

1.5 -- Solving Inequalities

↳ comparison of 2 unequal qty's.

Ex. 1

Which graph represents the **solution** to $6x - 2 < 5x + 7$?

*get variable alone

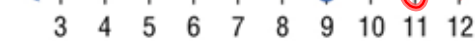
$$6x - 2 < 5x + 7$$

$$\begin{array}{r} -5x \quad -5x \\ \hline x - 2 < 7 \end{array}$$

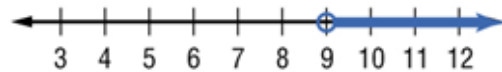
$$\begin{array}{r} x - 2 < 7 \\ +2 \quad +2 \\ \hline x < 9 \end{array}$$

$x < 9 \rightarrow$ "x is less than 9"

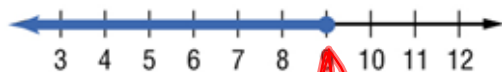
A)



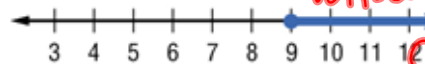
~~B)~~



C)

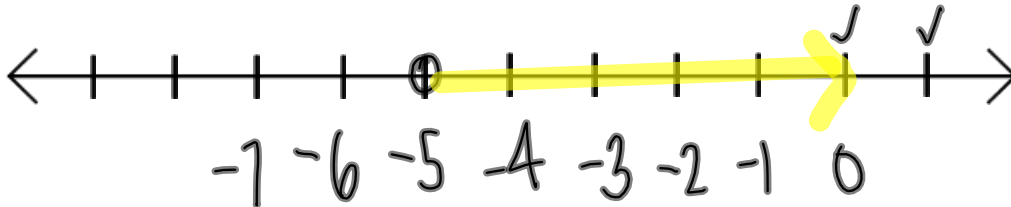


~~D)~~



Ex.2: Solve $4y - 3 < 5y + 2$. Graph the solution set on a number line.

$$\begin{array}{r} 4y - 3 < 5y + 2 \\ -4y \quad -4y \\ \hline -3 < y + 2 \\ -2 \quad -2 \\ \hline \end{array} \rightarrow \begin{array}{l} -5 < y: \text{"-5 is less than y"} \\ y > -5: \text{"y is greater than -5"} \end{array}$$



Ex.3 What is the solution to $-3x \geq 21$?

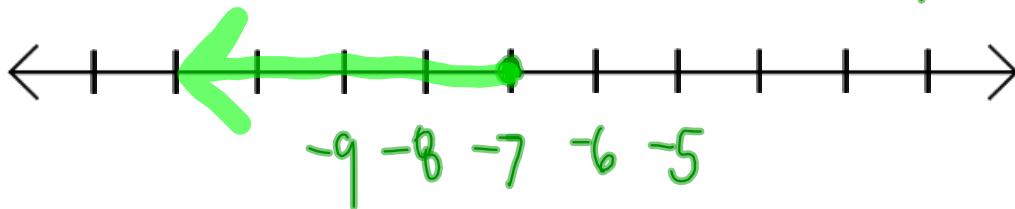
$$\frac{-3x}{3} \geq \frac{21}{3}$$

"opposite of x"

$$\leftarrow -x \geq 7$$

$$x \leq -7$$

Mult./Divide w/neg
~~everything becomes~~
its opposite.



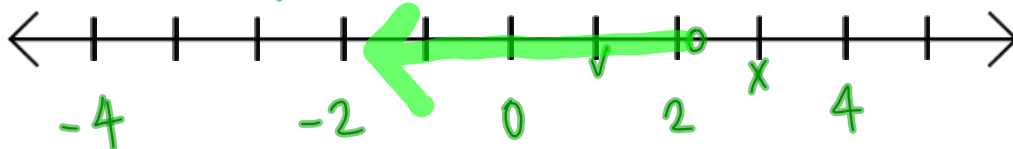
Ex. 4 ^{2.} Solve $-x > \frac{x-7}{2}$. Graph the solution set on a number line.

$$\begin{array}{r} -2/x > x - 7 \\ +2x \quad +2x \end{array}$$

$$\begin{array}{r} 0 > 3x - 7 \\ +7 \quad \quad +7 \end{array}$$

$$7 > 3x \rightarrow \frac{7}{3} > x \text{ or } x < \frac{7}{3}$$

$$\left(2\frac{1}{3}\right)$$



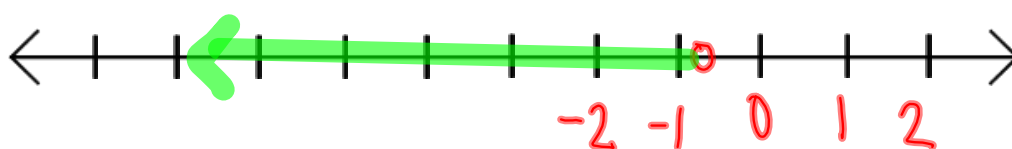
Ex. 5 What is the solution to $-2x > \frac{x+5}{3}$?

$$-6x > x+5$$

$$0 > 7x+5$$

$$-\frac{5}{7} > x$$

$$x < -\frac{5}{7}$$



- Ex. 6 **CONSUMER COSTS** Javier has **at most** \$15.00 to spend today. He buys a bag of pretzels and a bottle of juice for \$1.59. If gasoline at this store costs \$2.89 per gallon, how many gallons of gasoline, to the nearest **tenth** of a gallon, can Javier buy for his car?

$$\text{spends} \leq 15$$

$g = \#$ of gallons
of gas

$$1.59 + 2.89g \leq 15$$

$$g \leq 4.8$$

$$\frac{2.89g}{2.89} \leq \frac{13.41}{2.89}$$

*Javier can buy at most 4.8 gallons of gas.

Ex. 7 **RENTAL COSTS** Jeb wants to rent a car for his vacation. Value Cars rents cars for \$25 per day plus \$0.25 per mile. How far can he drive for one day if he wants to spend no more than \$200 on car rental?

Value Cars: $\underbrace{25 + 0.25m}_{\text{spend}}$ $m = \# \text{ of miles}$

$$\text{Spend} \leq 200$$

*Jeb can drive up to 700 miles.

$$\begin{array}{r} 25 + 0.25m \leq 200 \\ -25 \quad -25 \\ \hline 0.25m \leq 175 \\ \hline \cdot 25 \quad \cdot 25 \\ \hline m \leq 700 \end{array} \rightarrow \textcircled{m \leq 700}$$