

Basics for Solving Linear Inequalities

1. Think of the inequality as an equation— treat $<$, $>$, \leq , \geq as the equal symbol ($=$) in the inequality.
2. Like any equation, the goal is to “get the variable by itself.”
3. The final variable is always on the left of the inequality:
Example: $y < 15$ **and not** $15 > y$
4. When graphing,
 - a. If you do not include a number in a graph, the circle is open: ○
 - b. If you do include a number in the graph, the circle is shaded: ●
5. **IMPORTANT:** If you multiply or divide by a negative number, reverse the inequality (the inequality changes direction)!

$$-2y < -8 \quad \longrightarrow \quad \frac{-2y}{-2} < \frac{-8}{-2} \quad \longrightarrow \quad y > 4$$

6. The symbol used for the word “infinity” (forever; without end): ∞
7. *Interval Notation* represents intervals as a pair of numbers. The numbers are the *endpoints* of the interval.

Parentheses and/or brackets show whether the endpoints are *excluded* or *included*.

For example, $[-1, 2)$ is the interval of real numbers between -1 and 2 , **including** -1 and **excluding** 2 .



8. The following chart will help you when you have word problems.

Inequalities			
$<$	\leq	$>$	\geq
<ul style="list-style-type: none"> • less than • fewer than 	<ul style="list-style-type: none"> • less than or equal to • at most • no more than • a maximum of 	<ul style="list-style-type: none"> • greater than • more than 	<ul style="list-style-type: none"> • greater than or equal to • at least • no less than • a minimum of