

Lesson 3: Sections 1.4 & 1.6

By the end of this lesson, you will be able to:

- Solve inequalities for one variable

$>$, $<$, \leq , \geq

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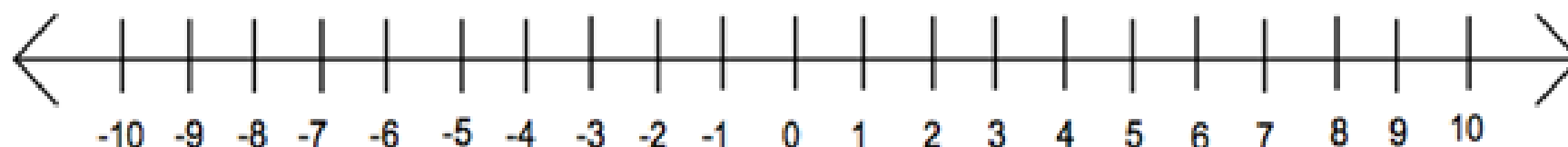
An **Inequality** has a greater than ($>$), greater than or equal to (\geq), less than ($<$), or less than or equal (\leq) to sign instead of an equal ($=$) sign.

For ex:

$$\text{Equation is } 3x - 4 = 14$$

$$\text{Inequality is } 3x - 4 > 14$$

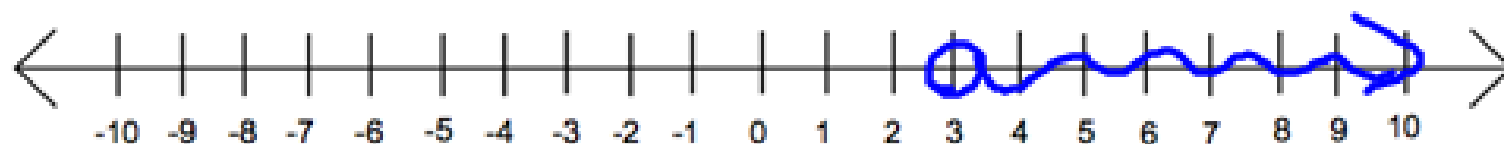
We will be solving for x to find where we can make this sentence true and then graphing on a number line.



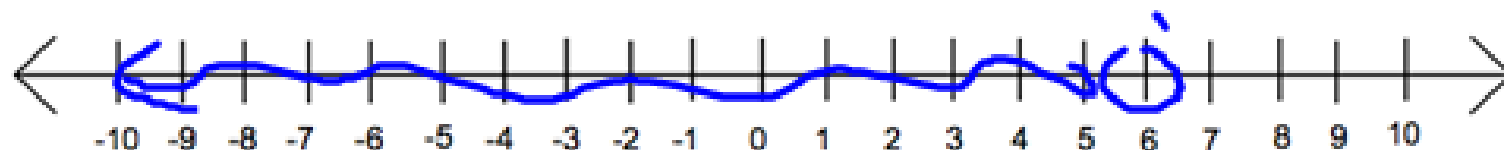
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Let's start with graphing on a number line.

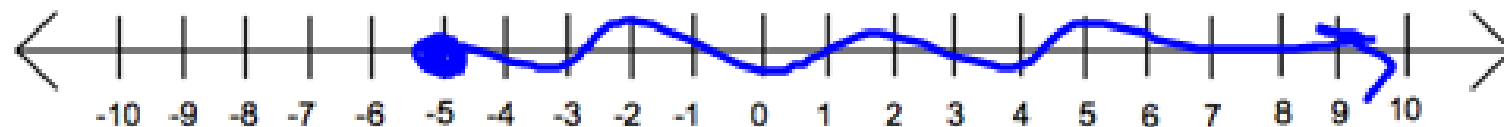
1. $x > 3$



2. $x < 6$



3. $x \geq -5$



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Adding and Subtracting Inequalities

In general, if we have a , b , and c , then we have

1. if $a > b$, then $a+c > b+c$ and $a-c > b-c$
2. if $a < b$, then $a+c < b+c$ and $a-c < b-c$

Multiplying and Dividing Inequalities

In general, if we have a , b , and c , then we have

1. if $a > b$, then $a \cdot c > b \cdot c$ and $a/c > b/c$
2. if $a < b$, then $a \cdot c < b \cdot c$ and $a/c < b/c$

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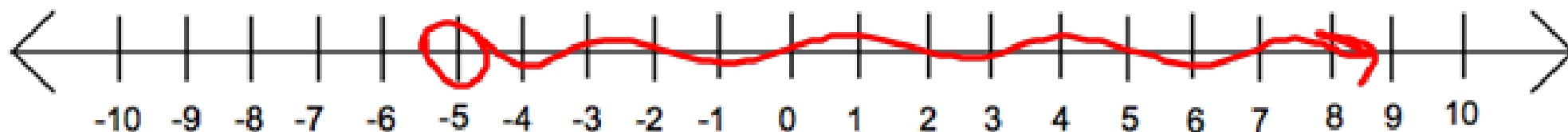
Let's solve some examples and then graph them. (Watch out for those negatives! *What should you do if to the $</>$ if you divide or multiply by a negative?*) *If you mult or div. by a neg., you flip the inequality ($>, <, \geq, \leq$)*

1. $6x + 3 > 5x - 2$

$$\begin{array}{r} -5x \quad -5x \\ \hline \end{array}$$

$$\begin{array}{r} x + 3 > -2 \\ -3 \quad -3 \\ \hline \end{array}$$

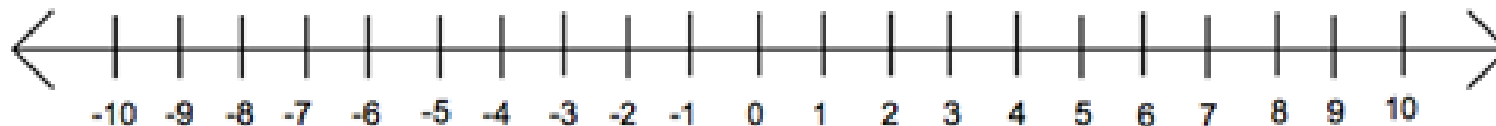
$$x > -5$$



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Let's solve some examples and then graph them. (Watch out for those negatives! *What should you do if to the $</>$ if you divide or multiply by a negative?*)

2. $-3x - 4 < 14$



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Let's solve some examples and then graph them. (Watch out for those negatives! *What should you do if to the $</>$ if you divide or multiply by a negative?*)

3. $-3(4x + 7) < 21$

$$\begin{array}{r} -12x - 21 < 21 \\ \hline +21 \quad +21 \end{array}$$

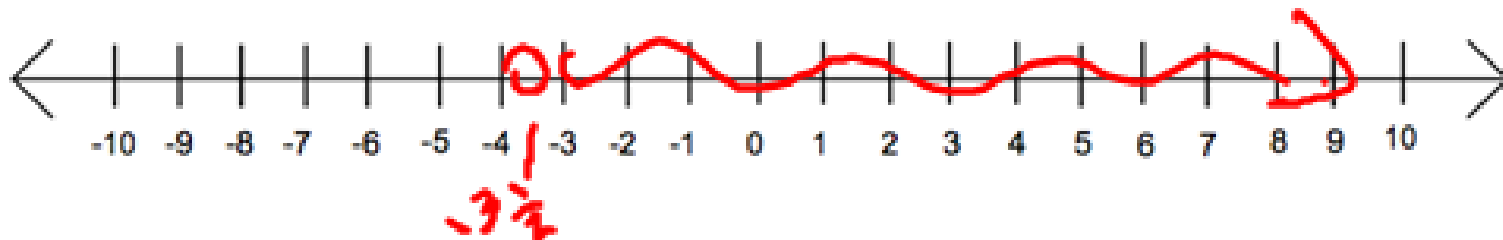
$$\begin{array}{r} -12x < 42 \\ \hline -12 \quad -12 \end{array}$$

$$x > \frac{42}{-12}$$

$$x > -\frac{21}{6}$$

$$x > -\frac{7}{2}$$

$$x > -3\frac{1}{2}$$



Journal #3:

Pg. 47

Due at the beginning of next class

Assignment #3:

Pg. 16

Due at the end of next class