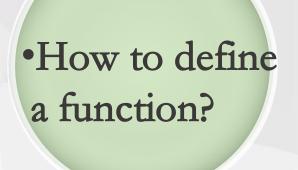
Functions

•You may be very familiar with the mathematical concept of a function

$$z = f(x, y)$$

f is a function that operates on the inputs x and y. The output of the function is z.

However, programming functions are much more generalized and versatile than this mathematical definition.







Preview Exercise:

Which keyword is used to define function?

- A Fun
- B Define
- © Def
- Function

Functions

- •Function is a block of code which only runs when it is called
- Reusable pieces/chunks of code
- •Function characteristics:
 - has a **name**
 - has a colon (:) to mark the end of the function header
 - > has parameters(arguments) (0 or more)
 - has a **docstring** (optional): comment document
 - > has a **body**
 - **Possibly returns** something

Functions

• A function is created with the **def** keyword. The statements in the block of the function must be **indented**.

```
def function_name(args):
    statements
    return values
```

- The **def** keyword is followed by the function name with round brackets enclosing the arguments and a **colon**.
- The return keyword is used to specify a list of values to be returned.

How to Write a Function

```
Colon
         Name Arguments
def is even(i)
     11 11 TT
    Input: i, a positive int
                                                             Comments
    Returns True if i is even, otherwise False"""
                                                             document
    print("inside is even")
    return i%2 == 0
                                       Body
a=is even (4) # call the function
print (is even. doc ) # print out comments document
```

If No Return Statement

```
def is even( i ):
    ** ** **
   Input: i, a positive
    int Does not return
   anything
              77 77 77
    i%2 == 0 ←
a=is even(4)
```

Python returns the value None, if no return given

Functions: Name

- The rules for naming a function are a lot like rules for naming a variable:
 - > They must start with a letter or an underscore:
 - They can have **numbers**.
 - They can be any length, but keep them short.
 - > They should uniquely identify the function
 - > They can't be the same as a Python keyword.
 - They can have the same name as an existing function (including a built-in), but avoid this for now.

```
def this_is_my_function(): def _f3(x):
```