 20$$

$$(7)\,\dfrac{x}{7} = (7)20$$ *Multiply both sides by 7.*

$$x = 140$$

Check.

$$\frac{x}{7} - 11 = 9$$

$$\frac{140}{7} - 11 = 9$$ *Substitute 140 for y.*

$$20 - 11 = 9$$

$$9 = 9 \checkmark$$ *140 is a solution.*