

## Today's Plan:

**Learning Target (standard):** I will solve absolute value inequalities and write their solutions using set builder notation and interval notation.

**Students will:** Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

**Teacher will:** Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

**Assessment:** Board work, homework check and homework assignment

**Differentiation:** Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

Solve:

$$3 + \left| \frac{1}{3}x - 2 \right| = 8$$

$$\left| \frac{1}{3}x - 2 \right| = 5$$

distance  
-5, 5

$$3 \left[ \frac{1}{3}x - 2 = -5 \right]$$

$$x - 6 = -15$$

$$x = -9$$

$$3 \left[ \frac{1}{3}x - 2 = 5 \right]$$

$$x - 6 = 15$$

$$x = 21$$

$$x = -9, 21$$

Solve. Write the solution in set and interval form.

$$|3x - 2| < 4$$

← distance  
 $3x - 2 \downarrow$   
 on a number line from -10 to 10, a red wavy line is drawn between -4 and 4.

$$-4 < 3x - 2 < 4$$

$$-4 < 3x - 2 \quad 3x - 2 < 4$$

$$-2 < 3x \quad 3x < 6$$

$$-\frac{2}{3} < x \quad x < 2$$

$$\{x \mid -\frac{2}{3} < x < 2\}$$

$$(-\frac{2}{3}, 2)$$

Absolute Value Inequalities:

$$|x| \leq -4$$

← distance  
 $\emptyset$

Solve. Write the solution in set and interval form.

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

← distance -1, 1

$$-1 \leq x - 5 \leq 1$$

$$-1 \leq x - 5 \quad x - 5 \leq 1$$

$$4 \leq x \quad x \leq 6$$

$$\{x \mid 4 \leq x \leq 6\}$$

$$[4, 6]$$

Solve. Write the solution in set and interval form.

$$|5 - 4x| \leq 13$$

← distance -13, 13

$$-13 \leq 5 - 4x \leq 13$$

$$-13 \leq 5 - 4x \quad 5 - 4x \leq 13$$

$$-18 \leq -4x \quad -4x \leq 8$$

$$\frac{9}{2} \geq x \quad x \geq -2$$

$$\frac{9}{2} \geq x \geq -2$$

$$\{x \mid -2 \leq x \leq \frac{9}{2}\}$$

$$[-2, \frac{9}{2}]$$

Solve. Write the solution in set and interval form.

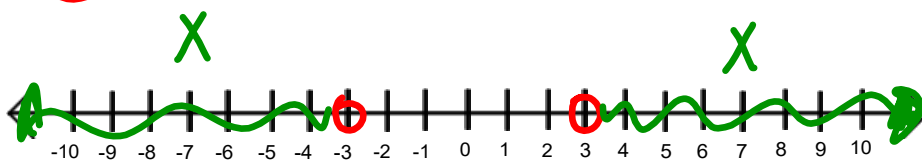
$$|4x - 3| \leq -2$$

$\emptyset$

Absolute Value Inequalities:

$$|x| > 3$$

← distance  
-3, 3



$$x < -3$$

$$x > 3$$

$$\{x \mid x < -3, x > 3\}$$

$$(-\infty, -3) \cup (3, \infty)$$

Absolute Value Inequalities:

$$|x| \geq 5$$

distance  
-5,5



$$x \leq -5$$

$$x \geq 5$$

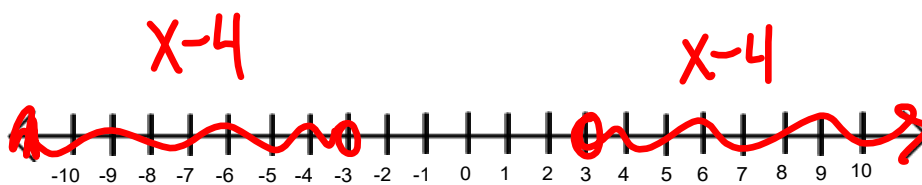
$$\{x \mid x \leq -5, x \geq 5\}$$

$$(-\infty, -5] \cup [5, \infty)$$

Absolute Value Inequalities:

$$|x - 4| > 3$$

distance  
-3,3



$$x - 4 < -3$$

$$x < 1$$

$$x - 4 > 3$$

$$x > 7$$

$$\{x \mid x < 1, x > 7\}$$

$$(-\infty, 1) \cup (7, \infty)$$

Rule:

$$|ax + b| > c$$

$$ax + b < -c \quad \text{or} \quad ax + b > c$$

Assignment:

p.89 #56 - 76 even

\* Due on Friday! \*