

Key

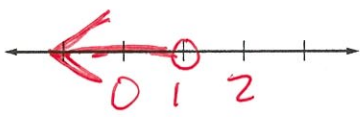

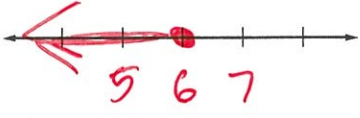
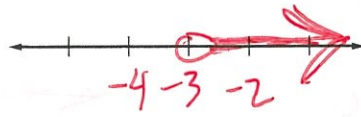
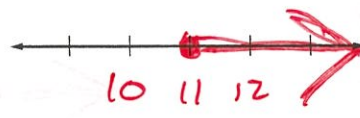
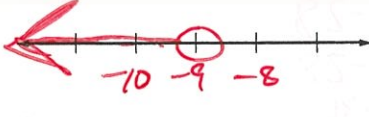
Multi-step Inequalities

Interval Notation is another way of expression your answer an inequality. It uses parentheses and brackets to show where the graph starts and ends.

Symbols for Interval Notation		
(Means "not included", or "open" Use when you have a graph starting or ending on an OPEN circle.	○
[Means "included", or "closed" Use when you have a graph starting or ending on a CLOSED circle.	●

Examples: Solve, graph, and write the following inequalities in interval notation.

	EXAMPLE	GRAPH	INTERVAL NOTATION
1	$4(x+3) > -24$ $4x+12 > -24$ $4x > -36$ $x > -9$		$(-9, \infty)$
2	$x - 3(x+2) > 4$ $x - 3x - 6 > 4$ $-2x - 6 > 4$ $-2x > 10$ $x < -5$		$(-\infty, -5)$
3	$7x - 2(x-4) \leq -2$ $7x - 2x + 8 \leq -2$ $5x + 8 \leq -2$ $5x \leq -10$ $x \leq -2$		$(-\infty, -2]$
4	$-8(x-1) - x \leq -28$ $-8x + 8 - x \leq -28$ $-9x + 8 \leq -28$ $-9x \leq -36$ $x \geq 4$		$[4, \infty)$

<p>5</p> $6x + 1 < 9 - 2x$ $8x + 1 < 9$ $8x < 8$ $x < 1$		$(-\infty, 1)$
<p>6</p> $2x - 1 \leq 5x + 20$ $-3x - 15 \leq 20$ $-3x \leq 21$ $x \geq -7$		$[-7, \infty)$
<p>7</p> $3 - (2x - 7) \leq 34 - 6x$ $3 - 2x + 7 \leq 34 - 6x$ $-2x + 10 \leq 34 - 6x$ $4x + 10 \leq 34$ $4x \leq 24$ $x \leq 6$		$(-\infty, 6]$
<p>8</p> $-3(x + 2) - 3x < 2x + 18$ $-3x + (-6) - 3x < 2x + 18$ $-6x - 6 < 2x + 18$ $-8x - 6 < 18$ $-8x < 24$ $x > -3$		$(-3, \infty)$
<p>9</p> $5x - 3(x + 6) \geq 8 - (x - 7)$ $5x - 3x - 18 \geq 8 - x + 7$ $2x - 18 \geq 15 - x$ $3x - 18 \geq 15$ $3x \geq 33$ $x \geq 11$		$[11, \infty)$
<p>10</p> $-(3x + 3) - 2x > -4(x - 2) - 2$ $-3x - 3 - 2x > -4x + 8 - 2$ $-5x - 3 > -4x + 6$ $-x - 3 > 6$ $-x > 9$ $x < -9$		$(-\infty, -9)$