

Domain and Range { 5.2 }

Secondary Math II Notes

OBJECTIVE: Determine the domain and range of a function given a table, graph, or set of ordered pairs. Write the domain and range for finite sets in set notation. Write the domain and range for infinite sets in set notation and interval notation.

Review Domain and Range

Domain:	The set of all inputs or x-values.
Range:	The set of all outputs or y-values.

Representing the Domain and Range

Finite Sets

If there are a finite amount of elements in the domain or range, we simply list all items included. We typically use this notation when analyzing ordered pairs or a table. It will look something like this:

$$D: \{-4, -3, -1, 0, 5\}$$

$$R: \{1, 4, 17\}$$

Infinite Sets

If there is an infinite amount of elements included in our domain or range we will use inequalities to describe values that are included. We typically use this form when looking at a graph or an equation. Set notation will look something like this:

$$D: \{x \mid x > 2\}$$

$$R: \{y \mid y < -3\}$$

We can also use interval notation and it will look something like this:

$$D: (2, \infty)$$

$$R: (-\infty, -3)$$

Ordered Pairs

Example 1: $\{(-3, -9), (-2, -6), (-1, -3), (0, 0), (1, 3), (2, 6), (3, 9)\}$

All of the possible x-values are -3, -2, -1, 0, 1, 2, and 3, so we would write the domain as follows:

$$D: \{-3, -2, -1, 0, 1, 2, 3\}$$

All of the possible y-values are -9, -6, -3, 0, 3, 6, and 9, so we would write the range as follows:

$$R: \{-9, -6, -3, 0, 3, 6, 9\}$$

Tables

Example 2:

x	-4	-3	-2	-1	0	1	2	3	4
y	-12	-11	-10	-9	-8	-7	-6	-5	-4

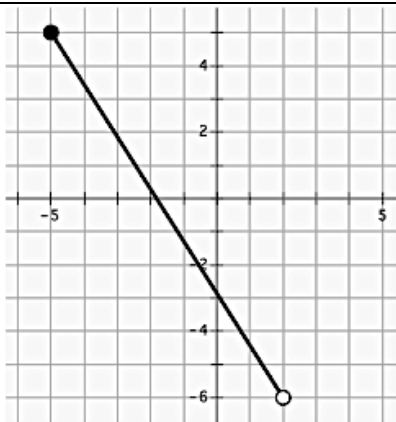
All of the possible x-values are -4, -3, -2, -1, 0, 1, 2, 3, and 4, so we would write the domain as follows:

$$D: \{-4, -3, -2, -1, 0, 1, 2, 3, 4\}$$

All of the possible y-values are -12, -11, -10, -9, -8, -7, -6, -5, and -4, so we would write the range as follows:

$$R: \{-12, -11, -10, -9, -8, -7, -6, -5, -4\}$$

Graphs



A. Finite or Infinite? *Infinite*

B. Set Notation-

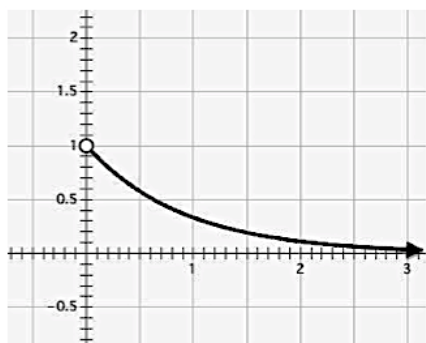
Domain: $\{x | -5 \leq x < 2\}$

Range: $\{y | -6 < y \leq 5\}$

C. Interval Notation – (if infinite)

Domain: $[-5, 2)$

Range: $(-6, 5]$



A. Finite or Infinite? *Infinite*

B. Set Notation-

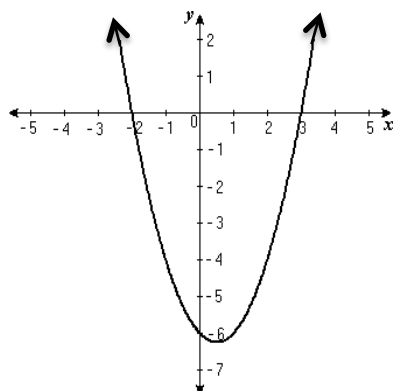
Domain: $\{x | 0 < x\}$

Range: $\{y | 0 < y < 1\}$

C. Interval Notation – (if infinite)

Domain: $(0, \infty)$

Range: $(0, 1)$



A. Finite or Infinite? *Infinite*

B. Set Notation-

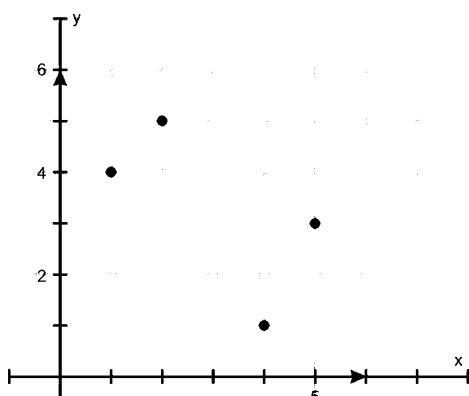
Domain: *all real numbers*

Range: $\{y | -6.2 \leq y\}$

C. Interval Notation – (if infinite)

Domain: $(-\infty, \infty)$

Range: $(-6.2, \infty)$



A. Finite or Infinite? *Finite*

B. Set Notation-

Domain: $\{1, 2, 4, 5\}$

Range: $\{1, 3, 4, 5\}$

C. Interval Notation – (if infinite) *does not apply*

Domain:

Range: