

Day 1 – Understanding Inequalities – Notes

Think About it: What numbers are bigger than -3? List them below.

-2, -1, 0, 1, 2, 3, ... the list goes on

An **inequality** is a statement that compares two quantities that may or may not be equal. The quantities being compared use one of the following signs:

$<$	$>$	\leq	\geq	\neq
$A < B$	$A > B$	$A \leq B$	$A \geq B$	$A \neq B$
A is less than B.	A is greater than B.	A is less than or equal to B.	A is greater than or equal to B.	A is not equal to B.

When reading an inequality, you always want to read from the variable. Translate the following inequalities into words. Then name some possible solutions.

	Possible Solutions
A. $x > 2$ <u>x is greater than 2</u>	<u>3, 7, 10.4</u>
B. $-3 > p$ <u>p is less than -3</u> $p < -3$	<u>-3.5, -4, -9</u>
C. $y \leq 0$ <u>y is less than OR equal to 0</u>	<u>0, -2, -4.5</u>
D. $-2 \leq z$ <u>z is greater than OR equal to -2</u> $z \geq -2$	<u>-2, 1, 3.2</u>
E. $x \neq 1$ <u>x does not equal 1</u>	<u>-3, -1, 0, 2</u>

When graphing an inequality on a number line, you must pay attention to the sign of the inequality. We use open and closed circles to determine whether the value named in the inequality is part of the solution or not.

Open Circles: They communicate to us that a particular value is NOT included in the solution set.

Closed Circles: They communicate to us that a particular value IS included in the solution set.

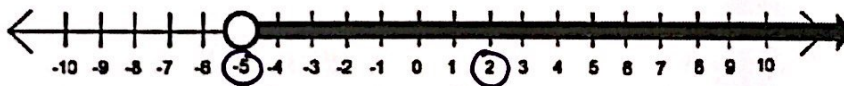
Words	Example	Circle	Number Line
Greater Than	$x > 2$	Open	
Less Than	$p < -3$	Open	
Greater Than or Equal To	$z \geq -2$	Closed	
Less Than or Equal To	$y \leq 0$	Closed	
Not Equal To	$x \neq 1$	Open	

Naming Inequalities from a Graph

Write an inequality to represent each graph and then determine if the following numbers are solutions:

1.

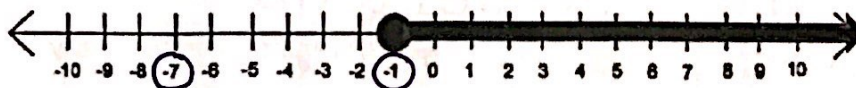
$$x > -5$$



Is 2 a solution? **yes**
Is -5 a solution? **no**

2.

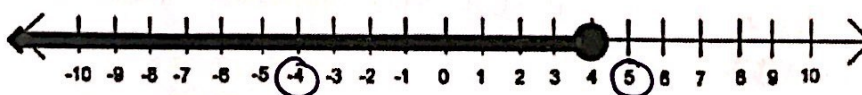
$$x \geq -1$$



Is -7 a solution? **no**
Is -1 a solution? **yes**

3.

$$x \leq 4$$



Is -4 a solution? **yes**
Is 5 a solution? **no**