Chapter 2   Equations in One Variable

3 **Solve $\frac{1}{3}h - 4\left(\frac{2}{3}h - 3\right) = \frac{2}{3}h - 6$. Check your solution.**

$$\frac{1}{3}h - 4\left(\frac{2}{3}h - 3\right) = \frac{2}{3}h - 6 \qquad \text{Write the equation.}$$

$$\frac{1}{3}h - \frac{8}{3}h + 12 = \frac{2}{3}h - 6 \qquad \text{Distributive Property}$$

$$-\frac{7}{3}h + 12 = \frac{2}{3}h - 6 \qquad \text{Collect like terms.}$$

$$\underline{+\frac{7}{3}h \qquad = +\frac{7}{3}h} \qquad \text{Addition Property of Equality}$$

$$12 = \ 3h - 6 \qquad \text{Simplify.}$$

$$\underline{+6 = \qquad +6} \qquad \text{Addition Property of Equality}$$

$$18 = \ 3h \qquad \text{Simplify.}$$

$$\frac{18}{3} = \frac{3h}{3} \qquad \text{Division Property of Equality}$$

$$6 = h \qquad \text{Simplify.}$$

So, the solution is 6.

To check the solution, replace h with 6 in the original equation.

$$\frac{1}{3}h - 4\left(\frac{2}{3}h - 3\right) = \frac{2}{3}h - 6 \qquad \text{Write the original equation.}$$

$$\frac{1}{3}6 - 4\left(\frac{2}{3}6 - 3\right) \overset{?}{=} \frac{2}{3}6 - 6 \qquad \text{Replace } h \text{ with 6.}$$

$$2 - 4(4 - 3) \overset{?}{=} 4 - 6 \qquad \text{Simplify.}$$

$$2 - 4(1) \overset{?}{=} -2 \qquad \text{Simplify.}$$

$$2 - 4 \overset{?}{=} -2 \qquad \text{Simplify.}$$

$$-2 = -2 \ \checkmark \qquad \text{The sentence is true.}$$

Glencoe Math, Course 3

The school has budgeted $2,000 for an end-of-year party at the local park. The cost to rent the park shelter is $150. How much can the student council spend per student on food if each of the 225 students received a $3.50 gift?

Let f represent the amount spent per student on food. Then $f + 3.50$ represents the total amount spent per student. There are 225 students and the park shelter costs $150.

$225(f + 3.5) + 150 = 2,000$	Write the equation.
$225f + 225 \cdot 3.5 + 150 = 2,000$	Distributive Property
$225f + 787.5 + 150 = 2,000$	Simplify.
$225f + 937.5 = 2,000$	Simplify.
$225f + 937.5 - 937.5 = 2,000 - 937.5$	Subtraction Property of Equality
$225f = 1,062.5$	Simplify.
$\dfrac{225f}{225} = \dfrac{1,062.5}{225}$	Division Property of Equality
$f = 4.7\overline{2}$	Simplify.

So, the student council can spend $4.72 per student on food.