Introduction to Functions – Day 4   Name _____
Notes   Date _____ Period _____

A function is a set of ordered pairs (*x*, *y*), such that no *x*-values are repeated. The domain and range of a function are sets that describe those ordered pairs.

	Definition	Example {(0, 1), (2, 6), (3, 5)}
Domain	All the *x*-coordinates in the function's ordered pairs.	{0, 2, 3}
Range	All the *y*-coordinates in the function's ordered pairs.	{1, 5, 6}

- The **domain** is the set of all the values of the independent variable, the *x*-coordinate.
- The **range** is the set of all the values of the dependent variable, the *y*-coordinate.

Identify the domain and range of each situation. Then determine if the situation represents a function.
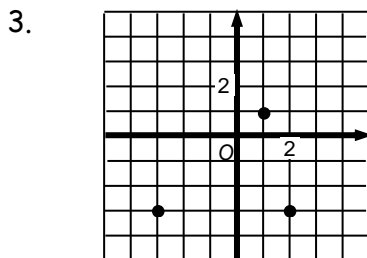
1.   {(0, 1), (2, 3), (4, 5)}   2.   {(3, 6), (4, 2), (3, 9)}

       domain _____   domain _____

       range _____   range _____

       function? _____   function? _____

3.   4.

       domain _____   domain _____

       range _____   range _____
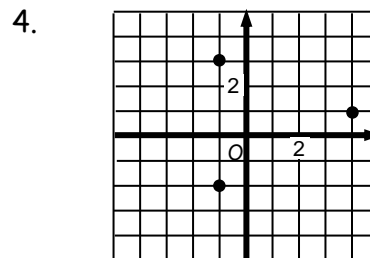
       function? _____   function? _____

The domain and range of algebraic functions are usually assumed to be the set of all real numbers. In some cases, however, the domain or range of a function may be a subset of the real numbers because certain numbers would not make sense in a real-life problem situation.

The number of shoes in n pairs of shoes can be expresses by the function $s = 2n$. Are there any values that would not be reasonable to include in the domain or range of this function?

- The **<u>domain</u>** of this function is the set of values you may choose for n, the independent variable. Would it be reasonable to let $n = -2$? No. The variable n represents a number of pairs of shoes, so it must be a nonnegative integer. The domain is the set of nonnegative integers, {0, 1, 2, 3, …}.

- The **<u>range</u>** of this function is the set of values you will obtain for the dependent variable, s, the number of shoes in n pairs of shoes. Is it possible to get 5 as a value for s? No, 5 is not a reasonable value for the range of this function. Since 1 pair of shoes has 2 shoes, 2 pairs of shoes have 4 shoes, and so on, the range of this function is the set of multiples of 2 or {0, 2, 4, 6, …}.

5. The following temperature data was collected during the last week in July. Determine the domain and range of the data and if it represents a functional relationship.

Date	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Temp.	96°	97°	95°	96°	98°	100°	98°

domain _____

range _____ functional relationship? _____

6. Dale kept track of the number of sacks he made each football game. Determine the domain and range of the data and if it represents a functional relationship.

Game	1	2	3	4	5	6	7	8	9	10
# of Sacks	6	7	5	8	12	11	10	13	4	9

domain _____

range _____ functional relationship? _____