Solving Inequalities Cue Card – With Examples

Inequality Symbols: Always read from the variable!

Symbol	Words	Graph
$<$	"less than"	
$\leq$	"less than or equal to", "no more than", "at most"	
$>$	"greater than"	
$\geq$	"greater than or equal to" "no less than" "at least"	

Example: **x > 5** reads "x is greater than 5"; **5 > x** reads "x is less than 5".

Inverse Operations: Addition & Subtraction
Positive # & Negative #
Multiplication & Division

When Multiplying or Dividing by a negative number FLIP THE SYMBOL!

Solving 1-Step Inequalities Cue Card

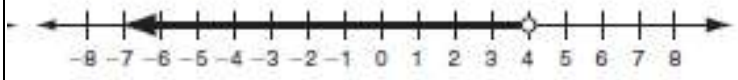
Step 1: Use inverse operations to undo the number on the **same side of the variable**
***FLIP the inequality sign if you multiply or divide by a negative number**

Solve $x + 3 < 7$ and graph the solutions.

$x + 3 < 7$

$-3 \quad -3$ *Subtract 3 from each side.*

$x < 4$

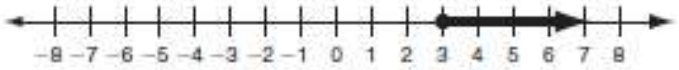


Solve $x - 2 \geq 1$ and graph the solutions.

$x - 2 \geq 1$

$+2 \quad +2$ *Add 2 to each side.*

$x \geq 3$

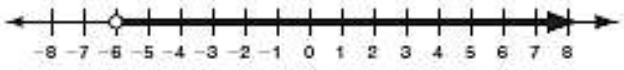


Solve $\frac{x}{3} > -2$ and graph the solution.

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

$3 \cdot \frac{x}{3} > 3 \cdot (-2)$ *Multiply both sides by 3.*

$x > -6$



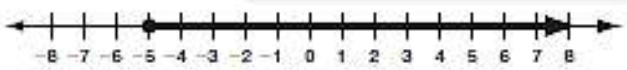
Solve $-2m \leq 10$ and graph the solutions.

$-2m \leq 10$

$\frac{-2m}{-2} \leq \frac{10}{-2}$ *Divide both sides by –2.*

$m \geq -5$

Dividing by a negative. Reverse inequality sign.



Solving 2-Step Inequalities Cue Card	
Step 1:	Undo Addition or Subtraction to the number on the **same side of the variable** using inverse operations
Step 2:	Undo the multiplication or division ***FLIP the inequality sign if you multiply or divide by a negative number**

Solve $-5x + 3 < 23$ and graph the solutions.

$-5x + 3 < 23$

$-3 \quad -3$ *Add −3 to each side.*

$-5x < 20$

$\frac{-5x}{-5} < \frac{20}{-5}$ *Divide both sides by −5.*

$x > -4$ *Reverse the inequality sign.*

$\frac{y}{6} - 9 \leq 1$

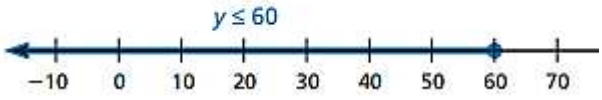
$+9 \quad +9$

$\frac{y}{6} \leq 10$

$\frac{y}{6} \cdot 6 \leq 10 \cdot 6$

$y \leq 60$

The solution is $y \leq 60$.



Solving Multi-Step Inequalities

Step 1: Distribute

Multiply

$5(x + 6)$

$5x + 30$

Step 2: Combine Like Terms on the **SAME** side of the equal sign

$4a + 5 + 2a - 3$

$6a + 2$

Step 3: Is there a variable on both sides?

Yes; Use inverse operations to move the variable term to the left

No; Go to Step 4

Step 4: Use inverse operations to undo the number on the **same side of the variable** (add or subtract)

Step 5: Use inverse operations to undo any multiplication or division

***FLIP the inequality sign if you multiply or divide by a negative number**

$-2(x + 3) < 10$

$-2x - 6 < 10$

$-2x - 6 + 6 < 10 + 6$

$-2x < 16$

Flip Inequality Sign!

$\frac{-2x}{-2} > \frac{16}{-2}$

$x > -8$

$3x + 2 < x - 4$

$-x \quad -x$

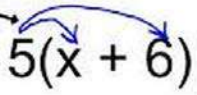
$2x + 2 < -4$

$-2 \quad -2$

$2x < -6$

$\frac{2x}{2} < \frac{-6}{2}$

$x < -3$

Solving Multi-Step Equations		
Step 1:	Distribute **Multiply**  5x + 30	
Step 2:	Combine Like Terms on the **SAME** side of the equal sign **4a + 5 + 2a - 3** **6a + 2**	
Step 3:	Is there a variable on both sides?	
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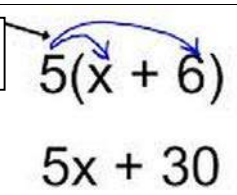
Step 1:	Distribute **Multiply** 	
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