

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

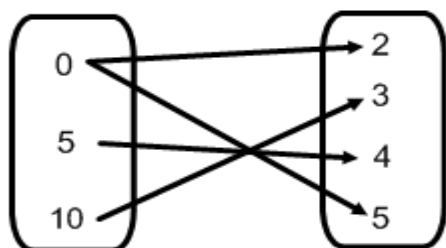
Range: 5, 2, 1 (do not write 2 twice)

****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.

a) **Input** **Output**



Function: yes or no? **No**

If yes:

Domain _____

Range _____

b)

Input	Output
0	0
1	2
4	8
6	12

Function: yes or no? **Yes**

If yes: Domain 0, 1, 4, 6

Range 0, 2, 8, 12

c)

Input	3	6	9	12
Output	1	2	2	1

Function: yes or no? **Yes**

If yes:

Domain 3, 6, 9, 12Range 1, 2

d)

Input	2	2	4	7
Output	0	1	2	3

Function: yes or no? **No**

If yes:

Domain 2, 4, 7Range 0, 1, 2, 3, 5, 2, 1 (do not write 2 twice)

Ways to Represent Functions

Example:

Verbal Rule

Equation

Table

The output is 3 more than
the input.

$$y = 3 + x$$

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

Plug in values to make the table

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.

The domain is the input so put 0, 2, 5, 7, 8, in the input row.

Plug these values into the function to find the output.

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

$$y = 2x \text{ for } x=0$$

$$y = 2 \cdot 0$$

$$y = 0$$

$$y = 2x \text{ for } x=7$$

$$y = 2 \cdot 7$$

$$y = 14$$

$$y = 2x \text{ for } x=2$$

$$y = 2 \cdot 2$$

$$y = 4$$

$$y = 2x \text{ for } x=5$$

$$y = 2 \cdot 5$$

$$y = 10$$

$$y = 2x \text{ for } x=8$$

$$y = 2 \cdot 8$$

$$y = 16$$

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.

The domain is the input so put 10, 12, 15, 18, 29, in the input row.

Then plug these values into the function to find the output.

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: $y = 2x - 1$

Challenge: 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. Think about.....

Does the number of tickets bought depend on the amount you spent? or

Does the amount you spend depend on the number of tickets you buy?

Independent variable: The number of tickets purchased

Dependent variable: The amount spent

d) Identify the domain and range. Use the table above. Remember that you can buy up to six tickets only.

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.

a) 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

b) Write a rule for the amount you spend (in dollars) as a function of the number of lessons you attend. How do you find the total amount spent?

$$A = 12n$$

c) Identify the independent and dependent variables. Think about.....

Does the amount you spend depend on the number of lessons you take? Or

Does the number of lessons you take depend on how much you spend?

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