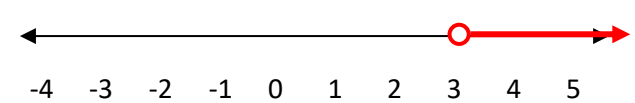
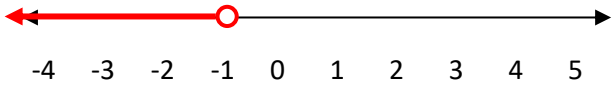
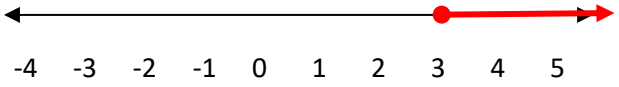
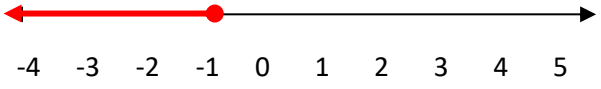
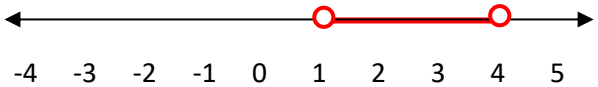
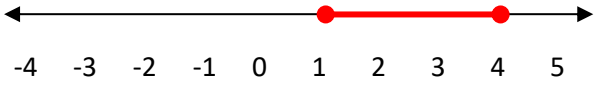
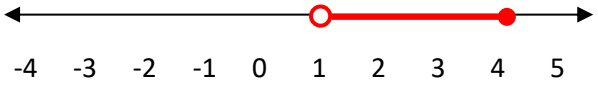
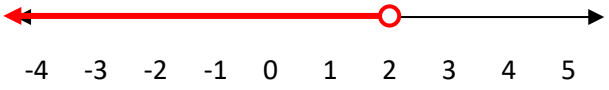
Name: Date: Period:

$>$	Greater Than	} Use an "Open Circle" when graphing ○	
$<$	Less Than		
$\geq$	Greater Than Or Equal To	} Use a "Closed Circle" when graphing ●	
$\leq$	Less Than Or Equal To		

You use an open circle to show that the # is **NOT** included in your solution set.

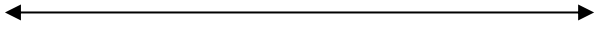
You use a closed circle to show that the # **IS** included in your solution set.

Inequality	Explain in words	Graph
$x > 3$	all numbers greater than 3	
$x < -1$	all numbers less than -1	
$x \geq 3$	all numbers greater than or equal to 3	
$x \leq -1$	all numbers less than or equal to -1	

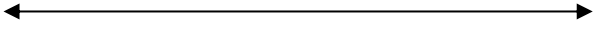
Compound Inequality	Explain in words	Graph
$1 < x < 4$	all numbers between 1 and 4, **not** including 1 and 4	
$1 \leq x \leq 4$	all numbers between 1 and 4, **including** 1 and 4	
$1 < x \leq 4$	all numbers between 1 and 4, **not** including 1, but **including** 4	
$2 > x$	use the mirror image $x < 2$	

Graph these on the number line:

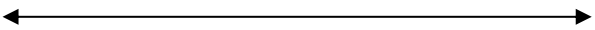
1. $6 < x \leq 12$



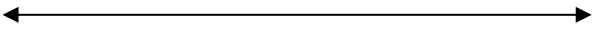
2. $14 > x$



3. $11 \leq x \leq 15$



4. $x > 17$



Solving Inequalities…

Inequalities are solved just like an equation except…

Two reasons to switch the inequality sign around:

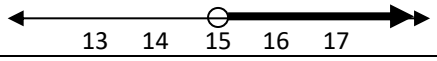
1: After solving, the variable is on the right side and it should be on the left side of the inequality. (You always want the variable on the left!!!)

2: If you multiply or divide **by** a NEGATIVE number to solve, the inequality sign must be flipped around.

When creating your number line

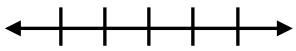
(a) Make sure your numbers are evenly spaced

(b) Number it using two numbers to the right of your answer and two numbers to the left of your answer. For example, if your answer is x > 15, your number line would be numbered as follows:

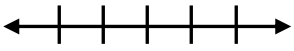


Solve each inequality and graph on a number line. Always substitute a # from the shaded area to check that you shaded correctly.

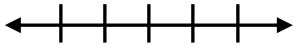
1. $x - 4 > 1$



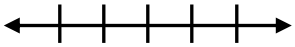
2. $5x + 4 \leq 11 - 2x$



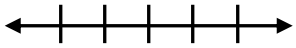
3. $6x + 2 - 8x < 14$



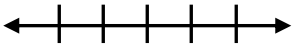
4. $2(2x - 8) - 8x \leq 0$



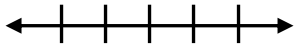
5. $4 > z - 6$



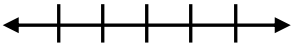
6. $-10x + 50 > -20$



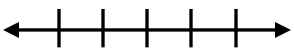
7. $2x + 15 > 3x - 2$



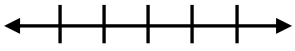
8. $15 + 6x \leq x - 10$



9. $2(3m + 4) - 2 \leq 3(1 + 3m)$



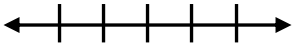
10. $3b - 2(b - 5) < 2(b + 4)$



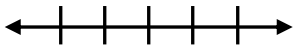
Name: Date: Period:

Extra Practice Problems.

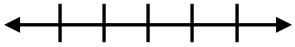
1. Solve and graph: $2x + 9 < 3x - 4$



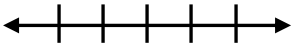
2. Solve and graph: $5x - 3 \leq -18$



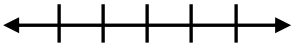
3. Solve and graph: $5 - 7x + 3 > 8x - 11 + 4x$



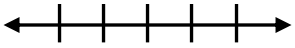
4. Solve and graph: $5(3x - 2) + 8 \geq 43$



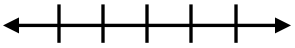
5. Solve and graph: $-4x - 9 > 23$



6. Solve and graph: $3r + 1 < 4r + 7$



7. Solve and graph: $-10 \geq -2t + 2$



8. Solve and graph: $2(x - 3) < 3x + 7$

9. Solve and graph: $10a - (3a - 11) > 25$

10. Solve and graph: $11x \leq 40 - (-7x - 4)$