

Math 365 Lecture Notes Section 2.5 – Functions

★ Introducing the Concept of Functions

1) A Rule to Follow

“Multiply the given number n by 3”:

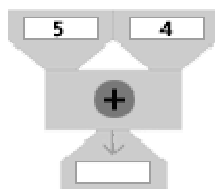
“If the number n is even, the answer is 0; if the number is odd, the answer is 1”:

“Multiply the given number by 3, and add four”:

2) A Function Machine

When thinking about inputs and outputs, you are thinking about algorithms as *functions*: You *input* a number into the algorithm, follow the prescribed steps, and get an *output*. To be a function, there are two requirements. First, the algorithm must be consistent -- that is, every time you give it the same input, you get the same output. Second, each input must produce exactly one possible output.

Some people picture the steps in an algorithm or function as little machines. An addition machine would look like this:



If you put a 5 in the left hopper and a 4 in the right hopper, what would come out of the bottom? Take a few minutes to practice drawing your own machines.

Source: http://www.learner.org/channel/courses/learningmath/algebra/session3/part_c/

3) **Definition:**

Domain:

Range

☆ Identifying functions from diagrams of pairings from set A to set B

☆ Identifying functions from sets of ordered pairs

☆ Identifying functions from graphs:

☆ Writing sequences as a function

☆ Operations on Functions

Composition of two functions $f \circ g$

Note: composition of functions is **NOT** commutative.