

Name: _____

Date: _____

Notes

Algebra Section 1.6

Pages 35-40



Goal: "I will be able to write a function as a rule and as a table"
"I will identify the domain and range of a function"

Vocabulary:

Function: An equation for which any x that can be plugged into the equation will yield exactly one y .

Domain: A set of all possible input values (usually x).

Range: A set of all possible output values (usually y).

Dependent Variable: The output value. It is dependent on the input value.

Independent Variable: The input value. It is not dependent on other values.

Example:

The input-output table shows the cost of various amounts of regular unleaded gas from the same pump. Identify the domain and range of the function.

Input (gallons)	10	12	13	17
Output (dollars)	19.99	23.99	25.99	33.98

Domain (Input): 10,12,13,17

Range (Output): 19.99, 23.99, 25.99, 33.98

Try These:

a) Identify the domain and range of the given function:

Input	1	3	4	8
Output	5	11	14	26

Domain: 1, 3, 4, 8

Range: 5, 11, 14, 26

b) Identify the domain and range of the given function:

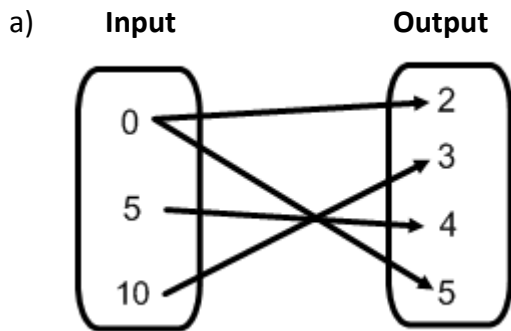
Input	0	1	2	4
Output	5	2	2	1

Domain: 0, 1, 2, 4

Range: 5, 2, 1 (do not write 2 twice)

**Why is it a function even though '2' appears twice in the output? Every x value has exactly one y value. The y value can have more than one x value.

Decide if the following relationships represent a function. Explain why or why not. If yes, identify the domain and range.



No. The input value (0) has more than one output

b)

Input	Output
0	0
1	2
4	8
6	12

Yes. Each input value has only one output

Domain: 0, 1, 4, 6

Range: 0, 2, 8, 12

c)

Input	3	6	9	12
Output	1	2	2	1

Yes. Each input value has only one output

Domain: 3, 6, 9, 12

Range: 1, 2

d)

Input	2	2	4	7
Output	0	1	2	3

No. The input value (2) has more than one output

Ways to Represent Functions

Example:

Verbal Rule

The output is 3 more than the input.

Equation

$$y = 3 + x$$

Table

Input (x)	0	1	2	3
Output (y)	3	4	5	6

Plug in the values

Try These:

a) The domain of the function $y = 2x$ is 0, 2, 5, 7, 8. Make a table for the function, then identify the range.

Input	0	2	5	7	8
Output	0	4	10	14	16

Range: 0, 4, 10, 14, 16

b) Make a table for the function $y = x - 5$ with a domain of 10, 12, 15, 18, 29. Then identify the range.

Input	10	12	15	18	29
Output	5	7	10	13	24

Range: 5, 7, 10, 13, 24

Writing a Rule for a Function:

Basic Premise: If you have x , how do you get y ?

a)

Input	0	1	4	6	10
Output	2	3	6	8	12

Rule: $y = x + 2$

b)

Input	1	2	4	7	9
Output	0	1	3	6	8

Rule: $y = x - 1$

c)

Input	1	3	5	7	9
Output	1	5	9	13	17

Rule: $y = 2x - 1$

Write a rule for the following functions.

a)

Input	0	3	6	9	12
Output	5	14	23	32	41

Rule: $y = 3x + 5$

b)

Input	4	6	10	16	26
Output	4	5	7	10	15

Rule: $y = \frac{1}{2}x + 2$

c) You are buying concert tickets that cost \$15 each. You can buy up to six tickets.

- a) Write a rule for the amount you spend (in dollars) (A) as a function of the number of tickets you buy (t).
 $A = 15n$
- b) Make a table to identify the range.

Number of Tickets n	0	1	2	3	4	5	6
Amount (dollars) A	0	15	30	45	60	75	90

- c) Identify the independent and dependent variables.
Independent variable: The number of tickets purchased
Dependent variable: The amount spent
- d) Identify the domain and range.
Domain: 0, 1, 2, 3, 4, 5, 6
Range: 0, 15, 30, 45, 60, 75, 90

d) At a community center, art lessons are offered at night. The fee is \$12 per lesson. You plan to attend up to 5 lessons n .

a) Write a rule for the amount you spend (in dollars) as a function of the number of lessons you attend. $A = 12n$

b) Make a table to identify the range.

Number of Lessons n	0	1	2	3	4	5
Amount (dollars) A	0	12	24	36	48	60

c) Identify the independent and dependent variables.

Independent variable: The number of lessons taken

Dependent variable: The amount spent

d) Identify the domain and range.

Domain: 0, 1, 2, 3, 4, 5

Range: 0, 12, 24, 36, 48, 60