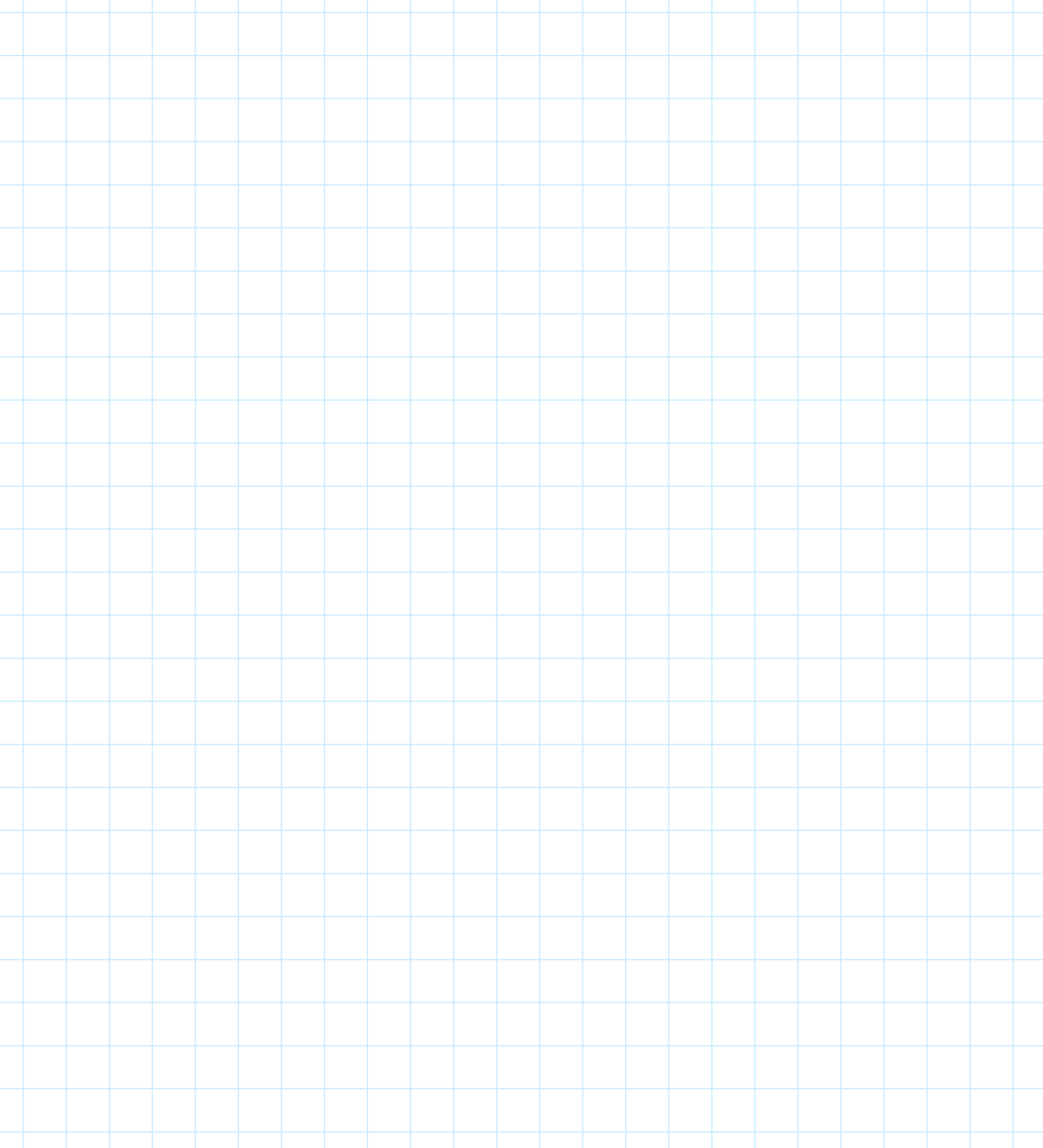


4.4 Part 1 Domain and Range

Thursday, April 13, 2023 10:31 AM



4.4 Domain and Range Part 1

There are different ways to express the domain and range of a relation.

- A. Brackets
- B. Set Notation
- C. Interval Notation

A. Brackets

Curly brackets $\{ \}$ are used to note the domain and range of discrete data/values.

Discrete data : Finite number of outcomes

- The number of items in a list
- The number of people in a room
- Set of ordered pairs

Example 1 : Determine the domain and range of each relation. Determine if the relation is a function.

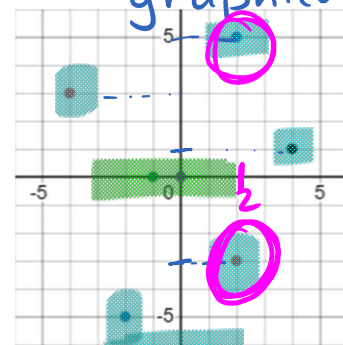
a) $\{(-3, 4), (5, -6), (-2, 7), (5, 3), (6, -3)\}$

ordered pairs (x, y)

X-values Domain : $\{-3, -2, 5, 6\}$
 y-values Range : $\{-6, -3, 3, 4, 7\}$
 Function : Yes No

Two points have an x-value of 5

b)



Domain : $\{-4, -2, -1, 0, 2, 4\}$
 Range : $\{-5, -3, 0, 1, 3, 5\}$
 Function : Yes No

Two points that have the same x-value $x=2$

B. Set Notation



Signs of inequality are used to note the domain and ^{range} image of **continuous data/values**. This notation is called set notation.

Continuous Data : Infinite number of outcomes

- The speed of a car
- The time it takes to complete a task

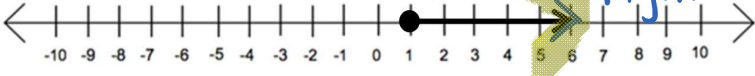
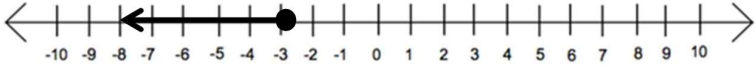

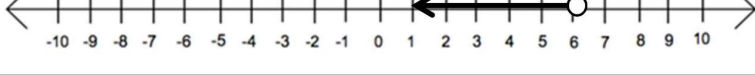
Review : Inequalities

< less than
> greater than



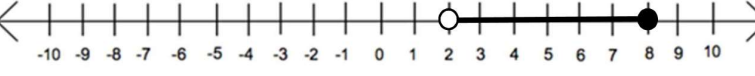
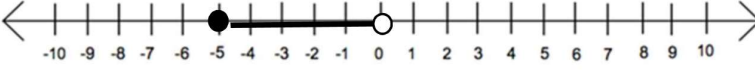
 less than or equal to
 greater than or equal to

The dots indicate the ends. A solid dot indicates that the number is included. An open dot indicates that the number is not included. The arrow indicates that the numbers extend to the right or left.

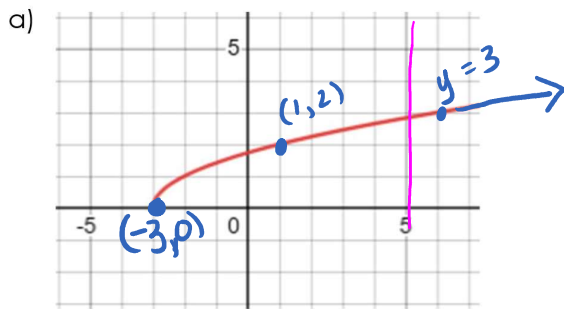
write the X first

Number Line	Inequality
	$x \geq 1$
	$x \leq -3$
	$x > -5$
	$x < 6$

When there are points at each end indicating a numerical line, two inequality symbols are used.

Number Line	Inequality
	$-1 \leq x \leq 4$
	$-8 < x < 4$
	$2 < x \leq 8$
	$-5 \leq x < 0$

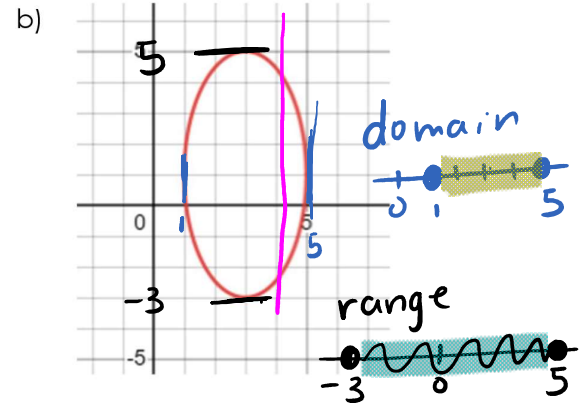
Example 2 : Determine the domain and range of each relation using **set notation**. Determine if the relation is a function.



Domain: $x \geq -3$

Range: $y \geq 0$

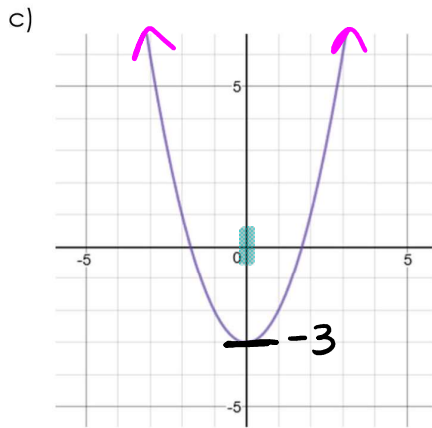
Function: **Yes** No



Domain: $1 \leq x \leq 5$

Range: $-3 \leq y \leq 5$

Function: Yes **No**



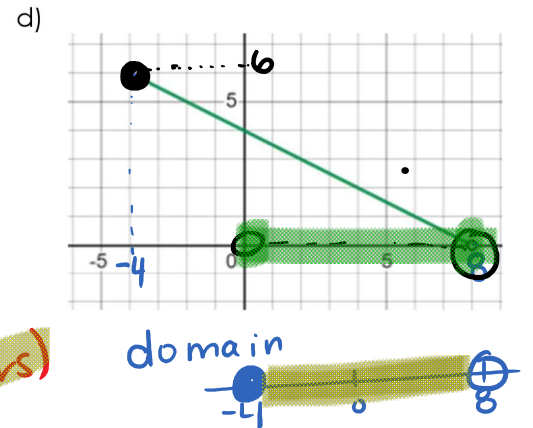
all real numbers (all the numbers)

Domain: $x \in \mathbb{R}$

Range: $y \geq -3$

Function: **Yes** No

Range: $y \geq -3$



Domain: $-4 \leq x < 8$

Range: $0 < y \leq 6$

Function: **Yes** No

range: $0 < y \leq 6$