Lesson 3: Functions

Objective: We will find function values and complete function tables.
How does the domain affect the range in a function?

Vocabulary - Write in pencil what you think each word means.

function a relation in which every member of the domain (x) is paired w/ exactly one member of the range (y)	independent variable the variable that can change (x), what you input	dependent variable the variable that's affected when the independent variable changes (y)
Example: $m = 20n$ m = amt of $ n = # of lawns mowed $d = 4.5h$	Example: # of lawns mowed time in hours	Example: amt of $ d, # of miles

d = # of miles h = time in hours

Finding Function Values

f(x) is just a fancy way to write y! When finding the value of a function for a certain number, ___Substitute___ the number for the variable x.

Example 1: Find $f(-3)$ if $f(x) = 2x + 1$.

$$f(-3) = 2(-3) + 1$$
$$f(-3) = -6 + 1$$
$$f(-3) = -5$$

Example 2: $f(2)$ if $f(x) = x - 4$

$$f(2) = 2 - 4$$
$$f(2) = -2$$

Example 3: $f(22)$ if $f(x) = \frac{1}{2}x + 5$

$$f(22) = \frac{1}{2}(22) + 5$$
$$f(22) = 11 + 5$$
$$f(22) = 16$$

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.

Example 4: Choose four values for x to make a function table for f (x) = x + 5. Then state the domain and range of the function.

Domain	Rule	Range
x	f(x) = x + 5	f(x)
-1	-1 + 5	4
0	0 + 5	5
1	1 + 5	6
2	2 + 5	7

$D = (-1, 0, 1, 2)$

$R = (4, 5, 6, 7)$

Example 5: Choose four values for x to complete the function table for the function f(x) = x - 7. Then state the domain and range of the function.

x	f(x) = x - 7	f(x)
-1	-1 - 7	-8
0	0 - 7	-7
1	1 - 7	-6
2	2 - 7	-5

$D = (-1, 0, 1, 2)$

$R = (-8, -7, -6, -5)$

Interpreting Domain and Range & Identifying Independent and Dependent Variables

Example 6: There are approximately 770 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 j.

Identify the independent and dependent variables. ind = # of jars of PB
dep = total # of peanuts

What values of the domain and range make sense for this situation? Explain.
Only whole #s because you can't have negative or half jars

Write a function to represent the total number of peanuts. Then determine the number of peanuts in 7 jars of peanut butter. p(j) = 770j

p(7) = 770(7)
= 5,390 peanuts

Example 7: A scrapbooking store is selling rubber stamps for $4.95 each. The total sales f(n) is a function of the number of rubber stamps n sold.

Identify the independent and dependent variables. ind = # of stamps sold
dep = f(n), the total sales

What values of the domain and range make sense for this situation? Explain.
Only whole #s because you can't have negative or fractional stamps

Write a function to represent the total sales. Then determine the total sales for 5 stamps.
f(n) = 4.95n