KEY

Parallel Modeling: Solving Equations with Variables on Both Sides

Objective: The student will use appropriate operations to solve equations with variables on both sides.

$-3 + 2x - 9 = 7x - 8$	**Process** Goal: Isolate the Variable	$x + 3x - 1 = 8 - 2x$
$-12 + 2x = 7x - 8$	1. Combine like terms (if needed)	$4x - 1 = 8 - 2x$
$+12 \quad +12$	2. Inverse operation of the constant	$+1 \quad +1$
$2x = 7x + 4$	3. Simplify	$4x = 9 - 2x$
$-7x \quad -7x$	4. Inverse operation of the variable	$+2x \quad +2x$
$-5x = 4$	5. Simplify	$6x = 9$
$\frac{}{-5} \quad \frac{}{-5}$	6. Isolate variable	$\frac{}{6} \quad \frac{}{6}$
$x = -\frac{4}{5}$	7. Check work	$x = \frac{9}{6} = 1\frac{1}{2} = 1.5$

$3y - 13 - 2 = 15 - y + 2$	**Process** Goal: Isolate the Variable	$2x = 2x - 14 - 2 + 2x$
$3y - 15 = 17 - y$	1. Combine like terms (if needed)	$2x = 4x - 16$
$+15 \quad +15$	2. Inverse operation of the constant	↓
$3y = 32 - y$	3. Simplify	$2x = 4x - 16$
$+y \quad +y$	4. Inverse operation of the variable	$-4x \quad -4x$
$4y = 32$	5. Simplify	$\frac{-2x}{-2} = \frac{-16}{-2}$
$\frac{}{4} \quad \frac{}{4}$	6. Isolate variable	$-2 \quad -2$
$y = 8$	7. Check work	$x = 8$

$x + 10 = 7x - 14$	**Process** Goal: Isolate the Variable	$-9 + 4x = 6x - 13$
↓	1. Combine like terms (if needed)	↓
$+14 \quad +14$	2. Inverse operation of the constant	$+13 \quad +13$
$x + 24 = 7x$	3. Simplify	$4 + 4x = 6x$
$-x \quad -x$	4. Inverse operation of the variable	$-4x \quad -4x$
$\frac{24}{6} = \frac{6x}{6}$	5. Simplify	$\frac{4}{2} = \frac{2x}{2}$
	6. Isolate variable	
$4 = x$	7. Check work	$2 = x$

$-0.75p - 2 = 0.25p$	**Process** Goal: Isolate the Variable	$60 + 50.45x = 57.95x$
↓	1. Combine like terms (if needed)	↓
	2. Inverse operation of the constant	
$-0.75p - 2 = 0.25p$	3. Simplify	↓
$+0.75p \quad +0.75p$	4. Inverse operation of the variable	$-50.45x \quad -50.45x$
$-2 = 1p$	5. Simplify	$\frac{60}{7.50} = \frac{7.50x}{7.50}$
$-2 = p$	6. Isolate variable	
$-2 = p$	7. Check work	$8 = x$