Algebra 1 Week 7 Friday Warm Up

1. The acidity of the water in a swimming pool is considered normal if the average of # pH readings is between 7.2 and 7.8, inclusive. The first two readings for a pool are 7.4 and 7.9. What possible values for the third reading "p" will make the average pH normal?

Skill 4: Solve and graph absolute value equations and inequalities

2. $|2x+3|=15$

3. $|x-1|\leq 8$

4. Skill 3: Solve and Graph Compound Inequalities on a Number Line

$-9<3m+6\leq 18$

5. You are riding your bicycle to prepare for a race. It takes you 12 mins to go 2.5 miles. What was your speed in miles per hour?

Wk 7Fri **CW** More Absolutely

Every absolute value inequality with > or ≥ represents *two* inequalities combined with "or":

$|x| \geq 4$ means that $x \geq 4$ or $x \leq -4$.

It means $x \geq 4$ because for numbers greater than 4, the absolute value will be greater than 4: $|6.3| > 4$

It means $x \leq -4$ because for numbers less than –4, the absolute value will be greater than 4: $|-8| > 4$

The numbers that work in $|x| \geq 4$ can meet either of these requirements, but don't have to meet both:

9 works because it is greater than 4, even though it is not less than –4. $|9| \geq 4$ is a true statement.

-7.3 works, even though it is not greater than 4, because it is less than –4. $|-7.3| \geq 4$ is a true statement.

Use the principle above to fill in the blanks for each question below:

1. $|x-1| > 7$ means $x-1 > 7$ or _____

2. $|5-3x| > 25$ means _____ or _____

3. $|3e-8| > 7$ means _____ or _____

4. $|4y| - 8 > 16$ changes to _____ which means _____ or _____

Skill 4: Solve absolute value inequalities

To solve absolute value inequalities, solve the two inequalities that each represents.

For example, to solve $|2x+1| > 5$:

$|2x+1| > 5$ means $2x+1 > 5$ or $2x+1 < -5$

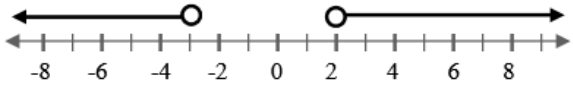
$-1 \quad -1$ $\qquad$ $-1 \quad -1$

$2x > 4$ $\qquad$ $2x < -6$

$x > 2$ or $x < -3$

The solution set is $x > 2$ *or* $x < -3$.

The graph of this solution set looks like:



Check $x = -4$: Is $|2(-4)+1| > 5$?

$|-7| > 5$ Yes.

(–4 is in solution set.)

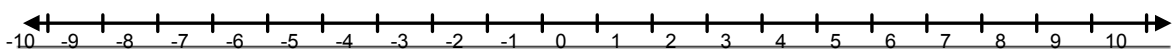
Check $x = 0$: Is $|2(0)+1| > 5$?

$|1| > 5$ No.

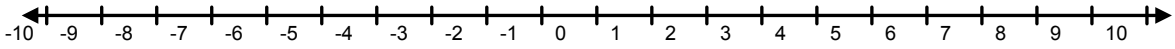
(0 is not in solution set.)

Use the principle above to solve each absolute value equation, graph the solution set, and on odd problems, check two values – one in the solution set and one not in the solution set.

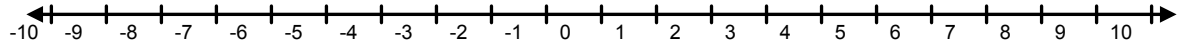
5. $|w+8| \geq 1$



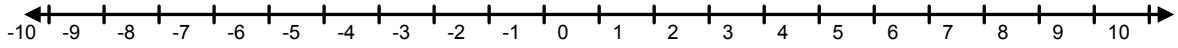
6. $|t+4|>3$



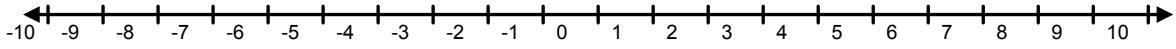
7. $|2y-5|\geq 0$



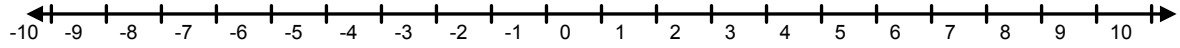
8. $|6-3x|>9$



9. $8+|2z|\geq 40$



10. $1-3|y|>-2$



11. Compare the process of solving inequalities with "<" or "≤" to solving inequalities with ">" or "≥". What is the same? What's different?

HW p 211: 19, 29, 35, 39, 41, 44, 46

Solve each equation. If there is no solution, write *no solution*.

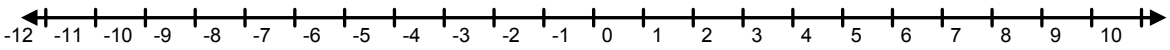
Remember: 2 sticks = 2 problems

19. $2 = |g + 3|$

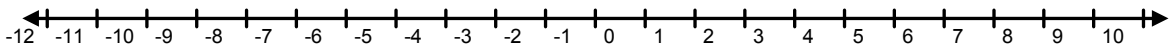
29. $-4|k| = 12$

Solve and graph each inequality.

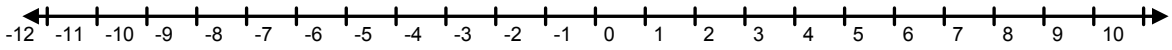
35. $|y + 8| \geq 3$



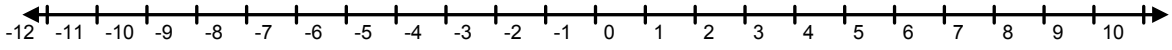
39. $|3t + 1| > 8$



41. $|5t - 4| \geq 16$



44. $|3d - 7| > 28$



46. $|5m - 9| \geq 24$