Inequalities — Quick Reference

Inequality Symbols

< **Less Than**
≤ **Less Than OR Equal To**

> **Greater Than**
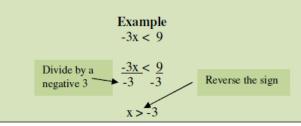≥ **Greater Than or Equal To**

Graphing Inequalities in One Variable

Graphing Symbols

○——→ **Greater Than** (The open circle indicates that this is **NOT Equal to** the numeral graphed.

●——→ **Greater Than or Equal To** (The closed circle indicates that this is **Equal to** the numeral graphed.

←——○ **Less Than** (The open circle indicates that this is **NOT Equal to** the numeral graphed.

←——● **Less Than or Equal To** (The closed circle indicates that this is **Equal to** the numeral graphed.
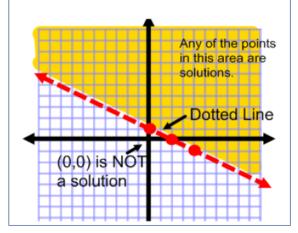
Special Rule - Just for Inequalities

Whenever you **multiply or divide** by a **negative** number, you **MUST reverse** the sign.

Example
$-3x < 9$

Divide by a negative 3 →
$$\frac{-3x}{-3} < \frac{9}{-3}$$
Reverse the sign →

$x > -3$

Graphing Inequalities in Two Variables

Graph for: **y > -1/2x + 1**

1. Graph $y = -1/2x + 1$, but dot the line since the symbol is >. The points on the line are **not** solutions.
2. Pick a point such as (0,0) and substitute it into the inequality. (0,0) is **not** a solution, therefore, shade the side of the line that does not contain (0,0).

Any of the points in this area are solutions.

Dotted Line

(0,0) is NOT a solution

Systems of Inequalities

Graph each inequality as shown above. **ONLY** the area that is shaded by **BOTH** inequalities is the solution set (orange section)

y ≥ 3/2x -1

Solutions to the system of inequalities (orange area) →

y ≥ -1

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