

Warm Up (9/11/17)

State whether the following inequalities are "True" or "False".

1. $12 > 7$ T

2. $9 > 9$ F

3. $9 \geq 9$ T

4. $-6 \leq -8$ F

5. $2x \geq x$

$$\begin{array}{l} x=0 \\ 0 \geq 0 \quad \checkmark \\ 2(1) \geq 1 \quad \checkmark \\ 2 \geq 1 \quad \checkmark \end{array}$$
$$\begin{array}{l} -2 \\ -4 \geq -2 \\ \text{False} \end{array}$$

True for $x \geq 0$

Solving Inequalities

Let's consider the following inequality: $x + 4 \geq 5$

Just like with equality ($=$), inverse operations and our mathematical properties remain the same. ○

Comm. $\rightarrow x + 4 \geq 5$ is the same as $4 + x \geq 5$

Add any number: $x + 4 + 1 \geq 5 + 1$

Associative: $(x + 4) + 1 \geq 5 + 1$

Multiplying by a negative changes the sign of the inequality. ○

Ex: $7 > 3$

Mult. by -1 $(-7 > -3)$

Flip this inequality $-7 < -3$ ✓

Let's consider the following inequality: $x + 4 \geq 5$

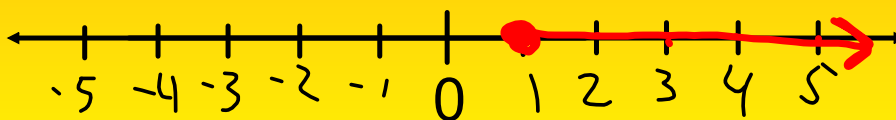
Now let's solve for x to make the inequality true.

$$\begin{array}{r} x + 4 \geq 5 \\ -4 \quad -4 \\ \hline x \geq 1 \end{array}$$

Let's try graphing the answer, for this we use a number line because we only have 1 variable that we're dealing with.

If we have $<$ or $>$, we use \circ

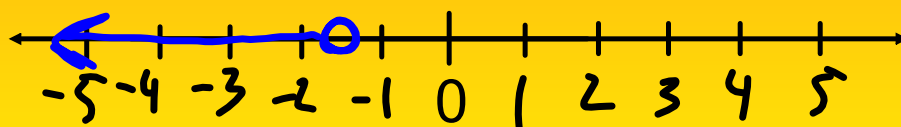
If we have \leq or \geq , we use \bullet



Example

Solve and graph the following inequality:

$$\begin{array}{r} -2x + 4 > 7 \\ \quad -4 \quad -4 \\ \hline -2x > 3 \\ \quad -2 \quad -2 \\ x < -\frac{3}{2} \text{ or } -1.5 \end{array}$$

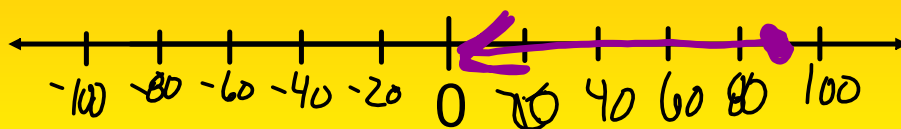


Solve and graph the following inequality

$$\frac{1}{5}x - 8 \leq 10$$

~~$5(\frac{1}{5}x) \leq (18)5$~~

$$x \leq 90$$



Solve and graph the following inequality

$$4(x-3) > 2(x-2)$$

$$\begin{array}{r} 4x-12 > 2x-4 \\ +12 \qquad +12 \end{array}$$

$$\begin{array}{r} 4x > 2x+8 \\ -2x \quad -2x \end{array}$$

$$\begin{array}{r} 2x > 8 \\ \frac{2x}{2} > \frac{8}{2} \end{array}$$

$$x > 4$$

