Do Now:

1) Solve for x.

a) $\frac{4x}{4} = \frac{12}{4}$ $x = 3$

b) $\frac{4x}{4} < \frac{12}{4}$ $x < 3$

c) $\frac{-4x}{-4} < \frac{12}{-4}$ $x > -3$ FLIP

d) $\frac{4x}{4} < \frac{-12}{4}$ $x < -3$

2) How is solving inequalities different from solving equations?

Multiply or divide by negative, you need to flip inequality sign.

6.5 Solving Multi-Step Inequalities

7.NS
7.EE

$<, >, \leq, \geq$

- SWBAT use two or more steps to solve inequalities
- SWBAT represent and analyze situations using algebraic symbols.

Calculators: Yes

Recall from Lesson 3.6...

Graphing Inequalities

- Use a number line to graph inequalities

  -Use an open circle ○
  -to graph less than (<) or greater than (>)

  -Use a closed circle ●
  -to graph less than or equal to ($\leq$) or greater than or equal to ($\geq$)

- Always keep the variable on the left side of the inequality symbol

Recall from Lesson 3.7...

Multiplying or dividing by a negative number ***reverses*** the inequality sign

flips

Solve the inequality. Then graph the solution.

1. $10 + 4y < 18$

$10 + 4y < 18$

$-10 \quad -10$

$4y < 8$

$\frac{4y}{4} < \frac{8}{4}$

$y < 2$

Solve the inequality. Then graph the solution.

2. $-7z + 15 \geq 57$

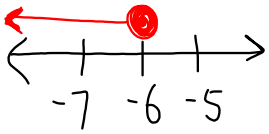
$-7z + 15 \geq 57$

$-15 \quad -15$

$-7z \geq 42$

$\frac{-7z}{-7} \geq \frac{42}{-7}$ ← Divided by a negative (FLIP)

$z \leq -6$



Solve the inequality. Then graph the solution.

3. $5.6p + 2.7p \leq 76.36$

$5.6p + 2.7p \leq 76.36$

$560p + 270p \leq 7636$

$\frac{830p}{830} \leq \frac{7636}{830}$

$p \leq 9.2$

Solve the inequality. Then graph the solution.

1. $22 + 5k > 52$
2. $4 - 3x \leq -11$
3. $0.4z \geq 9.65 + 0.5z$

Solve the inequality. Then graph the solution.

1. -7x + 10 > -9x - 16

$-7x + 10 > -9x - 16$

$+7x \quad +7x$

$10 > -2x - 16$

$+16 \quad +16$

$26 > -2x$

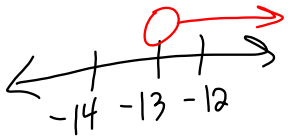
$\frac{26}{-2} > \frac{-2x}{-2}$ ← Divided by neg (Flip)

$-13 < x$ ← Variable on left (Flip)

$x > -13$

< less than

> greater than



Solve the inequality. Then graph the solution.

2. 9(y - 2) > -16

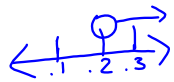
$9y - 18 > -16$

$+18 \quad +18$

$\frac{9y}{9} > \frac{2}{9}$

$y > .\overline{2}$

$y > \frac{2}{9}$



Solve the inequality. Then graph the solution.

3. $\frac{1}{4}z - 5 \le -\frac{1}{5}z$ LCD: 20

$\frac{5}{20}\left(\frac{1}{4}z\right) - \frac{20}{1}\left(\frac{5}{1}\right) \le \frac{4}{20}\left(\frac{-1}{5}z\right)$

$5z - 100 \le -4z$

$-5z \quad -5z$

$-100 \le -9z$

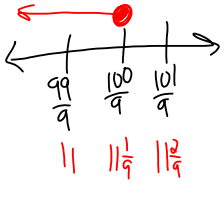
$\frac{-100}{-9} \le \frac{-9z}{-9}$ ← Divide by neg. (Flip)

Flip

$\frac{100}{9} \ge z$ ← Var. on left (Flip)

Flip

$z \le \frac{100}{9}$



Solve the inequality. Then graph the solution.

1. 3x - 8 < -x + 4

2. 1 < 3(x - 1)

3. $\frac{2}{7}h - \frac{1}{3}h > -6$

German is organizing a bowling night for the wrestling squad. Each ticket costs $10 and includes shoe rental. Shoes cost him $5 per pair and door prizes cost him $50.
How many people need to attend for German to raise at least $200?

Hint:

Ticket Sales - Costs $<$ $\leq$ $=$ $>$ $\geq$ Profit

Exit Pass 6.5

Describe and correct the error in the solution.

$9 - 2x \leq 3$
$-9 \quad -9$
$-2x \leq -6$

$\frac{-2x}{-2} \leq \frac{-6}{-2}$ ← Divide by negative (Flip)

$x \leq 3$

$x \geq 3$

"Don't blame the sea if you cannot catch a fish."

Working individually or with a partner, complete the workbook.

Workbook pg.

Reflection of Today's Lesson

6.5 Solving Multi-Step Inequalities

7.NS
7.EE

- SWBAT use two or more steps to solve inequalities.
- SWBAT represent and analyze situations using algebraic symbols.

Calculators: Yes

Homework

pg. 297 #9-31 odds