

## Today's Plan:

**Learning Target (standard):** I will solve compound 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.

## Operations on Sets Worksheet

$$4) \{-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$$

$$\{x \mid -10 \leq x \leq -5, x \in \mathbb{Z}\}$$

$$5) \{x \mid 2 < x < 15\}$$

$$6) \{x \mid 3 < x < 20, x \in \mathbb{Q}\}$$

$$7) A \cup B = \{-3, -2, -1, 0, 2, 3, 4, 5, 6, 7, 8, 9\}$$

$$8) A \cup B = \mathbb{R}$$

$$9) A \cup B = \{x \mid -4 \leq x < 5\}$$

$$11) A \cap B = \emptyset$$

$$12) A \cap B = \{x \mid 2 < x \leq 4\}$$

$$13) A \cap B = \{x \mid -1 \leq x < 6\}$$

## Operations on Sets Worksheet

14)  $A \cup B = \mathbb{R}$

$A \cap B = \{x \mid 2 < x < 5\}$

15)  $A \cup B = \{x \mid x > -5\}$

$A \cap B = \{-1 < x < 7\}$

16)  $A \cup B = \{x \mid x \leq 6\}$

$A \cap B = \{x \mid -3 \leq x \leq -1\}$

17)  $A \cup B = \{x \mid x < 8\}$

$A \cap B = \{-1 < x < 2\}$

18)  $A \cup B = \{x \mid 0 < x < 10\}$

$A \cap B = \{x \mid 2 < x < 5\}$

19)  $A \cup B = \{x \mid -6 \leq x < 4, x > 7\}$

$A \cap B = \emptyset$

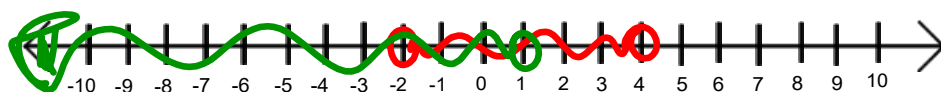
20)  $A \cup B = \{x \mid x \leq -3, x > 4\}$

$A \cap B = \emptyset$

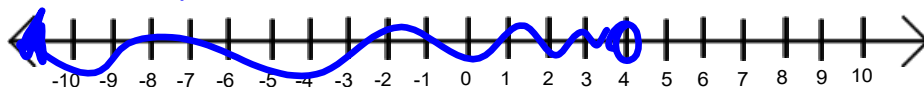
Graph the union and the intersection. Find the solution set of each.

$$A = \{x \mid -2 < x < 4\}$$

$$B = \{x \mid x < 1\}$$



$$A \cup B = \{x \mid x < 4\}$$



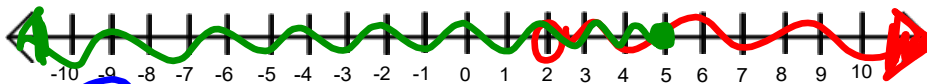
$$A \cap B = \{x \mid -2 < x < 1\}$$



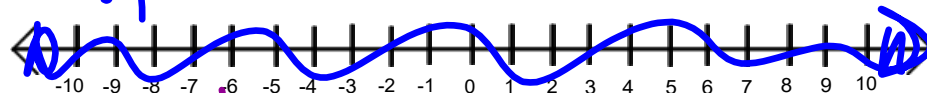
Graph the union and the intersection. Find the solution set of each.

$$A = \{x \mid x > 2\}$$

$$B = \{x \mid x \leq 5\}$$



$$A \cup B = \mathbb{R}$$



$$A \cap B = \{x \mid 2 < x \leq 5\}$$



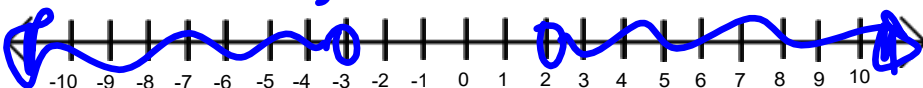
Graph the union and the intersection. Find the solution set of each.

$$A = \{x \mid x < -3\}$$

$$B = \{x \mid x > 2\}$$



$$A \cup B = \{x \mid x < -3, x > 2\}$$



$$A \cap B = \emptyset$$



## Compound Inequalities:

- Inequalities are solved similarly to equations, but division/multiplication by a negative changes the direction of the inequality
- The word **or** means the same as the **union** of the sets (**disjunction**)
- The word **and** means the same as the **intersection** of the sets (**conjunction**)
- The solution to an inequality is always a **set** of possible values

Solve. Write the solution as a set and an interval.

$$2 - 2(7 - 2x) < 3(3 - x)$$

$$2 - 14 + 4x < 9 - 3x$$

$$-12 + 4x < 9 - 3x$$

$$-12 + 7x < 9$$

$$7x < 21$$

$$x < 3$$

$$\{x \mid x < 3\}$$

$$(-\infty, 3)$$



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Solve. Write the solution as a set and an interval.

$$10 - 13(2 - x) < 5(3x - 2)$$

$$10 - 26 + 13x < 15x - 10$$

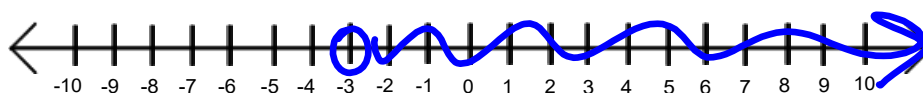
$$-16 + 13x < 15x - 10$$

$$-16 - 2x < -10$$

$$-2x < 6$$

$$x > -3$$

$$\{x \mid x > -3\}$$
  
$$(-3, \infty)$$



Assignment:

p.74 #4 - 40 (by 4)