

Name:	Date:
Topic/Objective: Solving Multi Step inequalities	Class/Period:

Questions/Main Ideas:	Notes:
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DO NOW:
Solve and graph the inequality

- 1.) $4x = 24$
- 2.) $-2m > 20$
- 3.) $3x - 7 < 8$
- 4.) $-6y + 5 \leq -16$

$$\frac{4x}{4} < \frac{24}{4}$$

$$x < 6$$

$$\frac{-2m}{-2} > \frac{20}{-2}$$

$$m < -10$$

$$\frac{3x - 7 < 8}{+7 +7}$$

$$\frac{3x < 15}{3 \quad 3}$$

$$x < 5$$

When do you reverse the inequality sign?
When you multiply or divide by a negative #.

$$\frac{-6y + 5 \leq -16}{-5 \quad -5}$$

$$\frac{-6y \leq -21}{-6 \quad -6}$$

$$y \geq 3.5$$

Let's begin with solving multi step equations... Solve and graph.

$$1.) \frac{-4}{1} \cdot \frac{1}{4} (p - 12) > -2 \cdot \frac{-4}{1}$$

$$\frac{p - 12 > 8}{+12 \quad +12}$$

$$p > 20$$

$$2.) \frac{6x - 7 > 2x + 17}{-2x \quad -2x}$$

$$\frac{4x - 7 > 17}{+7 \quad +7}$$

$$\frac{4x > 24}{4 \quad 4}$$

$$x > 6$$

$$3.) \frac{-7x + 2 < -5}{-2 \quad -2}$$

$$\frac{-7x < -7}{-7 \quad -7}$$


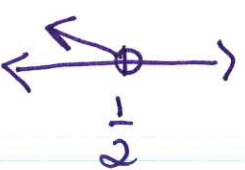
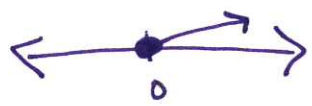
$$x > 1$$

NEXT.....
Identify the number of solutions of an inequality.

If the inequality is true:
ALL REAL NUMBERS
Example:
 $5 > 4$
True;

If the inequality is false:
NO SOLUTION
Example:
 $5 > 6$
false

<p>Solve the inequality, if possible.</p> <p>Is the statement true for #1? <i>False</i></p> <p>Is the statement true for #2? <i>True</i></p>	<p>1.) $14x + 5 < 7(2x - 3)$</p> $\begin{array}{r} 14x + 5 < 14x - 21 \\ -5 \qquad -5 \\ \hline 14x < 14x - 26 \\ -14x \quad -14x \\ \hline 0 < -26 \end{array}$ <p><i>False; No solution</i></p>	<p>2.) $12x - 1 > 6(2x - 1)$</p> $\begin{array}{r} 12x - 1 > 12x - 6 \\ +1 \qquad +1 \\ \hline 12x > 12x - 5 \\ -12x \quad -12x \\ \hline 0 > -5 \end{array}$ <p><i>True; All real #'s</i> \longleftrightarrow</p>
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<p>Now practice..... Solve and graph</p>	<p>1.) $5y + 9 \leq 4$</p> $\begin{array}{r} 5y + 9 \leq 4 \\ -9 \quad -9 \\ \hline 5y \leq -5 \\ \frac{5y}{5} \leq \frac{-5}{5} \\ y \leq -1 \end{array}$ 	<p>2.) $3(w + 12) < 0$</p> $\begin{array}{r} 3w + 36 < 0 \\ -36 \quad -36 \\ \hline 3w < -36 \\ \frac{3w}{3} < \frac{-36}{3} \\ w < -12 \end{array}$
	<p>3.) $-10p > 6p - 8$</p> $\begin{array}{r} -10p > 6p - 8 \\ -6p \quad -6p \\ \hline -16p > -8 \\ -16 \quad -16 \\ \hline p < \frac{1}{2} \end{array}$ 	<p>4.) $5d - 8d - 4 \leq -4 + 3d$</p> $\begin{array}{r} 5d - 8d - 4 \leq -4 + 3d \\ -3d - 4 \leq -4 + 3d \\ +4 \quad +4 \\ \hline -3d \leq 3d \\ +3d \quad +3d \\ \hline 0 \leq 6d \\ \frac{0}{6} \leq \frac{6d}{6} \\ 0 \leq d \text{ or } \boxed{d \geq 0} \end{array}$ 

What is the final answer when you reach an inequality that is false?

No solution.