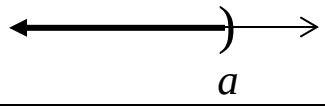
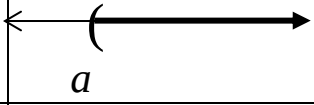
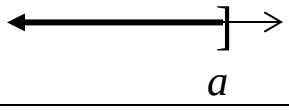
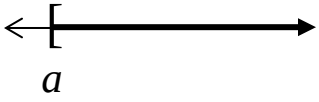
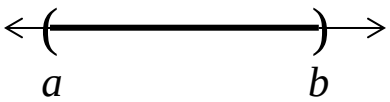
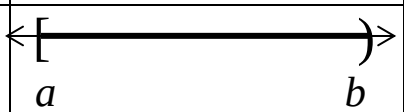
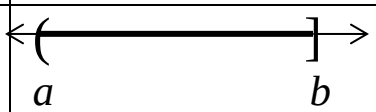
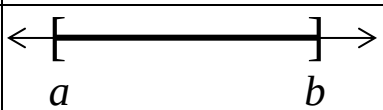
Inequalities

Inequalities can be expressed in the following three ways.

1. With an inequality symbol $(>, <, \geq, \leq)$
2. With a number line graph
3. Using interval notation

Inequality Symbol	Number Line Graph	Interval Notation
$x < a$		$(-\infty, a)$
$x > a$		(a, ∞)
$x \leq a$		$(-\infty, a]$
$x \geq 0$		$[a, \infty)$
$a < x < b$		(a, b)
$a \leq x < b$		$[a, b)$
$a < x \leq b$		$(a, b]$
$a \leq x \leq b$		$[a, b]$
no solution		$\emptyset$
all real numbers		$(-\infty, \infty)$

A parenthesis is the same as an 'open circle' and a bracket is the same as a 'closed circle'.

When using interval notation; always have the smallest value first. A parenthesis means *x* can get very close to that number and a bracket means *x* can equal that number. Never use a bracket with $-\infty$ or ∞, since those are not 'exact' numbers.