Inequalities

April 4, 2017

Mr. Collin

Announcements

- I will be available after school tomorrow

Inequalities

- Let's look at what an equation means:

$$x = 5$$

- This means that x must be equal to the number 5

Inequalities

- Let's look at what an inequality means:

$$x > 5$$

- What numbers can x be?

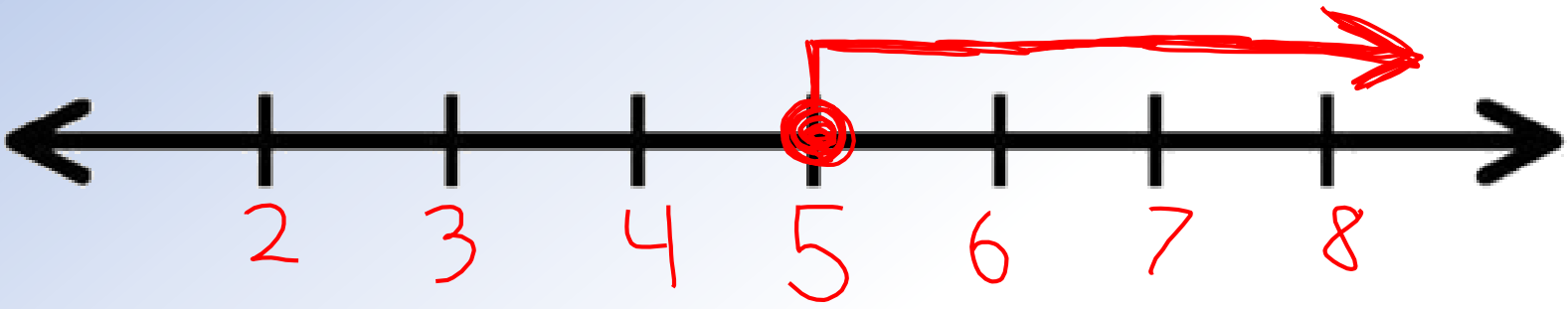
Inequalities

$>$	Is Greater Than
$\geq$	Is Greater Than or Equal To
$<$	Is Less Than
$\leq$	Is Less Than or Equal To
$\neq$	Does Not Equal

Graphing Inequalities

How would we graph an inequality?

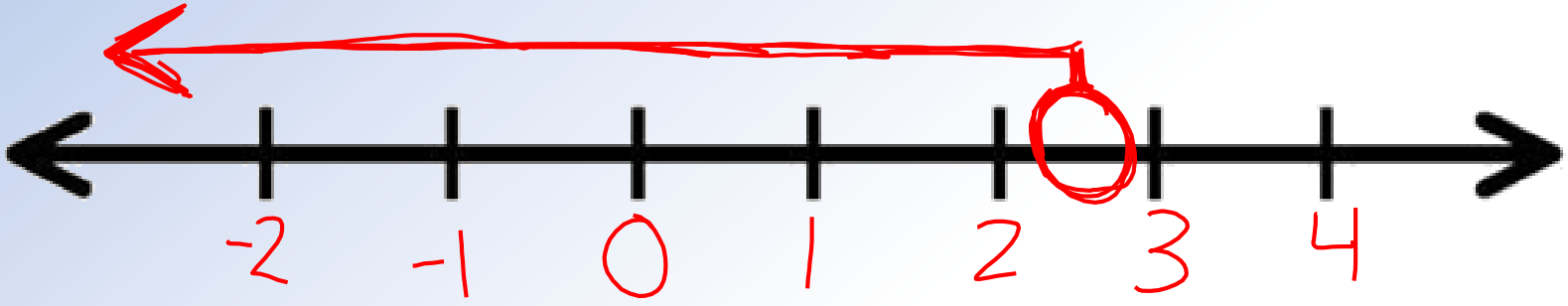
$$x \geq 5$$



Graphing Inequalities

How would we graph an inequality?

$$x < \frac{5}{2}$$



Now You Try

Graph each of the following:

1) $x < 2$

2) $x \geq \frac{3}{2}$

3) $x < \frac{1}{2}$

4) $x \leq 4$

5) $x > 8$

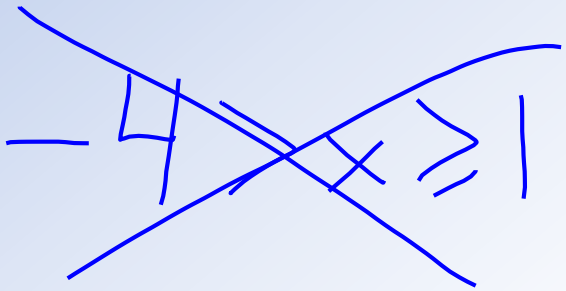
6) $x \geq \frac{3}{4}$

Compound Inequalities

- What do you suppose this means?

$-4 < x \quad x \leq 1$

$$-4 < x \leq 1$$

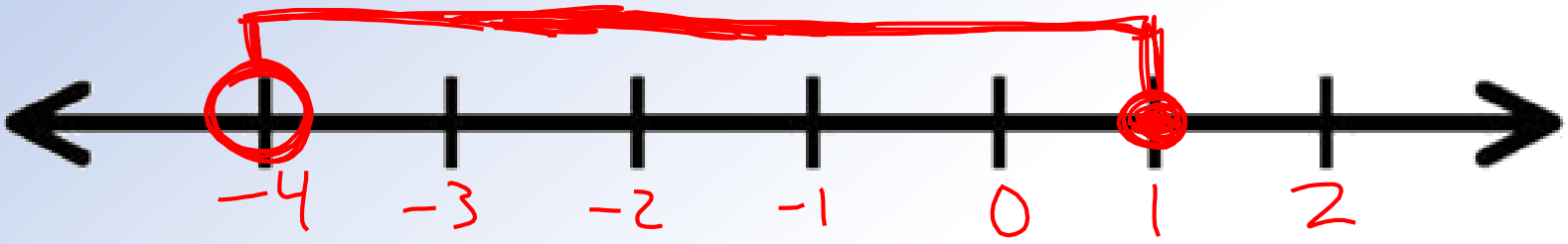


Compound Inequalities

- How can we graph this?

$-4 > x \geq 1$

$$-4 < x \leq 1$$



Now You Try

Graph the following compound inequalities:

1) $2 \leq x < 9$

2) $5 \geq x \geq 3$

3) $-3 < x < 4$

4) $-5 \geq x > -10$

Inequalities

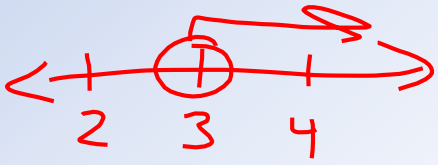
March 28, 2017

Mr. Collin

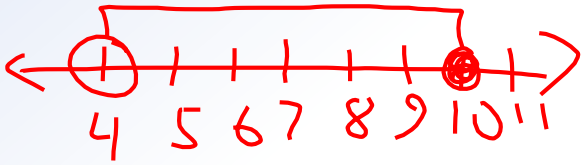
Warmup

Sketch a graph of each of the following inequalities:

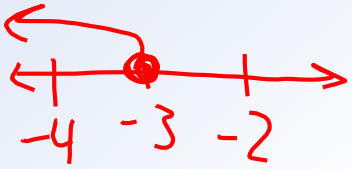
1) $x > 3$



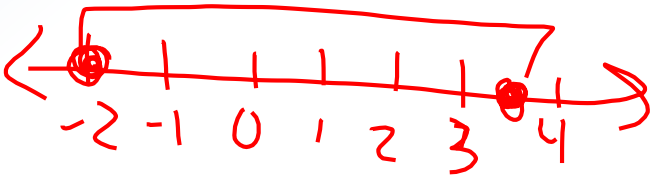
2) $4 < k \leq 10$



3) $m \leq -3$



4) $-2 \leq z \leq \frac{7}{2}$

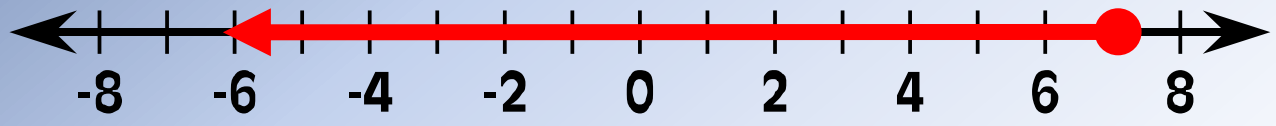


Trade and Grade

- If you received a stamp, you will trade your homework with the person sitting next to you (or someone else near you)
- When you get another person's homework, write your name in the "Corrected By" line at the bottom

Trade and Grade

1)



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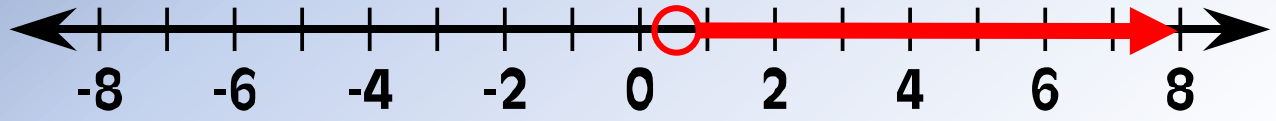


3)

4)

5)

Trade and Grade

6) $x \geq 1$

7) $x \leq -\frac{1}{2}$

8) $-3 < x \leq 4$

9) $-6 \leq x < -1$

10) $x = -4$

11) $m \in \emptyset$

12) $x = 0$

13) $p \in \mathfrak{R}$

14) $n \in \mathfrak{R}$

15) $n = -5$

Trade and Grade

- If eight or more answers are correct and there is a stamp on the page, write "4" in the score box
- If seven or fewer answers are correct, then write "2" in the score box

Solving Inequalities

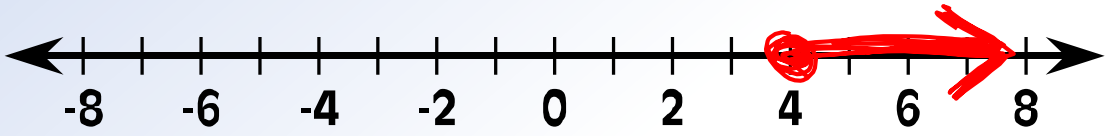
We can solve and graph inequalities just like we can do with equations:

$$4x + 11 \geq 27$$

$-11 \quad -11$

$$\frac{4x}{4} \geq \frac{16}{4}$$

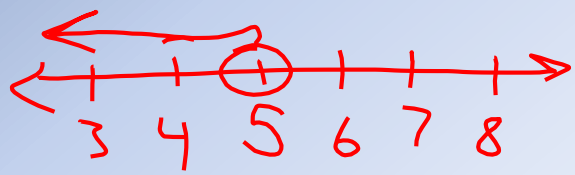
$$x \geq 4$$



Now You Try

Solve and graph the following inequality:

$$3m - 7 < 8$$



$+7 \quad +7$

$\frac{3m}{3} < \frac{15}{3}$

$m < 5$

On Your Own

Solve and graph the following:

1) $5k + 12 < 2$

2) $\frac{2}{3}(7x - 5) \geq 6$

3) $4w - 8 + w \leq 22$

4) $5(z + 2) - z > 4$

Negatives

Inequalities have one major difference:

When you multiply or divide by a negative number, change the direction of the sign

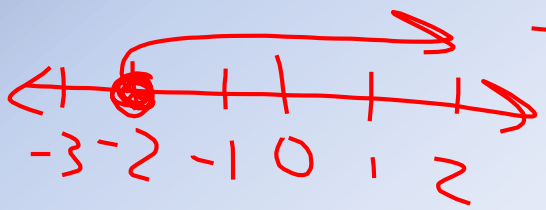
$-x > 0$

$x < 0$

Negatives

Now let's do one that takes a bit of solving:

$$10 - 4m \leq 18$$



$10 - 10 \leq 18 - 10$

$-4m \leq 8$

$\frac{-4m}{-4} \leq \frac{8}{-4}$

$m \geq -2$

Now You Try

Solve the following inequality:

$-\frac{12}{6} \geq -2$

$-2 \geq -2$ ✓

$-\frac{6}{6} \geq -2$

$-1 \geq -2$ ✓

$-6 \cdot -\frac{k}{6} \geq -2 \cdot -6$

$k \leq 12$

On Your Own

Solve the following inequalities:

1) $12 + 4z \leq 8$ $z \leq -1$

2) $-5x - 13 > 7$ $x < -4$

3) $17 - 3a \leq -1$ $a \geq 6$

4) $-2(3d + 7) < 4$ $d > -3$