Unit 8 Inequalities

8-1 Exploring Real Numbers

Part 1: Comparing Numbers

Recall:

> is greater than

≥ is greater than or equal to

< is less than

≤ is less than or equal to

= is equal to

≠ is not equal to

1. Use <, =, or > to compare $56 \qquad 49$

2. Use <, =, or > to compare $\frac{3}{8} \qquad \frac{4}{12}$

3. Use <, =, or > to compare $-\frac{2}{3} \qquad -\frac{1}{6}$

4. Write $-\frac{3}{4}$, $-\frac{7}{12}$, and $-\frac{5}{8}$ in order from least to greatest.

8-2 Inequalities and their Graphs Notes

Solution of an Inequality – any number that makes the inequality true.

1. Is each number a solution of $3+2x < 8$?

a) –2 b) 3

Graphing
Line goes Right
> Is greater than
≥ Is greater than or equal to

Line goes Left
< Is less than
≤ Is less than or equal to

2. Graph $4 \leq m$

3. Graph $x < 3$

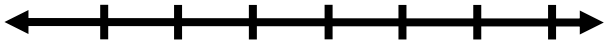
4. Define a variable and write an inequality:
A job that pays at least $500 a month

8-3 One Step Inequalities

Inequalities:
Solve them just like equations

Solve each inequality & graph the solutions:

1. $y + (-21) > 7$



2. $8 \geq d - 2$

3. $3z + 4.1 < -5.6$

Multiplying or Dividing by a negative number – change the direction of the inequality symbol.

4. $-8 \geq m - \frac{2}{3}$

5. $16 \leq y - 1\frac{3}{5}$

Use VESA:

6. In order to receive a B in your literature class, you must earn at least 350 points of reading credits. Last week you earned 120 points. This week you earned 90 points. How many more points must you earn to receive a B?

8-3 One Step Inequalities Practice

<u>Multiplying or Dividing by a negative number</u> – change the direction of the inequality symbol.	Solve each inequality & graph the solutions: 1. $17y > -51$  2. $-2.1x < 42$  3. $\frac{x}{28} \leq -\frac{6}{7}$  4. $\frac{x}{-4} \geq 13$  5. $3 \leq -\frac{3}{5}x$ 

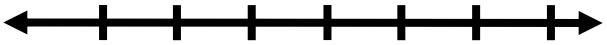
8-4 Solving Multi-Step Inequalities

Solve each inequality and check your solutions. Then graph the solutions.

1. $8z - 6 < 3z + 12$

2. $5(-3d + 6) \leq 3(3d - 2)$

3. $2(m - 8) < -8 + 2m$



4. $\frac{4}{3}\mathrm{r} - 3 > r + \frac{2}{3} + \frac{1}{3}\mathrm{r}$

5. $-2(3x - 4) \geq -8 + 4x$

8-5 Compound Inequalities

Compound Inequalities: considering ____ inequalities _____

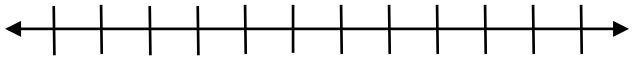
Intersection – "AND"

- True only if ***both*** inequalities are _____
- The solution is the _____ they have in _____

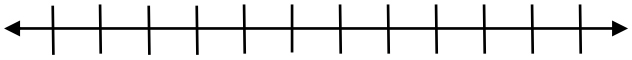
Union – "OR"

- True if ____ __ _____ inequalities is true
- The solution is the ____ inequalities _____

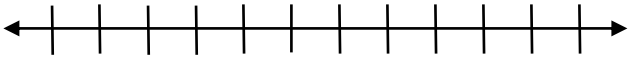
1. Graph the solution set of:
   $x < 10$ and $x \geq 5$



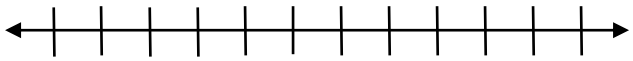
2. $-3 \leq x - 2 \leq 0$



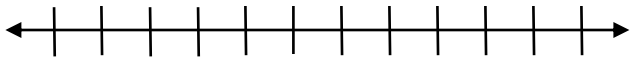
3. $2 < 3x + 2 < 14$



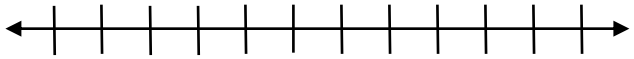
4. Graph the solution set of:
   $x \geq 3$ or $x < 2$



5. $-3 + x \geq 3$ or $-4 \leq -x$



8. $3m < m - 4$ or $-2m > m - 6$



Try this: Solve & graph the solution set:

1. $3x > 12$ *or* $-3x > 12$

2. $-5 \leq x - 2 \leq 10$

3. $-6m < m - 42$ *or* $-2m > 4m - 36$