

Interval Notation

$$\{x \mid -13 < x \leq 9\}$$
 $(-13, 9]$

	CLOSED INTERVAL	OPEN INTERVAL	HALF CLOSED/ OPEN INTERVAL
Set Notation	$\{x \mid 0 \leq x \leq 5\}$ 	$\{x \mid 0 < x < 5\}$ 	$\{x \mid 0 \leq x < 5\}$
Interval Notation	$[\text{ ____ } , \text{ ____ }]$	$(\text{ ____ } , \text{ ____ })$	$[\text{ ____ } , \text{ ____ })$
Number Line	 • Endpoints <u> </u> cluded	 • Endpoints <u> </u> cluded	

$$\{x \mid x \geq 3\}$$

► In interval notation, *a/ways* express ∞ with _____ bounds.

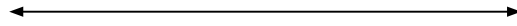
$$\{x \mid 14 \leq x < 26\}$$

 $(-\infty, 0]$

TOPIC: LINEAR INEQUALITIES

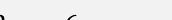
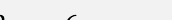
PRACTICE: Express the given set in interval notation and graph.

$$\{x \mid x \leq 7\}$$



Solving Linear Inequalities

- ◆ Linear **inequalities** are just linear **equations** with an _____ symbol instead of an = sign!
 - ▶ You can apply **everything** from solving linear equations to linear inequalities.

Linear Equation	Linear Inequality
$2x - 6 = 0$ $\begin{array}{r} +6 \quad +6 \\ 2x = 6 \\ \hline 2 \quad 2 \\ x = 3 \end{array}$ 	$2x - 6 \leq 0$ $\begin{array}{r} -2x - 6 \leq 0 \\ +6 \quad +6 \\ \hline -2x \leq 6 \end{array}$ 

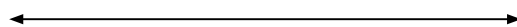
Multiplying/Dividing by a **negative** # _____ the symbol.

Solution: _____ value

Solution: _____ of values

PRACTICE: Solve the inequality. Express the solution set in interval notation and graph.

$$2x + 12 > 19$$



TOPIC: LINEAR INEQUALITIES

Solving Three Part Inequalities

◆ In a **Three Part Inequality**, the variable expression is between ____ inequality symbols.

► To solve, follow the same steps for simple inequalities on all ____ sides to isolate the variable.

EXAMPLE

Solve the three part inequality and graph the solution.

$$-14 \leq 2x - 10 < 2$$

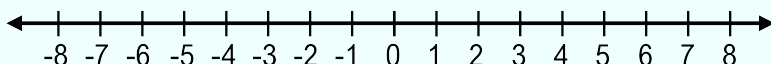
New

$$a < x < b$$

Solution Set:

Interval Notation:

Graph:



PRACTICE

Solve the following inequalities and express the answer in interval notation.

(A)

$$-4 \leq 2x + 1 \leq 7$$

(B)

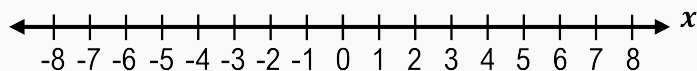
$$1 < \frac{x-2}{2} \leq 4$$

TOPIC: LINEAR INEQUALITIES

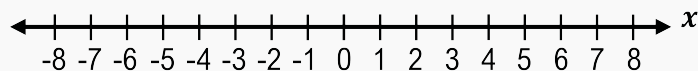
PRACTICE

Solve the following inequalities and graph the solution.

(A) $-6 < 2x - 4 < 4$



(B) $-6 \leq 0.5(x - 4) < -3$



EXAMPLE

Solve the following inequality and express the solution in interval notation. Then, graph the solution.

$$4 < 6 - x \leq 8$$

