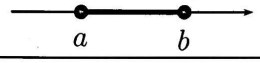
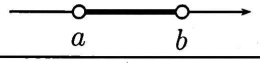
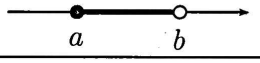
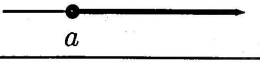
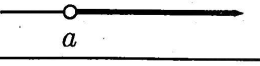
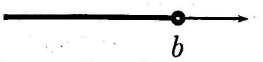
Absolute Value - Handout

The **absolute value** of a real number c, denoted by $|c|$ the non-negative number which is equal in magnitude (or size) to c, is the number resulting from disregarding the sign:

$$|c| = \begin{cases} c & \text{if } c \geq 0, \\ -c & \text{if } c < 0. \end{cases}$$

Inequality notation	Number line	Interval notation
$a \leq x \leq b$		$[a, b]$
$a < x < b$		(a, b)
$a \leq x < b$		$[a, b)$
$a < x \leq b$		$(a, b]$
$a \leq x$		$[a, \infty)$
$a < x$		(a, ∞)
$x \leq b$		$(-\infty, b]$
$x < b$		$(-\infty, b)$

Formally, we define the interval $[a, b]$, the set of all real numbers x such that $a \leq x \leq b$, using **set builder notation**:

$$[a, b] \;=\; \{\, x \mid a \leq x \leq b \,\}$$