Chapter 3-6 Notes
"Compound Inequalities"

Main Idea:
- A **compound** (noun) is a whole formed by a union of two or more parts.
- A **compound** inequality (adjective) consists of two distinct inequalities joined by the word *and* or the word *or*.

Example:

You read 3 x 6 as "x is less than 6 *and* greater than 3."

Writing a Compound Inequality:
Ex 1:

All real numbers that are between -5 *and* 7.

All real numbers that are less than 1 *or* greater than or equal to 6.

Solving a Compound Inequality Involving And:

Ex 2:

*(A solution of a compound inequality involving *and* is any # that makes <u>BOTH</u> inequalities <u>TRUE</u>!)*

What are the solutions of

<u>Your Example:</u>

 What are the solutions of

Solving a Compound Inequality Involving Or:

Ex 3:

*(A solution of a compound inequality involving *or* is any # that makes <u>EITHER</u> inequality <u>TRUE</u>!)*

What are the solutions of

<u>Your Example:</u>

What are the solutions of

Writing and Solving a Compound Inequality:
<u>Ex 4:</u>
(Inclusive means those #'s can be included in the solution!)

Your test scores in science are 83 and 87. What possible scores can you earn on your next test to have a test average between 85 and 90, inclusive?

<u>Your Example:</u>

To earn a B in your algebra class, you must achieve an unrounded test average between 84 and 86, inclusive. Suppose you scores 78, 78, and 79 on the first three tests, Is it possible for you to earn a B in the course? Assume that 100 is the maximum grade you can earn in the course and on the test. Explain.

Using Interval Notation:

- You can use an inequality such as   to describe a portion of the number line which is called an ***interval***.
- You can also use ***Interval Notation*** to describe an interval on the number line by these symbols:

  Parentheses: Use (or) with   or   to indicate that the interval's endpoints are ***NOT*** included.

  Brackets: Use [or] with   or   to indicate that the interval's endpoints ***ARE*** included.

  Infinity: Use   when the interval continues forever in a *positive* direction. Use   when the interval continues forever in a *negative* direction.

Ex 5:

What is the graph of (-2, 7]? How do you write (-2, 7] as an inequality?

What is the graph of x -1 or x 2? How do you write x -1 or x 2 in interval notation?