

I believe only Ohm and Sam need to finish Imagine Math. Therefore, we are going to correct Wednesday's homework and continue on with Section 2 Lesson 6. There will be a summative quiz over Inequalities on Tuesday.

7.  $2(k + 4) - 3k \leq 14$   $k \geq -6$

8.  $3(4c - 5) - 2c > 0$   $c > \frac{3}{2}$   
 $12c - 15 - 2c > 0$   
 $10c - 15 > 0$   
 $+15$   
 $10c > 15$   
 $\frac{10c}{10} > \frac{15}{10} = \frac{3}{2}$

9.  $15(j - 3) + 3j < 45$   $j < 5$

10.  $22 \geq 5(2y + 3) - 3y$   $y \leq 1$   
 $22 \geq 10y + 15 - 3y$   
 $22 \geq 7y + 15$   
 $-15$   
 $7 \geq 7y$   
 $\frac{7}{7} \geq \frac{7y}{7}$   
 $1 \geq y$   
 $y \leq 1$

Oct 4-4:27 PM

11.  $-53 > -3(3z + 3) + 3z$   $z > \frac{22}{3}$

$-53 > -9z - 9 + 3z$   
 $-53 > -6z - 9$   
 $+9$   
 $-44 > -6z$   
 $\frac{-44}{-6} > \frac{-6z}{-6}$   
 $\frac{22}{3} < z$

12.  $20(d - 4) + 4d \leq 8$   $d \leq \frac{11}{3}$

13.  $-x + 2 < 3x - 6$   $x > 2$

14.  $3v - 12 > 5v + 10$   $v < -11$

Oct 4-4:41 PM

21. A grandmother says her grandson is two years older than her granddaughter and that together, they are at least 12 years old. How old are her grandson and granddaughter?

The granddaughter is at least 5 years old and the grandson is at least 7 years old.

$$\begin{aligned} x + 2 + x &\geq 12 \\ 2x + 2 &\geq 12 \\ 2x &\geq 10 \\ x &\geq 5 \end{aligned}$$

22. A family decides to rent a boat for the day while on vacation. The boat's rental rate is \$500 for the first two hours and \$50 for each additional half hour. Suppose the family can spend \$700 for the boat. What inequality represents the number of hours for which they can rent the boat?

$$500 + 100(x - 2) \leq 700$$

→ 1 hr = \$100

23. **Writing** Suppose a friend is having difficulty solving  $-1.75(q - 5) > 3(q + 2.5)$ . Explain how to solve the inequality, showing all the necessary steps and identifying the properties you would use.

$$\begin{aligned} -1.75q + 8.75 &> 3q + 7.5 && \text{Use the Dist. Prop.} \\ -4.75q &> -1.25 && \text{Add. Prop. of Inequal.} \\ q &< \frac{5}{19} && \text{Div. Prop. of Inequal.} \end{aligned}$$

Oct 4-4:42 PM

## Section 2 – Topic 7 Solving Compound Inequalities

pg. 43

Oct 4-4:43 PM

Consider the following options.

Option A: You get to play NBA 2K after you clean your room and do the dishes.

Option B: You get to play NBA 2K after you clean your room or do the dishes.

What is the difference between Option A and B?

Circle the statements that are true.

$$2 + 9 = 11 \text{ and } 10 < 5 + 6$$

$$4 + 5 \neq 9 \text{ and } 2 + 3 > 0$$

$$0 > 4 - 6 \text{ or } 3 + 2 = 6$$

$$0 > -2 \text{ or } 5 = 6$$

$$15 - 20 > 0 \text{ or } 2.5 + 3.5 = 7$$

$$-5 > 0 \text{ or } 6 = 7$$

Oct 4-4:45 PM

These are called **compound equations** or **inequalities**.

- When the two statements in the previous sentences were joined by the word **AND**, the compound equation or inequality is true only if Both statements are true.
- When the two statements in the previous sentences were joined by the word **OR**, the compound equation or inequality is true if at least one of the statements is true. Therefore, it is also considered true if both statements are true.

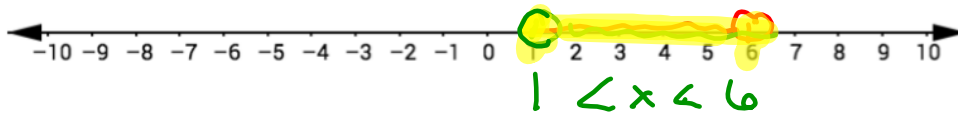
pg.44

Oct 4-4:46 PM

Let's graph  $x < 6$  and  $x > 1$ .

check  $x = 1$   
 $x = 4.3$

$1 < 6$  and  $1 > 1$   
 $4.3 < 6$  and  $4.3 > 1$



This is the \_\_\_\_\_ to the compound inequality.

How many solutions does this inequality have?

all real numbers between 1 and 6

Many times this is written as  $1 < x < 6$ . This notation denotes the conjunction "and."

We read this as "x is greater than one and less than six."

Oct 4-4:48 PM

Let's Practice!

pg. 44

1. Consider  $x < 1$  or  $x > 6$ . Could we write the inequalities above as  $1 > x > 6$ ? Explain your answer.

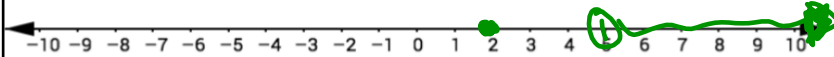
$$1 \leq -x \leq 7$$

$$\frac{1}{-1} \leq \frac{-x}{-1} \text{ and } \frac{-x}{-1} \leq \frac{7}{-1}$$

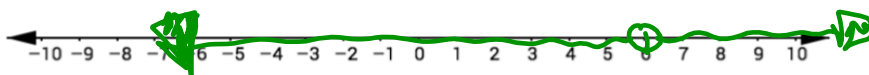
$$-1 \geq x \text{ and } x \geq -7$$

2. Graph the solution set to each compound inequality on a number line.

a.  $x = 2$  or  $x > 5$



b.  $x > 6$  or  $x < 6$



c.  $1 \leq -x \leq 7$

$$\frac{1}{-1} \geq \frac{-x}{-1} \geq \frac{7}{-1}$$

$$\rightarrow -1 \geq x \geq -7$$



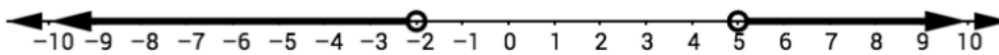
Oct 4-4:49 PM



Be on the lookout for negative coefficients. When solving inequalities, you will need to reverse the inequality symbol when you multiply or divide by a negative value.

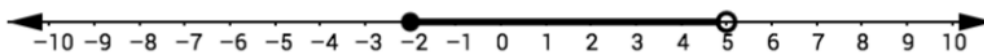
pg.45

3. Write a compound inequality for the following graphs.



a. Compound inequality:

$$x < -2 \text{ OR } x > 5$$



b. Compound inequality:

$$-2 \leq x < 5$$

And  
# < var < #  
≤ ≤

Oct 4-4:51 PM

Try It!

4. Graph the solution set to each compound inequality on a number line.

a.  $x < 1$  or  $x > 8$



b.  $x \geq 6$  or  $x < 4$

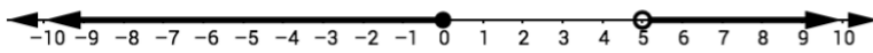


c.  $-6 \leq x \leq 4$



Oct 4-4:54 PM

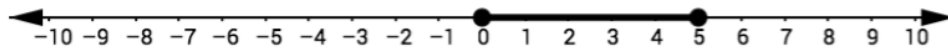
5. Write a compound inequality for the following graphs. pg.46



$\geq \leq$

$> <$   
0

a. Compound inequality:  $x \leq 0$  OR  $x > 5$



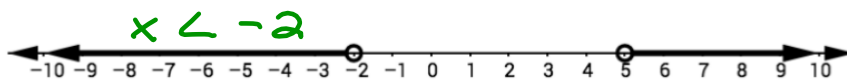
b. Compound inequality:  $0 \leq x \leq 5$

Oct 4-4:56 PM

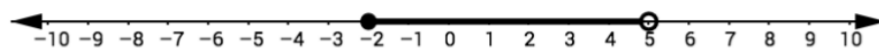
**BEAT THE TEST!**

1. Use the terms and symbols in the table to write a compound inequality for each of the following graphs. You may only use each term once, but you do not have to use all of them.

|                            |                              |                            |                              |        |                            |                            |                              |
|----------------------------|------------------------------|----------------------------|------------------------------|--------|----------------------------|----------------------------|------------------------------|
| <del><math>3x</math></del> | <del><math>-14</math></del>  | <del><math>-6</math></del> | $\geq$                       | $-$    | $17$                       | <del><math>15</math></del> | $<$                          |
| $7x$                       | <del><math>&lt;</math></del> | $2$                        | <del><math>&gt;</math></del> | $\leq$ | <del><math>3x</math></del> | $+$                        | <del><math>&gt;</math></del> |



Compound Inequality:  $3x < -6$  OR  $3x > 15$



Compound Inequality:

Oct 4-4:57 PM

Homework Due Monday

Two inequality signs

**Mangahigh**

11/10 - Gold

10/10 - Silver

8/10 - Bronze

Inequalities summative quiz on Tuesday

Oct 4-4:58 PM