

Essential Questions: What are compound Inequalities? How do we determine the solution set to a compound inequality?

Do Now: Determine whether each compound statement below is true or false.

- a) Right now, I am in math class **and** English class.
- b) Right now, I am in math class **and** sitting.
- c) $5 > 1$ **and** $5 < 7$
- d) $5 < 1$ **and** $5 < 7$



Think about this?

For any statements above that were determined to be true, what had to be true to make the statement true?

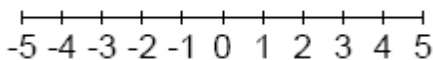
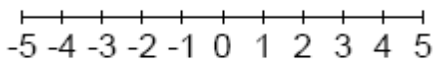
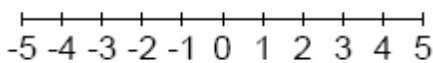
A compound inequality is two or more inequalities connected by the word _____ or by the word _____.

A number is a solution to a compound inequality connected by the word "AND" if the number is a solution to _____.

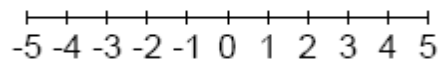
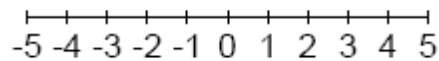
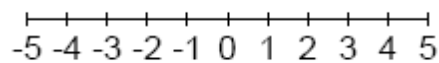


Let's look at some examples....

(1) Graph the solution set to $x < 4$ and $x \geq 2$



(2) Graph the solution set to $x \geq 4$ and $x < 2$

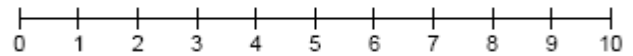
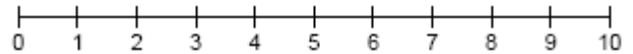


If it says "AND" only include the numbers where the inequalities _____ but if it says

"AND" and the inequalities DO NOT overlap, then there is _____, or _____.

(3) Graph the solution set of the compound inequality.

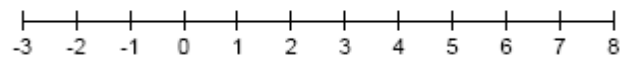
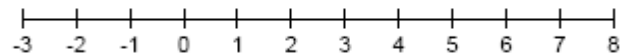
$$6 < x < 8$$



Represent the solution set in interval notation.

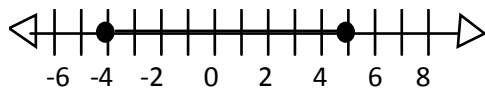
(4) Solve the compound inequality and graph the solution set.

$$6x - 4 < 26 \text{ and } x + 2 \geq 1$$



Represent the solution set in interval notation.

(5) Describe the solution set shown below in two different ways.



Inequality Statement: _____

Interval Notation: _____

(6) Describe the solution set of the following compound inequality: $-8 < x < -8$

(7) A poll shows that a candidate is projected to receive 57% of the votes. If the margin for error is plus or minus 3%, write a compound inequality for the percentage of votes the candidate can expect to get.

Let x = the percentage of votes



A solution to a compound inequality separated by the word "AND" is only a solution if it satisfies _____.