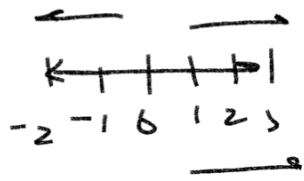


1.)  $\frac{-6r}{-6} > \frac{-24}{-6}$  or  $r-3 > 3$   
 $+3$   $+3$

$r < 4$

divergent

$r > 6$

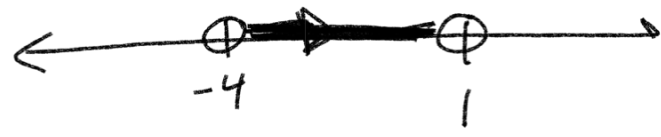


2.)  $x-10 < -9$  and  $x+3 > -1$   
 $+10$   $+10$   $-3$   $-3$

$x < 1$

convergent

$x > -4$



$-5 < x-8 \leq -3$   
 $+8$   $+8$   $+8$

$x-8$   
 $+8$

$3 < x \leq 5$

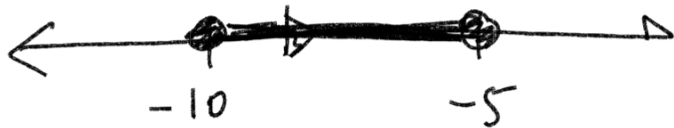
$3 < x$

$x \leq 5$



$$1.) \quad 5(-2) \leq 5\left(\frac{x}{5}\right) \leq (-1)5$$

$$-10 \leq x \leq -5$$



$$2.) \quad \begin{array}{ccccccc} -38 & \leq & -4x + 2 & \leq & -26 & & -4x + 2 \\ -2 & & \underbrace{\hspace{2cm}}_{-2} & & -2 & & -2 \end{array}$$

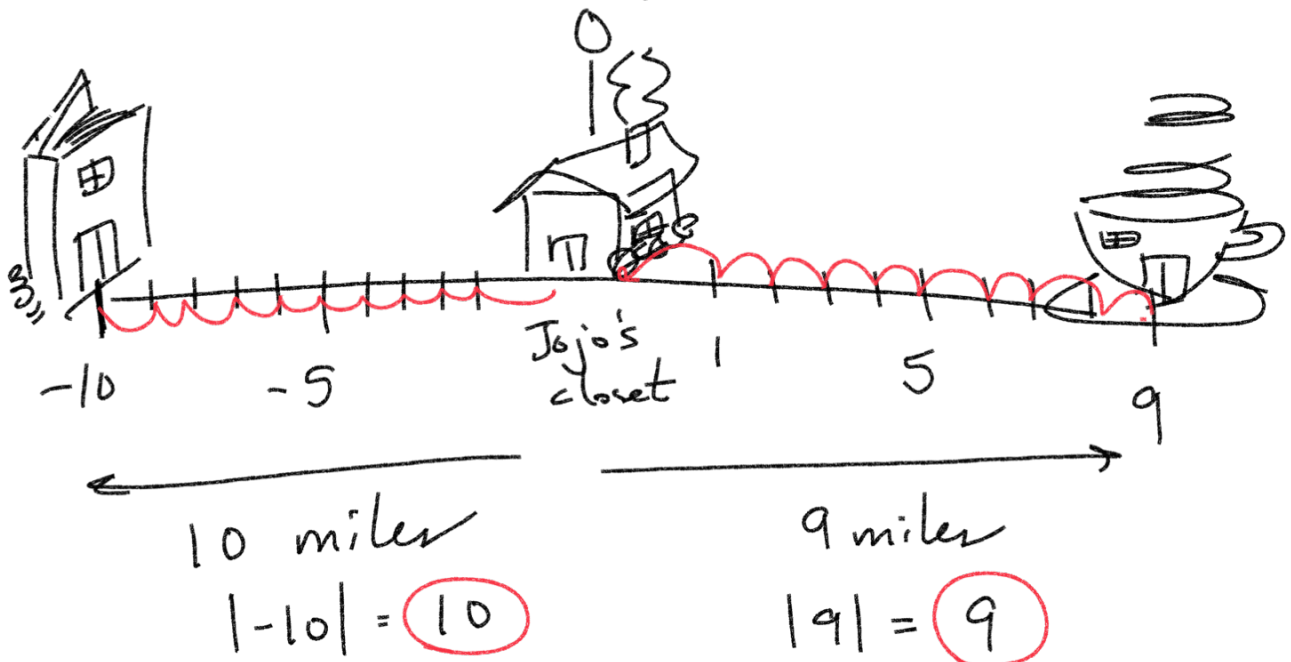
$$\begin{array}{ccc} -40 & \leq & -4x & \leq & -28 \\ \frac{-40}{-4} & & \frac{-4x}{-4} & & \frac{-28}{-4} \end{array}$$

flip!

$$10 \geq x \geq 7$$



Absolute Value - Distance from a number to zero on the number line



$$|-4| = 4$$

$$\ominus |-4| = -4$$

$$|x| = 3$$

3      -3

$$x = +3 \quad x = -3$$

$$x + 5 = 9$$
$$-5 \quad -5$$

$$|x| + 5 = 9$$
$$-5 \quad -5$$

$|x| = -2$   
No solution!

$$|x| = 4$$

$$x = 4$$

$$x = -4$$

$$|x| - 8 = 13$$
$$+8 \quad +8$$

$$x = 21, -21$$

$$|x| = 21$$

$$x = 21 \quad x = -21$$

1.) Isolate absolute value.

2.) Check for negatives

3.) Separate into  $\oplus$  and  $\ominus$

$$|x| + 6 = 4$$

-6                  -6

$$|x| = -2$$

No solution  
ns

$$\frac{-4|x|}{-4} = \frac{-3}{-4}$$

~~$$|x| = -\frac{3}{4}$$~~

$$|x| = \frac{3}{4}$$

$$|x| = \frac{3}{4}$$

↑  
- $\frac{3}{4}$

$$x = \frac{3}{4}$$

$$x = -\frac{3}{4}$$

1.) isolate abs. value

2.) Equal to negative?  
No solution

3.) ⊕ ⊖

$$|x-2| + 6 = 15$$

-6                  -6

$$|x-2| = 9$$

$$x-2 = 9$$

+2    +2

$$x = 11$$

$$x-2 = -9$$

+2    +2

$$x = -7$$

$$1.) \quad |x+9| = 12$$

$$x+9 = 12$$

-9   -9

$$x = 3$$

$$x+9 = -12$$

-9   -9

$$x = -21$$

$$3.) \quad \frac{|x|}{3} = (8)^3$$

$$|x| = 24$$

$$x = 24$$

$$x = -24$$

$$2.) \quad |x-1| = \textcircled{-7}$$

No solution!

$$4.) \quad |x-2| + 8 = 14$$

-8   -8

$$|x-2| = 6$$

$$x-2 = 6$$

+2   +2

$$x = 8$$

$$x-2 = -6$$

+2   +2

$$x = -4$$