

## Mathematics 9

### Section 6.3 - Introduction to Linear Inequalities

An inequality is a mathematical expression that contains one of these symbols:

$<$   $\rightarrow$  less than

$>$   $\rightarrow$  greater than

$\leq$   $\rightarrow$  less than or equal to

$\geq$   $\rightarrow$  greater than or equal to

When we are writing the  $<$  or  $>$  you need to face the LARGER OPEN SIDE  
TOWARDS THE LARGER NUMBER. So,

$$8 > 3$$

$$-9 < 0$$

$$-6 > -11$$

Quick practice:

$7 > 2$	$-7 < 1$	$-11 > -12$
$0 > -0.1$	$-0.5 < 0$	$-5 = -5$

Despite looking different than anything we have done before, you treat an inequality almost exactly the same as you would any other algebraic expression.

However, you must often graph your answer on a NUMBER LINE.

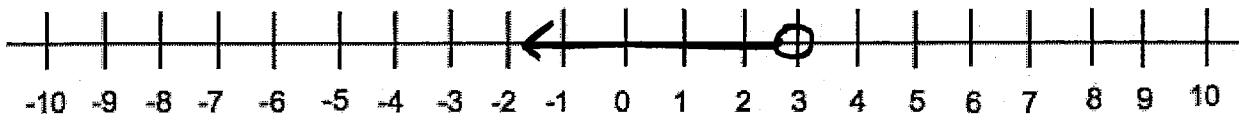
Your "graph" will include two things: A DOT (OPEN  $\circ$  OR CLOSED  $\bullet$ ) AND AN ARROW

$<$  OR  $>$  MEAN AN OPEN DOT (THIS POINT IS NOT INCLUDED)

$\leq$  OR  $\geq$  MEAN A CLOSED DOT (POINT IS INCLUDED)

So  $x < 3$  would be graphed like this:

The dot goes on the +3, and it is OPEN because of the rules stated above. THE DIRECTION OF THE SYMBOL INDICATES THE DIRECTION OF THE ARROW YOU MUST DRAW. (ONLY IF VARIABLE IS ON THE LEFT)

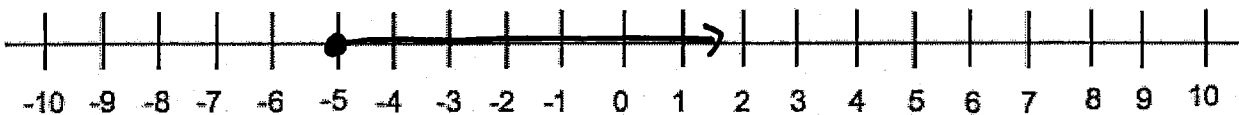


This means that all numbers LESS THAN, BUT NOT INCLUDING, THREE ( $x < 3$ ) are included in your answer

---

So  $x \geq -5$  would be graphed like this:

The dot goes on the -5, and it is CLOSED because of the rules stated above



This means that all numbers GREATER THAN AND INCLUDING NEGATIVE FIVE ( $x \geq -5$ ) are included in your answer

p. 292, 3-5, 6ad, 9, 10, 13abd