

**AIM:** 6-2 How do we write and graph inequalities on a number line?

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Date \_\_\_\_\_  
Math 6 - Period \_\_\_\_\_

**Warm-up:** Of the numbers 6, 7, or 8, which is a solution of the inequality below?

$$x + 2 < 9$$

IF  $x=6$   
 $6 + 2 < 9$   
 $8 < 9$   
True!  
Solution

IF  $x=7$   
 $7 + 2 < 9$   
 $9 < 9$   
False!  
Not a solution

IF  $x=8$   
 $8 + 2 < 9$   
 $10 < 9$   
False!  
Not a solution



Let's Investigate: Graphing Inequalities

Inequalities can be graphed on a number line.

Sometimes, it is impossible to show all of the values that make an inequality true.  
There can be infinitely many solutions.  
The number line helps you see which values make the inequality true.

**OPEN CIRCLE:** ○ → describes  $>$  (Greater than)  
← ○ describes  $<$  (Less than)



(does not include #)  
 $x < 3$      $x \neq 3$

**CLOSED CIRCLE:** ● → describes  $\geq$  (Greater than or equal to)  
← ● describes  $\leq$  (Less than or equal to)

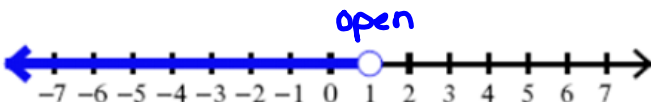


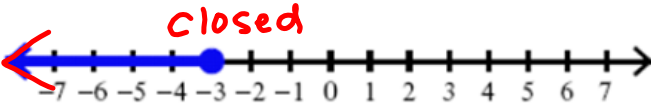
(Does include the #  $x \leq 3$ ;  $x = 3$ )

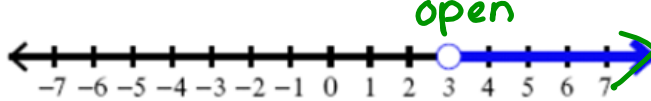
\*Note the direction in which the inequality sign is pointing!

**KEY CONCEPT 1:** Write an inequality that represents the graphs below.

**HINTS:** The variable is always written on the **LEFT** side!  
The inequality points in the direction of the arrow!

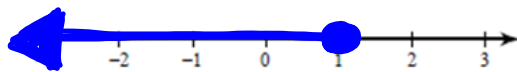
a)   $x < 1$  Sing!

b)   $x \leq -3$  Sing!

c)   $x > 3$  Sing!

**KEY CONCEPT 2:** Graph each inequality on the number line.

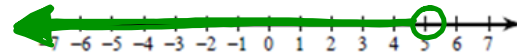
d)  $n \leq 1$  closed Sing!



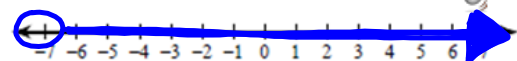
e)  $x \geq -2$  Closed Sing!



\*f)  $5 > p$  open Sing!  
 $p < 5$



\*g)  $-7 < y$  open Sing!  
 $y > -7$



**Helpful Hints!**

- Open circle is  $<, >$
- Closed circle is  $\leq, \geq$
- Variable is on the left side.
- Shade to the end of # line and include an arrow!
- Inequality points in the direction of the arrow!

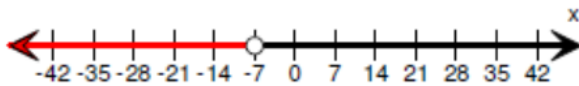
Name \_\_\_\_\_

6-2 HW - INEQUALITIES



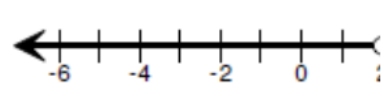
**Now You Try!** Write an inequality that represents the graphs below.

1)



Inequality: \_\_\_\_\_

2)



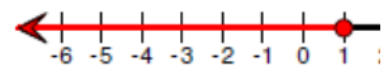
Inequality: \_\_\_\_\_

3)



Inequality: \_\_\_\_\_

4)



Inequality: \_\_\_\_\_

5)

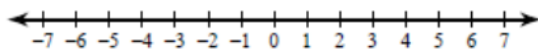


6)

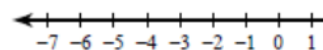


*Graph each inequality on the number line.*

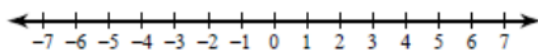
1)  $x \leq 1$



2)  $m > -2$



3)  $x \leq 4$



4)  $m > -6$

