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 _____ for which any _____ that can be plugged into the equation will yield exactly _____ _____.

Domain: A set of all possible _____ values (_____)

Range: A set of all possible _____ values (_____)

Dependent Variable: The _____ value. It is _____ on the _____ value.

Independent Variable: The _____ value. It is _____ 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): <u>10,12,13,17</u>   Range (Output): <u>19.99, 23.99, 25.99, 33.98</u>

<u>Try These:</u>

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

Input	1	3	4	8
Output	5	11	14	26

Domain:_____   Range:_____

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

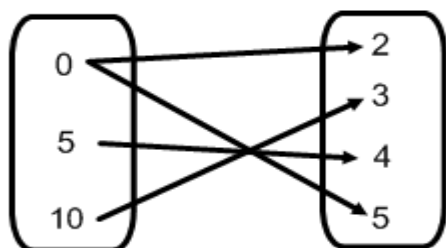| Input	0	1	2	4
Output	5	2	2	1

Domain:_____   Range:_____

**Why is it a function even though '2' appears twice in the output?

Every _____ value has exactly _____ y value. The y value can have _____

_____ _____ 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**

b)

Input	Output
0	0
1	2
4	8
6	12

Function: yes or no?
If yes:
Domain _____
Range _____

Function: yes or no?
If yes: Domain _____
          Range _____

c)

Input	3	6	9	12
Output	1	2	2	1

Function: yes or no?
If yes:
Domain _____
Range _____

d)

Input	2	2	4	7
Output	0	1	2	3

Function: yes or no?
If yes:
Domain _____
Range _____

Ways to Represent Functions

Example:

Verbal Rule	**Equation**	**Table**

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

The output is 3 more than $y = 3 + x$

the input.

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					
Output					

y = 2x for *x=0*   **y = 2x** for *x=2*   **y = 2x** for *x=5*

y = 2x for *x=7*   **y = 2x** for *x=8*

Range:_____

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					
Output					

Range:_____

Writing a Rule for a Function:

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

a)   b)

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

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

Rule: _____   **Rule _____**

c)

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

Rule: _____

Write a rule for the following functions.

a)

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

Rule: _____

b)

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

Rule _____

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).

  b) Make a table to identify the range.

Number of Tickets n							
Amount (dollars) A							

  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?

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

   Domain _____

   Range _____

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					
Amount (dollars) A					

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?

$A=$

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?

d) Identify the domain and range.

Domain _____

Range _____