

# Solving Addition and Subtraction Equations

You can use inverse relationships and the properties of equality to get the variable alone to solve an equation. Remember that you need to do the same thing to both sides of the equation to keep the equation equal.

Solve the equation  $5 + c = 15$ .

To get  $c$  alone, undo adding 5 by subtracting 5 from both sides.

$$\begin{aligned} 5 + c &= 15 \\ 5 + c - \mathbf{5} &= 15 - \mathbf{5} \\ c &= 10 \end{aligned}$$

Check your solution by substituting 10 for  $c$  in the equation.

$$\begin{aligned} 5 + c &= 15 \\ 5 + 10 &= 15 \\ 15 &= 15 \quad \text{It checks.} \end{aligned}$$

Solve the equation  $x - 20 = 16$ .

To get  $x$  alone, undo subtracting 20 by adding 20 to both sides.

$$\begin{aligned} x - 20 &= 16 \\ x - 20 + \mathbf{20} &= 16 + \mathbf{20} \\ x &= 36 \end{aligned}$$

Check your solution by substituting 36 for  $x$  in the equation.

$$\begin{aligned} x - 20 &= 16 \\ 36 - 20 &= 16 \\ 16 &= 16 \quad \text{It checks.} \end{aligned}$$

Explain how to get the variable alone in each equation.

1.  $x + 13 = 25$   
 $x + 13 - \mathbf{13} = 25 - \mathbf{13}$

2.  $n - 30 = 10$   
 $n - 30 + \mathbf{30} = 10 + \underline{\quad}$

Solve each equation and check your answer. Show your work.

3.  $g - 100 = 150$

$$g - 100 + \underline{\quad} = 150 + \underline{\quad}$$

$$g = \underline{\quad}$$

4.  $y + 56 = 63$

5. The Olympic triathlon is 51.5 km. A contestant has completed two of the three legs of the race and has traveled 41.5 km. Solve  $41.5 + d = 51.5$  to find the distance of the third leg.

\_\_\_\_\_