Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour: \_\_\_\_\_\_\_\_\_

FUNCTION JUNCTION

|  |  |  |
| --- | --- | --- |
|  | **Food for Life Canned Food Drive** |  |
| **Homeroom** | **Number of Students** | **Number of Cans** |
| 101 | 25 | 133 |
| 102 | 22 | 216 |
| 103 | 24 | 148 |
| 104 | 22 | 195 |
| 105 | 20 | 74 |
| 106 | 21 | 150 |

**DIRECTIONS: Even mathematicians don’t always agree on the definitions of some of our most commonly used terms. Below are some descriptions and definitions of three terms commonly used in algebra: function, domain, and range. Read each description and then write the definitions of function, domain, and range in your own words.**

**Description #1**

Davidson, D. M. (2001). Pre-algebra: Tools for a changing world. Needham: Prentice Hall.

“The table shows the results of a canned food drive.

You can write the data in the table as a **relation**, a set of ordered pairs. The first coordinate of each ordered pair is the number of students in a homeroom. The second coordinate is the number of cans the students in the homeroom collected.

Here is the relationship represented by the table: {(25,133), (22,216), (24, 148), (22,195), (20,74), (21, 150)}

The braces, {}, indicate that these are all the ordered pairs in the relation. The first coordinates are the **domain** of the relation. The second coordinates are the **range** of the relation.

Some relations are functions. In a **function**, each member of the domain is paired with exactly one member of the range.”

(p. 384)

**Description #2**

Sullivan, M. (2002). College algebra (6th ed.). Upper Saddle River: Prentice Hall. Page 95.

“Let X and Y be two nonempty sets of real numbers. A **function** from X into Y is a relation that associates with each element of X a unique element of Y. The X is called the **domain** of the function. For each element x in X, the corresponding element y in Y is called the **value** of the function at x, or the image of x. The set of all images of the elements in the domain is called the **range** of the function.”

(p. 95)

**Description #3**

Collins, W. (2001). Mathematics Applications and Connections: Course 2. New York: Glencoe McGraw Hill. 

“When Christian Laettner played basketball for Duke University, he was 83 inches, or 211 centimeters, tall. Certainly this is taller than the average 18-year-old.

It is clear from the graph that height increases with age. Height is a **function** of age, which means that height *depends* on age. A function describes a relationship between two quantities.”

(p. 249)

**Description #4**

Davidson, David M. (2001). Pre-Algebra: Tools for a Changing World. Needham: Prentice Hall.

“You can write a function using **function notation**, where you use *f(x)* instead of *y*. You read *f(x)* as “f of x.” You can think of a domain value as an *input* and the resulting range value as the *output*. A **function rule** is an equation that describes a function.”

|  |  |
| --- | --- |
| function rule | Function rule |
| y = 3x + 7 | f(x) = 3x + 7 |
|  ↓ ↓ |  ↓ ↓ |
|  output input  |  output input  |

(p.404)

**Description #5**

Sullivan, M., & Sullivan, M., III. (2000). Precalculus: Enhanced with Graphing Utilities (2nd ed.). Upper Saddle River: Prentice Hall.

“Many everyday phenomena involve two quantities that are related to each other by some rule of correspondence. The mathematical tern for such a rule of correspondence is a **relation**. In mathematics, relations are often represented by mathematical equations and formulas. For instance, the simple interest I earned on $1000 for 1 year is related to the annual interest rate r by the formula I = 1000r.

The formula I=1000r represents a special kind of relation that matches each item from one set with exactly one item from a different set. Such a relation is called a **function.**

**Definition of a Function**

A function *f* from a set A to a set B is a relation that assigns to each element x in the set A exactly one element y in the set B. The set A is the **domain** (or set of inputs) of the function f, and the set B contains the **range** (or set of outputs). […]

**Characteristics of a Function from Set A to Set B**

1. Each element in A must be matched with an element in B.
2. Some elements in B may not be matched with any element in A.
3. Two or more elements in A may be matched with the same element in B.
4. An element in A (the domain) cannot be matched with two different elements in B.”

(p. 27)

**My definitions:**

*Function: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

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*Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

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