

## SOLVING MULTI-STEP EQUATIONS

- Step 1: Distribute if necessary.
- Step 2: Simplify each side of the equation by Combine like terms.
- Step 3: Combine all variables terms to one side using inverse operation.
- Step 4: Solve the remaining 2-step equation using inverse operation.

Examples:

1.  $2(3x - 2) + 2x = 12$

$$6x - 4 + 2x = 12$$

$$8x - 4 = 12$$

$$\begin{array}{r} 8x - 4 = 12 \\ +4 \quad +4 \\ \hline 8x = 16 \\ \frac{8x}{8} = \frac{16}{8} \end{array}$$

given

Distribute

Combine like terms

Add 4 to both sides

Divide 8

Solve

2.  $6x - 4 = 2x + 12$

$$\begin{array}{r} 6x - 4 = 2x + 12 \\ -2x \quad -2x \\ \hline 4x - 4 = 12 \end{array}$$

$$\begin{array}{r} 4x - 4 = 12 \\ +4 \quad +4 \\ \hline 4x = 16 \end{array}$$

$$\begin{array}{r} 4x = 16 \\ \frac{4x}{4} = \frac{16}{4} \end{array}$$

3.  $-5x + 6 - (x - 2) = -3(x + 3)$

$$\begin{array}{r} -5x + 6 - x + 2 = -3x - 9 \\ -6x + 8 = -3x - 9 \\ +3x \quad +3x \\ \hline -3x + 8 = -9 \end{array}$$

$$\begin{array}{r} -3x + 8 = -9 \\ -8 \quad -8 \\ \hline -3x = -17 \end{array}$$

$$\begin{array}{r} -3x = -17 \\ \frac{-3x}{-3} = \frac{-17}{-3} \end{array}$$

$$x = \frac{17}{3} = 5\frac{2}{3}$$

given

Subtract 2x

Add 4

Divide by 4

Solve

given

Distribute

Combine Like Terms

Add 3x

subtract 8

divide -3

Solve

