

Solving One-Step Equations Using Addition and Subtraction

Step 1: Add or subtract the number on the same side of the variable to both sides of the equation.

Step 2: Check your answer.

Directions: Solve each equation. Check your answer.

1. $x + 11 = 21$

$$\begin{array}{r} \cancel{-11} \quad \cancel{-11} \\ \hline x = 10 \end{array}$$

Check

$$\begin{array}{l} x = 10 \quad \rightarrow \quad x + 11 = 21 \\ \quad \quad \quad \quad \quad \quad 10 + 11 = 21 \\ \quad \quad \quad \quad \quad \quad 21 = 21 \checkmark \end{array}$$

2. $-26 = b - 4$

$$\begin{array}{r} +4 \quad +4 \\ \hline -22 = b \\ \hline b = -22 \end{array}$$

$$\begin{array}{l} b = -22 \quad \overbrace{-26 = b - 4} \\ -26 = -22 - 4 \\ -26 = -22 + \oplus 4 \\ -26 = -22 + -4 \\ -26 = -26 \checkmark \end{array}$$

3. $x + 5 = -30$

$$\begin{array}{r} \cancel{-5} \quad \cancel{-5} \\ \hline x = -35 \end{array}$$

$$\begin{array}{r} -30 - 5 \\ -30 + \oplus 5 \\ -30 + -5 \\ -35 \end{array}$$

$$\begin{array}{l} x = -35 \quad \rightarrow \quad x + 5 = -30 \\ \quad \quad \quad \quad \quad \quad -35 + 5 = -30 \\ \quad \quad \quad \quad \quad \quad -30 = -30 \checkmark \end{array}$$

$$4. y + \frac{2}{3} = \frac{5}{6}$$

$$\frac{2}{3} \quad - \frac{2}{3}$$

$$y = \frac{1}{6}$$

$$\frac{5}{6} - \frac{2 \cdot 2}{3 \cdot 2} = \frac{5}{6} - \frac{4}{6} = \frac{5-4}{6} = \frac{1}{6}$$

$$\text{LCD} = 6$$

$$6: \textcircled{6} 12, 18$$

$$3: 3, \textcircled{6} 9$$

Check

$$y = \frac{1}{6} \quad \downarrow \quad y + \frac{2}{3} = \frac{5}{6}$$

$$\frac{1}{6} + \frac{2}{3} = \frac{5}{6}$$

$$\text{LCD} = 6$$

$$\frac{1}{6} + \frac{4}{6} = \frac{5}{6}$$

$$\frac{1+4}{6} = \frac{5}{6}$$

$$5/6 = 5/6 \checkmark$$

$$5. 1\frac{1}{4} = y - 2\frac{2}{3}$$

$$+ 2\frac{2}{3} \quad + 2\frac{2}{3}$$

$$3\frac{11}{12} = y$$

$$y = 3\frac{11}{12}$$

$$1\frac{1}{4} + 2\frac{2}{3} = \frac{3 \cdot 5}{3 \cdot 4} + \frac{8 \cdot 4}{3 \cdot 4} = \frac{15}{12} + \frac{32}{12} = \frac{15+32}{12} = \frac{47}{12}$$

$$\text{LCD: } 12$$

$$4: 4, 8, \textcircled{12}$$

$$3: 3, 6, 9, \textcircled{12}$$

$$\begin{array}{r} 3 \\ 12 \overline{) 47} \quad 3\frac{11}{12} \\ \underline{- 36} \\ 11 \end{array}$$

Check

$$y = 3\frac{11}{12} \text{ OR } \frac{47}{12}$$

$$1\frac{1}{4} = y - 2\frac{2}{3}$$

$$\frac{5}{4} = \frac{47}{12} - \frac{4 \cdot 8}{4 \cdot 3}$$

$$\text{LCD: } 12$$

$$\frac{5}{4} = \frac{47}{12} - \frac{32}{12}$$

$$\frac{5}{4} = \frac{47-32}{12}$$

$$\frac{5}{4} = \frac{15}{12} \div 3 = \frac{5}{4} \checkmark$$

$$6. f + 1.2 = -2.7$$

$$\begin{array}{r} -1.2 \\ -1.2 \end{array}$$

$$\boxed{f = -3.9}$$

$$\begin{array}{r} -2.7 - 1.2 \\ -2.7 + \oplus 1.2 \\ -2.7 + -1.2 \\ -3.9 \end{array}$$

$$\begin{array}{r} f = -3.9 \\ \begin{array}{r} 3.9 \\ -1.2 \\ \hline 2.7 \end{array} \end{array}$$
$$\begin{array}{r} f + 1.2 = -2.7 \\ -3.9 + 1.2 = -2.7 \\ -2.7 = -2.7 \checkmark \end{array}$$

$$7. -2.05 = g - 1.6$$

$$\begin{array}{r} +1.6 \\ +1.6 \end{array}$$

$$-0.45 = g$$

$$\boxed{g = -0.45}$$

$$-2.05 + 1.6$$

$$\begin{array}{r} 2.05 \\ -1.60 \\ \hline .45 \end{array}$$

check

$$g = -0.45 \quad -2.05 = -0.45 - 1.6$$

$$-0.45 + \oplus 1.6$$

$$-0.45 + -1.6$$

$$-2.05$$

$$-2.05 = -2.05 \checkmark$$

$$\begin{array}{r} .45 \\ 1.60 \\ \hline 2.05 \end{array}$$