

Name \_\_\_\_\_

Date \_\_\_\_\_

## Reporting Category 2 Notes (A.2.B)

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.

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 expressed 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 **domain** 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,  $\{0, 1, 2, 3, \dots\}$ .
- The **range** 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  $\{0, 2, 4, 6, \dots\}$ .