Guided Notes: 1.7 & 4.8

Name:_____Date:_____Per:_____

Functions and Relations

VOCABULARY

1. **Relation** -- a set of paired data, values or ordered pairs (x, y).

2. **Function** -- a relation in which there is only one output value **(y or dependent variable)** for each different input value **(x or independent variable).** There may be more than one input value with the same output value.

Example:

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

The input values or independent variables (x) make up the **domain** of the function and the output or dependent variables (y) make up the **range** of the function.

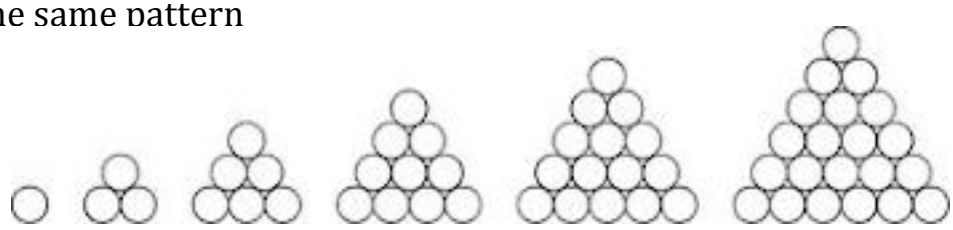
Identify the domain and range of the example above.

Domain = { }

Range = { }

Making Input-Output Tables

This diagram show the first six triangular numbers which continue in the same pattern



1 2 3 4 5 6

a. Make an input-output table in which the input is the number underneath and the output is the number of dots in the triangle.

b. Describe the Domain and Range

Input (x)						
Output (y)						

Domain = { }

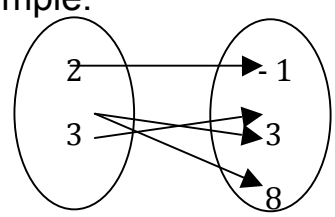
Range = { }

Identifying Functions

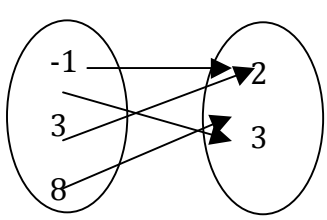
State whether the relation is a function, if so give the domain and the range.

<u>From a mapping</u>: Remember, for each x, the can only be one y.

Example:



Example:



<u>From a set of points:</u> Draw a mapping OR graph

Example: { (2, -1), (3,8), (3, 0) , (5, 3) }

Example: { (3, 2), (4, -4), (3, 6), (2, 0)}

<u>From a set a table of values:</u> **same as with a set of points**

Example:

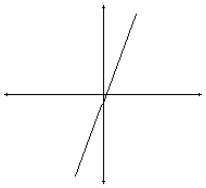
X	Y
2	-1
3	8
3	0
5	3

Draw a map, graph the points on paper

<u>From a graph:</u> Must pass the Vertical Line Test for Functions

VOCABULARY: <u>The Vertical line test</u>- A relation is a function if and only if no

_____ _____ passes through two or more points on the graph.



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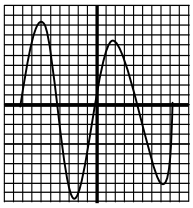

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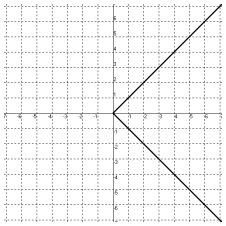

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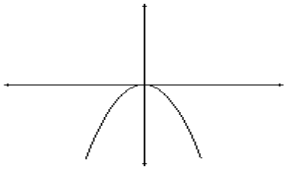

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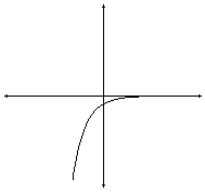

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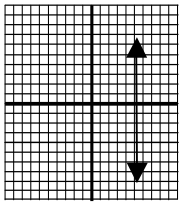

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Function Notation

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

If we made a process table of the data we would come up with the equation **y = x + 2**.

If x is the input value then x + 2 would represent the y value. A description of a function is the function rule. You can express the rule in **function notation** by naming the function f.

f(x) = x + 2

This is read **"f of x".** The domain is the set of all possible values for x and the range is the set of all possible values for f(x) or y.

Equations can be written in function notation by replacing _____

with _____

Example: Find the range for each function below given the domain.

f(x) = 2x + 1 D = {-1, 0, 1} R = { }

f(x) = 3x - 2 D = {1, 2, 3} R = { }

f(x) = 2 - 4x D = { -2, -1, 0, 1} R = { }

Evaluating a Function

Evaluating a function is just like evaluating an equation, replace the x with the value given and evaluate the function.

f(x) = 2x – 3 when x = -2

f(x) = -5x when x = 0

f(x) = 4x + 4 when x = -2