Notes U1A L10 Absolute Value Inequalities. Name: _____ Hr: _____

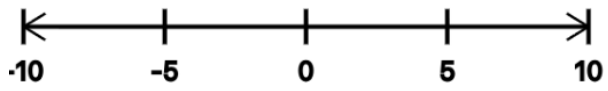
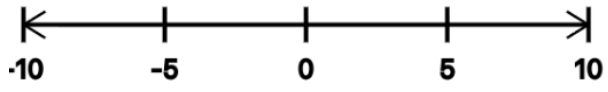
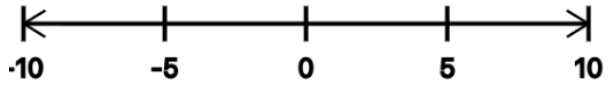
Target Skills: Interpret absolute value inequalities as distances, write AND or OR statements, solve, and graph the solution sets.

Review Solve or describe the solutions

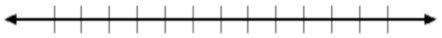
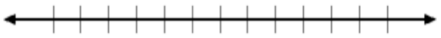
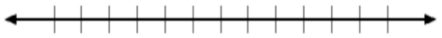
1. $\|x\| = 5$	2. $\|x - 4\| = 3$	3. $-2x < 8$

Part 1 Distance from zero

Mark the solutions on each number line. Compare exactly 5 units, more than 5 units, and at most 5 units.

Mark two points that are Exactly 5 units from zero $\|x\| = 5$ Solutions:	
Mark all the points that are More than 5 units from zero $\|x\| > 5$ Solutions:	
Mark all the points that are At most 5 units from zero $\|x\| \leq 5$ Solutions:	

Part 2 Patterns Assume a > 0 (why?)

EQUAL	GREATER outside	LESS THAN inside
$\|x\| = a$	$\|x\| > a$	$\|x\| < a$
		
$x = a$ OR $x = -a$	$x < -a$ OR $x > a$	$-a < x < a$
Two points.	Two exterior rays, OR.	One interval AND.

Solving Absolute Value Inequalities

1. **ISOLATE the ABSOLUTE VALUE**
2. **CHECK for NO SOLUTIONS or All Real Numbers**
3. Write two cases:

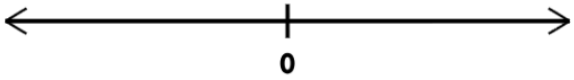
Case 1:	AND / or / OR	Case 2:
Write the equation without The absolute value bars (| |)		Write the equation without The absolute value bars (| |), FLIP inequality and OPPOSITE of the other side. (FLIP - CHANGE)

4. Solve the two inequalities and interpret solution

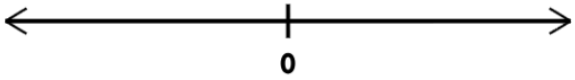
Example: $2|x| - 4 < 6$

Solve and graph each inequality: First isolate the bars. Then choose AND for an inside interval or OR for outside rays.

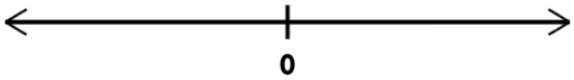
1. $|x-2| \leq 5$



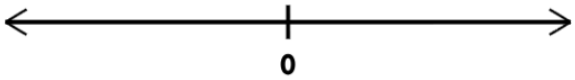
2. $|x+4| > 3$



3. $2|x-3|+4 \leq 10$

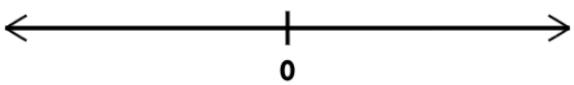


4. $-3|2x+1| > -12$



Ready for practice? Solve and graph independently

5. $|x| \leq 7$



6. $|2x+6| \geq 40$

