

LEARNING OBJECTIVE: We will solve and graph solutions to inequalities in 1 variable. (Alg1M1L7)

CONCEPT DEVELOPMENT:

SOLVING INEQUALITIES v. SOLVING EQUATIONS

$$3x - 3 > 12$$

+3 +3 PROP OF EQUALITY FOR ADDITION

$$\frac{3x}{3} > \frac{15}{3}$$

x > 5 PROP OF EQUALITY FOR DIVISION

$\{x \text{ real} \mid x > 5\}$

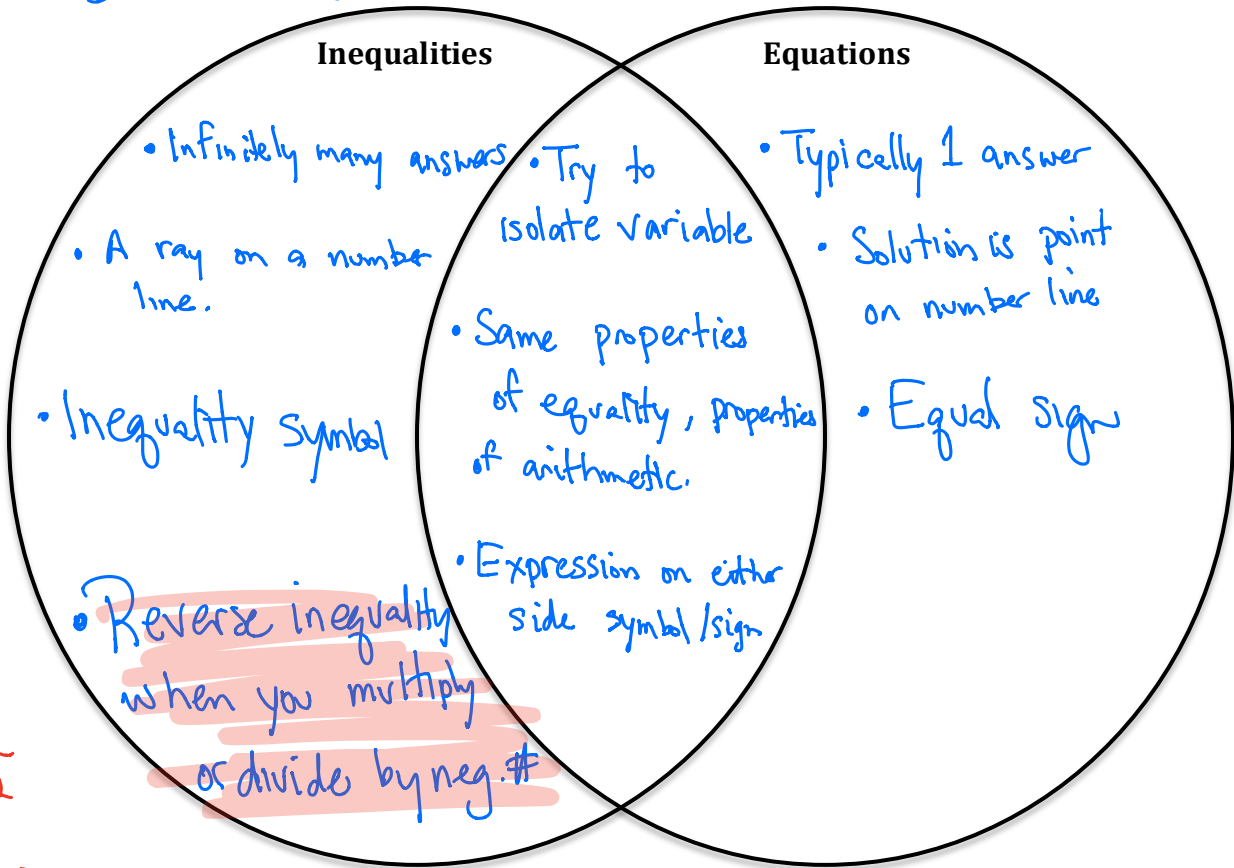
$$3x - 3 = 12$$

+3 +3 PROP OF EQUALITY FOR ADDITION

$$\frac{3x}{3} = \frac{15}{3}$$

PROP OF EQUALITY FOR DIVISION

$x = 5$ $\{5\}$



$$-3x > 12$$

-12 -12

$$-3x - 12 > 0$$

+3x +3x

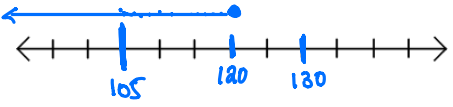
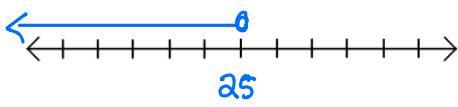
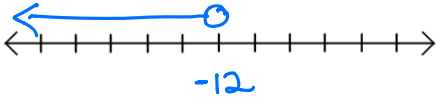
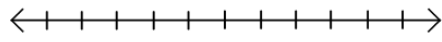
$$\frac{-12}{3} > \frac{3x}{3}$$

$$-4 > x \text{ OR } x < -4$$

GUIDED PRACTICE:

Steps for Solving Inequalities in One Variable

1. Use Properties of Inequality to isolate your variable.
2. Reverse the inequality symbol if multiplying or dividing by a **NEGATIVE** number.
3. Graph your inequality on a number line.

$240 + 3d \leq 600$ $\begin{array}{r} -240 \quad -240 \\ \hline 3d \leq \frac{360}{3} \\ d \leq 120 \end{array}$ 	$100 + 4f < 200$ $\begin{array}{r} -100 \quad -100 \\ \hline 4f < \frac{100}{4} \\ f < 25 \end{array}$ 
$12 - 5k > 72$ $\begin{array}{r} -12 \quad -12 \\ \hline -5k > 60 \\ \frac{-5k}{-5} > \frac{60}{-5} \\ k < -12 \end{array}$ <p style="color: blue; font-style: italic;">FLIP THE INEQUALITY SIGN</p> 	$-\frac{2}{3}x + 3 \geq -\frac{1}{2}$ $\begin{array}{r} -3 \quad -3 \\ \hline -\frac{2}{3}x \geq -3\frac{1}{2} \end{array}$ <p style="color: blue; font-style: italic;">CHANGE TO IMPROPER FRACTION</p> $-\frac{2}{3} \left(-\frac{3}{2}x \right) \geq \left(-\frac{7}{2} \right) \cdot \frac{3}{3}$ <p style="color: red; font-style: italic;">FLIP INEQUALITY.</p> $x \leq \frac{21}{4}$ 

$$24 - 6y \leq 5y - 9$$

$$\begin{array}{r} +9 \\ +9 \end{array}$$

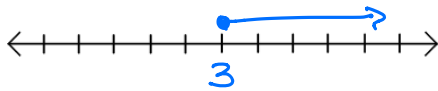
$$33 - 6y \leq 5y$$

$$\begin{array}{r} +6y \\ +6y \end{array}$$

$$\frac{33}{11} \leq \frac{11y}{11}$$

$$3 \leq y$$

$$y \geq 3$$



$$17 - 5m < 8m - 9$$

$$\begin{array}{r} +9 \\ +9 \end{array}$$

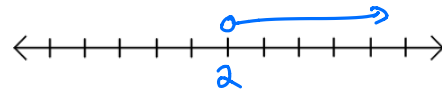
$$26 - 5m < 8m$$

$$\begin{array}{r} +5m \\ +5m \end{array}$$

$$\frac{26}{13} < \frac{13m}{13}$$

$$2 < m$$

$$m > 2$$



$$6(z - 5) \geq -5(7 - 2z)$$

$$6z - 30 \geq -35 + 10z$$

$$\begin{array}{r} +35 \\ +35 \end{array}$$

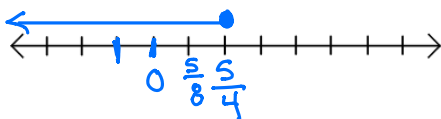
$$6z + 5 \geq 10z$$

$$\begin{array}{r} -6z \\ -6z \end{array}$$

$$\frac{5}{4} \geq \frac{4z}{4}$$

$$\frac{5}{4} \geq z$$

$$z \leq \frac{5}{4}$$



$$-2(m + 1) > 3(m + 1)$$

$$-2m - 2 > 3m + 3$$

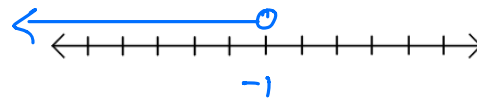
$$\begin{array}{r} +2 \\ +2 \end{array}$$

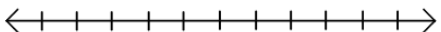
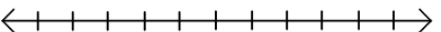
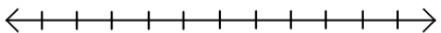
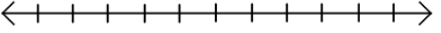
$$-2m > 3m + 5$$

$$\begin{array}{r} -3m \\ -3m \end{array}$$

$$\frac{-5m}{-5} > \frac{5}{-5}$$

$$m < -1$$

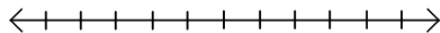


$2x - 7 + x < 3x + 10$ $+7 \quad +7$ $2x + x < 3x + 17$ $3x < 3x + 17$ $-3x \quad -3x$ $0 < 17$ $\{\mathbb{R}\}$ 	$2x + 4 > 4x - 7 - 2x$ $\{\mathbb{R}\}$ 
$2(x + 4) < 6x - 2 - 4x$ $2x + 8 < 2x - 2$ $8 < -2$ $\text{No solution } \{\}$ 	$5(x + 4) \geq 8x + 25 - 3x$ $\{\}$ 

CLOSURE:

1. Find the solution set to the following and graph:

$$x^2 + 3(x - 1) \geq x^2 + 5$$



2. Josh was absent today and asked Neil why the solution to $-5x > 30$ is $x < -6$. Provide a better answer than "you flip the inequality."

$$-5x > 30$$

$$+5x \quad +5x$$

$$0 > 5x + 30$$

$$-30 \quad -30$$

$$\frac{-30}{5} > \frac{5x}{5}$$

$$-6 > x \quad \rightarrow x < -6$$

Name: _____

Math 7.2, Period _____

Mr. Rogove

Date: _____

INDEPENDENT PRACTICE:

Personal Math Trainer! Homework from Go Math.

ACTIVATING PRIOR KNOWLEDGE:

NOTES:

Maps to lesson 4-2 of Algebra 1 (GO MATH)

Homework: Khan Academy, Multi-step linear inequalities.