# ALGEBRA I

**CHAPTER 5**

**RELATIONS & FUNCTIONS**

**Domain & Range**

Definitions to know:

 1. Relation – A set of ordered pairs

 2. Domain – The first coordinate (x)

 3. Range – The second coordinate (y)

**Examples:**

Given the sets of ordered pairs, list in order

\*\*Domain and Range are given as sets {}. The values are given in numerical order WITHOUT repeating values.

 ***x y***  (1, 3) (-4, 0) (3, 1) (0, 4) (2, 3)

14 120

12 110 Domain: {-4, 0, 1, 2, 3}

18 126

14 125 Range: {0, 1, 3, 4}

16 124

Domain: {12, 14, 16, 18}

Range: {110, 120, 124, 125, 126}

**Function**

Function – A relation that has exactly one value in the range for each value in the domain.

In other words, there is exactly one *y* value for each *x* value.

Vertical Line Test – If a vertical line touches the graph of a function at exactly one point all along the graph, then that is a function.

**\*\*See page 242**

Mapping Diagram \*\*Page 242 **Domain** **Range**

(0, 2) (1, -1) (-1, 4) (0, -3) (2, 1) -1 -3

 0 -1

 1 1

 2 2

 4

Draw lines connecting the ordered pairs.

Since there are TWO different values for the domain 0, this is NOT a function.

**Evaluating a Function**

Find the range for the function  given the domain .

Since you are given the domain, these are the x values. Substitute into the function and write down the RANGE values. Remember to put them in order.

$$y= -2\left(-2\right)+7=4+7=11$$

$$y= -2\left(-1\right)+7=2+7=9$$

$$y= -2\left(0\right)+7=0+7=7$$

$$y= -2\left(1\right)+7= -2+7=5$$

$$y= -2\left(2\right)+7= -4+7=3$$

So the range is: {3, 5, 7, 9, 11}

**Assignment**: