

Multi-Step Equations & Inequalities

SEQNI

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/inequality
- 3) Eliminate unattached term (constant) using inverse operations to both sides of the equation/inequality (two-step)
- 4) Eliminate attached term (coefficient) using inverse operations to both sides of the equation/inequality (one-step)
- 5) Check your answer by substitution

$$-4(x+2) \geq 8$$

$$\begin{array}{r} -4 \\ \hline x+2 \leq -2 \end{array}$$

$$\begin{array}{r} -2 \\ \hline x \leq -4 \end{array}$$

$x \leq -4$  ✓

Ex:  $3(x+1) = 9$

$$\begin{array}{r} 3 \\ \hline x+1 = 3 \end{array}$$

$$\begin{array}{r} -1 \\ \hline x = 2 \end{array}$$

$x = 2$  ✓

Ex:  $5x + 2(11-x) = -5$

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

$$3x + 22 = -5$$

$$\begin{array}{r} -22 \\ \hline 3x = -27 \end{array}$$

$$\begin{array}{r} 3 \\ \hline x = -9 \end{array}$$

$x = -9$  ✓