

## Sec. 4-3 Functions

A **function** is a relation in which every member of the domain (input value) is paired with exactly one member of the range (output value).

To find the value of a function for a certain number, substitute the number for the variable x.

$$f(x) = 5x$$

- $f(x)$  is read the function of  $x$ , or  $f$  of  $x$ . It is the output or range.

-The input  $x$  is any real number. It is the domain.

ex. Find  $f(-4)$  if  $f(x) = 3x + 5$

$$= 3(-4) + 5$$

$$= -12 + 5$$

$$= -7$$

$$(-4, -7)$$

ex.  $f(2)$  if  $f(x) = 2x - 3$

$$= 2(2) - 3$$

$$= 4 - 3$$

$$= 1$$

$$(2, 1)$$

ex.  $f(10)$  if  $f(x) = \frac{1}{5}x + 6$

$$= \frac{1}{5}(10) + 6$$

$$= 2 + 6$$

$$= 8$$

$$(10, 8)$$

Function Tables: You can organize the input, rule, and output into a **function table**. The variable for the domain is called the **independent variable** because it can be any number. The variable for the range is called the **dependent variable** because it depends on the domain.

Choose four values for  $x$  to make a function table for  $f(x) = 2x + 3$ . Then state the domain and range of the function.

$x$	$2x + 3$	$y$	
1	$2(1) + 3$	5	(1, 5)
2	$2(2) + 3$	7	(2, 7)
3	$2(3) + 3$	9	
4	$2(4) + 3$	11	

Choose four values for  $x$  to complete the function table for the function  $f(x) = x - 6$ . Then state the domain and range of the function.

$x$	$x - 6$	$y$
7	$7 - 6$	1
8	$8 - 6$	2
9	$9 - 6$	3
10	$10 - 6$	4

There are approximately 700 peanuts in a jar of peanut butter. The total number of peanuts  $p(j)$  is a function of the number of jars of peanut butter purchased,  $j$ .  $p(j) = 700j$

Identify the independent and dependent variables.

DEPENDENT: NUMBER OF PEANUTS      INDEPENDENT: JARS OF  
P(j) PEANUTS

What values of the domain and range make sense for this situation?

Explain. whole numbers

Write a function to represent the total number of peanuts. Then determine the number of peanuts in 7 jars of peanut butter.

$$\begin{aligned} p(j) &= 700j \\ &= 700(7) \\ &= 4900 \end{aligned}$$

A local store sells tacos for \$2.25 each. The total cost,  $c(t)$  is a function of the number of tacos  $t$  sold.

$$c(t) = 2.25t$$

Identify the independent and dependent variables.

DEPEND: Total Cost  $c(t)$

INDEP: Tacos Sold

What values of the domain and range make sense for this situation?

Explain.

whole numbers

Write a function to represent the total cost. Then determine the total cost for purchasing 6 tacos.

$$\begin{aligned} c(t) &= 2.25t \\ &= 2.25(6) \end{aligned}$$

....

$$= 2.25(6)$$

$$= \$13.50$$

Homework: page 290 #1-3 and page 291 #1-6