

# Solving Simple Equations

## Three or more step equations

1.  $3x + 3 = x + 15$

$$\begin{array}{r} -3 \quad -3 \\ 3x + 3 = x + 15 \\ \hline \end{array}$$

$$3x = x + 12$$

$$\begin{array}{r} -x \quad -x \\ 3x = x + 12 \\ \hline \end{array}$$

$$2x = 12$$

$$\frac{2x}{2} = \frac{12}{2}$$

$$\mathbf{x = 6}$$

Subtract 3 from both sides to get the x term by itself on the left side and the number terms by itself on the right side.

Subtract x from both sides to get the x terms together on the left.

Divide both sides by 2 to get x by itself.

2.  $3x - 3 = x - 15$

$$\begin{array}{r} +3 \quad +3 \\ 3x - 3 = x - 15 \\ \hline \end{array}$$

$$3x = x + 18$$

$$\begin{array}{r} -x \quad -x \\ 3x = x + 18 \\ \hline \end{array}$$

$$2x = 18$$

$$\frac{2x}{2} = \frac{18}{2}$$

$$\mathbf{x = 9}$$

Add 3 to both sides to get the x term by itself on the left side and the number terms by itself on the right side.

Subtract x from both sides to get the x terms together on the left.

Divide both sides by 2 to get x by itself.

3.  $\frac{x}{3} + 2 = \frac{x}{6} + 4$

$$\begin{array}{r} -2 \quad -2 \\ \frac{x}{3} + 2 = \frac{x}{6} + 4 \\ \hline \end{array}$$

$$\frac{x}{3} = \frac{x}{6} + 2$$

$$6\left(\frac{x}{3}\right) = 6\left(\frac{x}{6} + 2\right)$$

$$6\left(\frac{x}{3}\right) = 6\left(\frac{x}{6}\right) + 6(2)$$

$$3x = x + 12$$

$$\begin{array}{r} -x \quad -x \\ 3x = x + 12 \\ \hline \end{array}$$

$$2x = 12$$

$$\frac{2x}{2} = \frac{12}{2}$$

$$\mathbf{x = 6}$$

Subtract 2 from both sides to get the x term by itself on the left side and the number terms by itself on the right side.

LCD: 6

Multiply both sides by LCD (6) since to cancel both denominators in the next step.

Distribute 6 on right to allow us to cancel the denominator and still multiply the 2.

Subtract x from both sides to get the x terms together on the left.

Divide both sides by 2 to get x by itself.