Notes: Intro to Inequalities
Created for you by Ms. Nhotsoubanh

Definitions:

An **inequality** is a ___*mathematical*___ sentence that ___*compares*___ two quantities using the symbols ___$<$___, ___$>$___, ___$\leq$___, or ___$\geq$___.

An inequality has **more than** one **solution**.

For example x < 8, is read "x is less than 8". The values of x could be ___6, −10, −300 ... x can be any # less than 8___

Symbol	Meaning	Example	Graph
$<$	• is less than • is fewer than	$x < 5$	 The open circle indicates that 5 is NOT a solution
$>$	• is greater than • is more than	$n > 12$	 The open circle indicates that 12 is NOT a solution
$\leq$	• is less than or equal to • is at most • is no more than	$a \leq -4$	 The closed circle indicates that −4 is a solution
$\geq$	• is greater than or equal to • is at least • is no less than	$y \geq -7$	 The closed circle indicates that −7 is a solution

Example 1: There are at least 7 gallons of gas. Write an inequality to represent the statement. Then graph its solution set.

$$x \geq 7$$
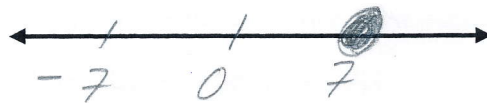
Name: ___*Key*___

Math 7H – Nov. 14

Glue on page 9

Use pages 8-10 to show your work.

Directions: #s 1 - 4: Write an inequality to represent the statement. Then graph its solution set.

1. The Wilson family spent no less than $90 for dinner.

2. The waiting time for a table is more than 15 minutes.

3. At Bellport Middle School, there are no less than 1,000 students.

4. The price of all special dinner entrees is below $22.95.

5. Given the inequality: $-4 > x$

   a. Write the inequality in sentence form.

   b. Graph the solution set for the inequality.

   c. Can the solution set contain -4? Explain.

Review: Solve for each equation.

6. $\dfrac{1}{6}w + \dfrac{5}{8} = -11$	7. $-3x - 4.6 = 5.9 - 5x$
8. $3(h-4) = 12h + 16 - 9h$	9. $15 - 2(4n+7) = -6n - 2(n+1) + 3$

10. Natalie went to the mall with $225. If Natalie spent $\dfrac{2}{3}$ on Christmas gifts for her friends, how much does she have left to spend on lunch?

11. The length of a rectangle is three less than four times the width. If the perimeter is 114 feet, what are the dimensions of the rectangle?

12. What is $(12x - 6)$ subtracted from $(-9x + 7)$?

Example 2. Write the inequality that describes the graph below.

In words: _x is less than or equal to 15_

In symbols: _$x \le 15$_ or _$15 \ge x$_

Example 3. Given the inequality: $x \ge -8$

a. Write out in sentence form the inequality.

x is greater than or equal to -8

b. Graph the solution set for the inequality.

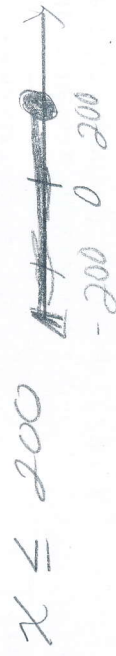c. Can the solution set contain 2? Explain. _Yes, because 2 is greater than -8_

Your turn:

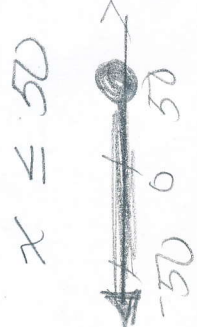**Directions:** Write an inequality to represent the statement. Then graph its solution set.

4. Yesterday, there was less than 2 inches of rain.

   $x < 2$

5. No more than 200 people can be seated in the restaurant.

   $x \le 200$

6. The temperature Monday will be at most 50 degree Fahrenheit.

   $x \le 50$