Inequality

A statement that shows the relationship between two (or more) expressions with one of the following five signs

1. $<$, Less Than
   $a < b$ if and only if there is a positive number c such that $a+c = b$
2. $\leq$, Less Than or Equal To
   $a \leq b$ if and only if there is a positive number or zero c such that $a+c = b$
3. $>$, Greater Than
   $a > b$ if and only if there is a positive number c such that $a - c = b$
4. $\geq$, Greater Than or Equal To
   $a \geq b$ if and only if there is a positive number or zero c such that $a - c = b$
5. $\neq$, Not Equal To
   $a \neq b$ if and only if $a - b \neq 0$

Examples:

1. (X: X is an integer > 5)
   $X = (6, 7, 8, \ldots \infty)$
2. $A \leq B$
   e.g. A=-3, B=-3

Addition Properties of Inequality:

If $a < b$, then $a + c < b + c$

If $a > b$, then $a + c > b + c$

Subtraction Properties of Inequality:

If $a < b$, then $a - c < b - c$

If $a > b$, then $a - c > b - c$