

Same Side

- ① Combine like terms
- ② Use Inverse Operations
 - Adding \longleftrightarrow Subtracting
 - Multiplying \longleftrightarrow Dividing

Ex $3x - 4 + 2x = 36$

$$\begin{array}{r} 3x - 4 + 2x = 36 \\ 5x - 4 = 36 \\ +4 \qquad +4 \end{array}$$

Check: $3(8) - 4 + 2(8) = 36$

$$\frac{5x}{5} = \frac{40}{5}$$

$36 = 36 \checkmark$

$24 - 4 + 16$

$20 + 16$

$36 = 36 \checkmark$

$x = 8$

Ex 2 $12x + 9 - 3x + 5 = -49$

$$\begin{array}{r} 9x + 14 = -49 \\ -14 \quad -14 \end{array}$$

$$\frac{9x}{9} = \frac{-63}{9}$$

$x = -7$

Ex 3

$$3x + 5(x - 2) = 14$$

$$3x + 5x - 10 = 14$$

$$8x - 10 = 14$$

$$+10 \quad +10$$

$$8x = 24$$

$x = 3$

$$4 + 2(x - 6) = 10$$

Variables on Both Sides

Summary

1. Move all variables to 1 side. Letters to the Left
2. Combine Like Terms
"Stay / Go"
3. Use Inverse Operations to Solve

Ex 4

$$\begin{array}{r|l}
 \begin{array}{r}
 \text{S} \quad \text{G} \\
 -2x + 15 \\
 -4x \quad -15 \\
 \hline
 -6x = 24 \\
 \hline
 -6 \quad -6 \\
 x = -4
 \end{array}
 &
 \begin{array}{r}
 \text{G} \quad \text{S} \\
 4x + 39 \\
 -4x \quad -15 \\
 \hline
 \end{array}
 \end{array}$$

Ex 5

$$\begin{array}{r}
 13x - 5 = 10x + 37 - 4x \\
 \begin{array}{r}
 \text{S} \quad \text{G} \\
 13x - 5 \\
 -6x + 5 \\
 \hline
 7x = 42 \\
 x = 6
 \end{array}
 =
 \begin{array}{r}
 \text{G} \quad \text{S} \\
 6x + 37 \\
 -6x + 5 \\
 \hline
 \end{array}
 \end{array}$$

Ex 6

$$\begin{array}{r}
 x = 6 \\
 -7(x-1) = -5(x-5) \\
 \begin{array}{r}
 -7x + 7 \\
 +5x - 7 \\
 \hline
 -2x = 18 \\
 x = -9
 \end{array}
 =
 \begin{array}{r}
 -5x + 25 \\
 +5x - 7 \\
 \hline
 \end{array}
 \end{array}$$