

Lesson 23 Solving Two-Step Equations

If an equation has two operations, use inverse operations and work backward to undo each operation one at a time.

***First add or subtract**

***Then multiply or divide**

Examples: Solve each equation.

1. $3x - 2 = 10$

$$\begin{array}{r} 3x - 2 = 10 \\ +2 \quad +2 \\ \hline 3x = 12 \\ \frac{3x}{3} = \frac{12}{3} \quad x = \underline{\underline{4}} \end{array}$$

2. $4x + 15 = 17$

$$\begin{array}{r} 4x + 15 = 17 \\ -15 \quad -15 \\ \hline 4x = 2 \\ \frac{4x}{4} = \frac{2}{4} \\ x = \underline{\underline{\frac{1}{2}}} \end{array}$$

2. $4x + 15 = 17$

3. $8 = -5m + 6$

$$\begin{array}{r} 8 = -5m + 6 \\ -6 \quad -6 \\ \hline 2 = -5m \\ \frac{2}{-5} = \frac{-5m}{-5} \\ \underline{\underline{\frac{-2}{5}}} = m \end{array}$$

3. $8 = -5m + 6$

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

$$2 \cdot \frac{1}{2}n = \frac{13}{12} \cdot 2$$

$$n = \frac{26}{12} = \frac{13}{6} = \underline{\underline{2\frac{1}{6}}}$$

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

5. $-10 = -2x + 12$

$$\begin{array}{r} -10 = -2x + 12 \\ -12 \quad -12 \\ \hline -22 = -2x \end{array}$$

5. $-10 = -2x + 12$

$$x = \underline{\underline{11}}$$

6. The Green family conserves energy by using energy-efficient bulbs. They pay \$125 for energy-efficient bulbs. If the family saves \$7 per month on their electricity bill, and the power company gives them a rebate of \$25, in about how many months will they have paid for the bulbs?

Let $x = \#$ months $7x + 25 = 125$

$$\begin{array}{r} 7x + 25 = 125 \\ -25 \quad -25 \\ \hline 7x = 100 \\ \frac{7x}{7} = \frac{100}{7} \end{array}$$

$$x = 14.3$$

about 14 months