Set Notation & Interval Notation

Always 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.

<u>Set builder notation</u> 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 mean "The set of..."

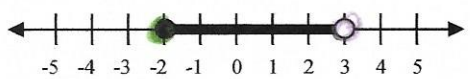
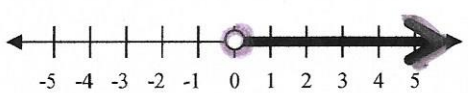
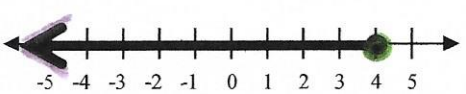
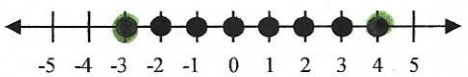
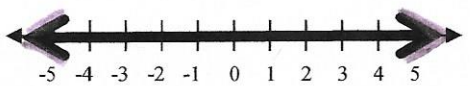
$$\{x \mid x \in \mathbb{Z}, -2 \leq x < 7\}$$

ALL inputs; such that; it is in the set of; integers; from, and including −2, up to, but NOT including 7

<u>Interval notation</u> 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
	$\{x \mid x \in \mathbb{R}, -2 \leq x < 3\}$	$[-2, 3)$
	$\{x \mid x \in \mathbb{R}, 0 < x < \infty\}$ OR $\{x \mid x \in \mathbb{R}, x > 0\}$	$(0, \infty)$
	$\{x \mid x \in \mathbb{R}, -\infty < x \leq 4\}$ OR $\{x \mid x \in \mathbb{R}, x \leq 4\}$	$(-\infty, 4]$
	$\{x \mid x \in \mathbb{Z}, -3 \leq x \leq 4\}$	Cannot be used for discrete sets!
	$\{x \mid x \in \mathbb{R}\}$	$(-\infty, \infty)$