Solving Equations with Variables on Both Sides

Step 1: Combine like terms on each side of the equation.
Step 2: Use opposite operations to move the variables to one side of the equation.
Step 3: Solve the equation by isolating the variable.
Step 4: Check your answer by substituting the solution into the original equation.

Directions: Solve each equation and check your solution.

1. $+2x-3=8x-9$
$-2x \quad -2x$

$-3=6x-9$
$+9 \quad +9$

$\frac{6}{6}=\frac{6x}{6}$

$1=x$

$\boxed{x=1}$

Check

$x=1 \quad 2x-3=8x-9$
$2(1)-3=8(1)-9$
$2-3=8-9$
$-1=-1$ ✓

2. $2+6y=-2y-14$
$+2y \quad +2y$

$2+8y=-14$
$-2 \quad -2$

$\frac{8y}{8}=\frac{-16}{8}$

$\boxed{y=-2}$

$-14+2=-16$

$y=-2 \quad 2+6y=-2y-14$
$2+6(-2)=-2(-2)-14$
$2-12=4-14$
$-10=-10$ ✓

3. $-8x+3=-2x+10-5x$

$-2x+-5x=-7x$

$-8x+3=-7x+10$
$+8x \quad +8x$

$3=x+10$
$-10 \quad -10$

$-7=x$

$\boxed{x=-7}$

$x=-7 \quad -8x+3=-2x+10-5x$
$-8(-7)+3=-2(-7)+10-5(-7)$

$56+3=14+10+35$
$59=59$ ✓

4. $5x-7=-15x-41+3x$

$5x-7=-12x-41$
$+12x \quad +12x$

$17x-7=-41$
$+7 \quad +7$

$x=-2 \quad 5x-7=-15x-41+3x$
$5(-2)-7=-15(-2)-41+3(-2)$
$-10+-7=30-41-6$
$-17=-11+-6$

$$\frac{17x}{17} = \frac{-34}{17}$$

$$\boxed{x = -2}$$

$$-17 = -17 \checkmark$$

5. $55 - 1(5 - x) = -6x + 8$

$$55 - 1(5 - 1x) = -6x + 8$$

$$55 - 5 + x = -6x + 8$$

$$50 + x = -6x + 8$$

$$+6x \quad +6x$$

$$50 + 7x = 8$$

$$-50 \quad -50$$

$$\frac{7x}{7} = \frac{-42}{7}$$

$$\boxed{x = -6}$$

$$x = -6$$

$$55 - (5 - x) = -6x + 8$$

$$55 - (5 + 6) = -6(-6) + 8$$

$$55 - 11 = 36 + 8$$

$$44 = 44 \checkmark$$