

Solving Two-Step Equations

A two-step equation contains two operations. To solve two-step equations, use inverse operations to undo each operation in reverse order of the order of operations. First, undo addition/subtraction. Then, undo multiplication/division.

Example 1 Solve $\frac{1}{2}c - 13 = 7$. Check your solution.

$$\begin{aligned} \frac{1}{2}c - 13 &= 7 && \text{Write the equation.} \\ \frac{1}{2}c - 13 + 13 &= 7 + 13 && \text{Addition Property of Equality} \\ \frac{1}{2}c &= 20 && \text{Simplify.} \\ 2 \cdot \frac{1}{2}c &= 2 \cdot 20 && \text{Multiplication Property of Equality} \\ c &= 40 && \text{Simplify. Check your solution.} \end{aligned}$$

$$\begin{aligned} \text{Check } \frac{1}{2}c - 13 &= 7 \\ \frac{1}{2}(40) - 13 &\stackrel{?}{=} 7 \\ 20 - 13 &\stackrel{?}{=} 7 \\ 7 &= 7 \quad \checkmark \end{aligned}$$

Example 2 Solve $7y - 2y + 4 = 29$. Check your solution.

$$\begin{aligned} 7y - 2y + 4 &= 29 && \text{Write the equation.} \\ 5y + 4 &= 29 && \text{Combine like terms.} \\ \underline{-4} &= \underline{-4} && \text{Subtraction Property of Equality} \\ 5y &= 25 && \text{Simplify.} \\ \frac{5y}{5} &= \frac{25}{5} && \text{Division Property of Equality} \\ y &= 5 && \text{Simplify. Check your solution.} \end{aligned}$$

$$\begin{aligned} \text{Check } 7y - 2y + 4 &= 29 \\ 7(5) - 2(5) + 4 &\stackrel{?}{=} 29 \\ 35 - 10 + 4 &\stackrel{?}{=} 29 \\ 25 + 4 &\stackrel{?}{=} 29 \\ 29 &= 29 \quad \checkmark \end{aligned}$$

Exercises

Solve each equation. Check your solutions.

1. $5t + 2 = 7$	2. $2x + 5 = 9$	3. $8m - 7 = 17$
4. $6.2u - 8 = 29.2$	5. $17m - 9 = 5$	6. $19k - 3 = -11$
7. $13 + 14a = -3$	8. $-3 + 12c = 12$	9. $7.2 - 2h = 20.4$