

Multi-Step Equations

EQ4

goal: isolate the variable

how: use inverse operations

Steps:

- 1) Get rid of parentheses (using distributive property or division)
- 2) Combine like terms on EACH side of the equation *★ NOW 2-STEP EQ ★*
- 3) Eliminate unattached term (constant) using inverse operations to both sides of the equation *(add or sub to create zero pair)*
- 4) Eliminate attached term (coefficient) using inverse operations to both sides of the equation *(mult/div to create a coefficient of one)*
- 5) Check your answer by substitution

$$\text{Ex: } 3(x+1) = 9$$

$$3x + \cancel{3} = 9$$

$$-3 \quad | \quad -3$$

$$\cancel{3}x = \cancel{3}6$$

$$x = 2$$

$$3(2+1)$$

$$3 \cdot 3$$

$$9 \checkmark$$

$$\text{Ex: } \cancel{3}(x+1) = 9$$

$$\cancel{3} \quad | \quad \cancel{3}$$

$$x + x = 3$$

$$+1 \quad -1$$

$$x = 2$$

$$\text{Ex: } 5x + 2(11-x) = -5$$

$$5(-9) + 2(11-9)$$

$$-45 + 2 \cdot 20$$

$$-45 + 40$$

$$-5$$

$$5x + 22 - 2x = -5$$

$$3x + \cancel{22} = -5$$

$$\cancel{3}x = \cancel{27}$$

$$x = -9$$