4-5a Writing Compound Inequalities

Two inequalities that are joined together form a **compound inequality**. There are two forms of a compound inequality. Consider the following example:

Graph the solution: $x < -2$ or $x > 5$

Graph the solution: $x \geq -4$ and $x < 1$

When the shading runs into each other, the there will be values that satisfy BOTH inequalities.

We will want to write these compound inequalities like _____

**You will want to notice these 3 things: 1.

                                                                                        2.

                                                                                        3.

Examples:

1. All real numbers that are at least 2 and at most 9.

2. All real numbers that are less than 3 or exceed 7.

3. All real numbers that are no less than -4 but less than 0.

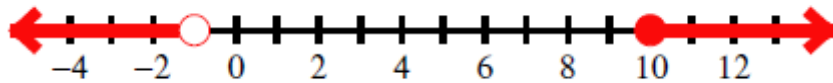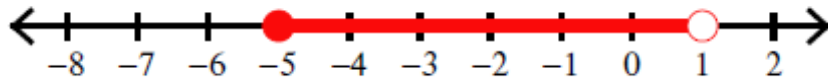4. All real numbers fewer than 9 but at least 2.

5. _____

$-10 \le x \le -5$

6. _____

7. _____

4-5b Interval Notation

Interval Notation is another way of expressing compound inequalities.

Use $(\ )$ _____ and $[\ ]$ _____

For Example:

Inequality: $-4 \le x \le 6$ Inequality: $0 < x \le 20$

Interval Notation: $[-4,6]$ **Interval Notation:** $(0,20]$

1. $5 < x \le 15$	2. $-1 < x < 3$	3. $32°F \le x \le 100°F$

4. All real numbers between -3 and 6, inclusive.

Practice 4-5   Name_____

Translate each phrase if necessary into an inequality AND graph.

1. $-4 \leq x \leq 2$

2. All real numbers that are less than 7, but greater than 2

3. All real numbers that are at least -1 and at most 3

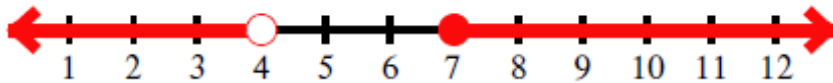4. All real numbers that are fewer than 20 but more than 15

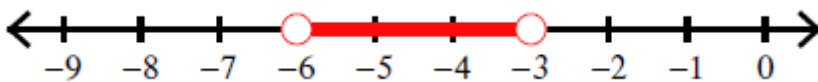5. All real numbers at least -1 and at most 4

Write a verbal sentence for each inequality below

6. _____

7. _____

8. _____