

## Set Notation & Interval Notation

\*Always go minimum to maximum!!!  
(small to BIG)

Recall from module 2 that the *domain* is the set of inputs (x-values) for which a function is defined. There are two types of notation we will use in Math 1 to represent domain.

**Set builder notation** indicates the *type* of number (eg. Real, Integer, Natural, etc.) and the conditions that the number meets, using inequalities. Discrete sets are defined with this notation. For example: curly brackets: "the set of ..."

$\{x \mid x \in \mathbb{Z}, -2 \leq x < 7\}$

The set of inputs such that  $x$  is an element of INTEGERS from including -2 up to but NOT including 7

\*This means  $x$  could be -2, -1, 0, 1, 2, 3, 4, 5, or 6 ONLY

**Interval notation** uses parentheses and brackets instead of inequalities to represent the set of values. *This notation can only be used for continuous intervals!*

Parentheses ( ) indicate an "open" interval that **DOES NOT** include the endpoints.  
 Brackets [ ] indicate a "closed" interval that **DOES** include the endpoints.

Example:	Set Notation	Interval
<p><math>-2 \leq x &lt; 3</math></p>	$\{x \mid x \in \mathbb{R}, -2 \leq x < 3\}$	$[-2, 3)$
<p><math>x &gt; 0</math></p>	$\{x \mid x \in \mathbb{R}, x > 0\}$ OR $\{x \mid x \in \mathbb{R}, 0 < x < \infty\}$	$(0, \infty)$
<p><math>x \leq 4</math></p>	$\{x \mid x \in \mathbb{R}, x \leq 4\}$ OR $\{x \mid x \in \mathbb{R}, -\infty < x \leq 4\}$	$(-\infty, 4]$
	$\{x \mid x \in \mathbb{Z}, -3 \leq x \leq 4\}$ OR $\{x \mid x = -3, -2, -1, 0, 1, 2, 3, 4\}$	*CANNOT be used for a discrete set!!!
<p><math>-\infty &lt; x &lt; \infty</math></p>	$\{x \mid x \in \mathbb{R}\}$ OR $\{x \mid x \in \mathbb{R}, -\infty < x < \infty\}$	$(-\infty, \infty)$