

Learning Objectives

- **Apply the following statistical functions to a List:**
 - **mean**
 - **median**
 - **mode**
 - **maximum**
 - **minimum**
 - **range**

definition

Assumptions

- Learners are comfortable creating a list with numerical elements.
- Learners are comfortable applying basic arithmetic operations such as adding, subtracting, multiplying, and dividing.

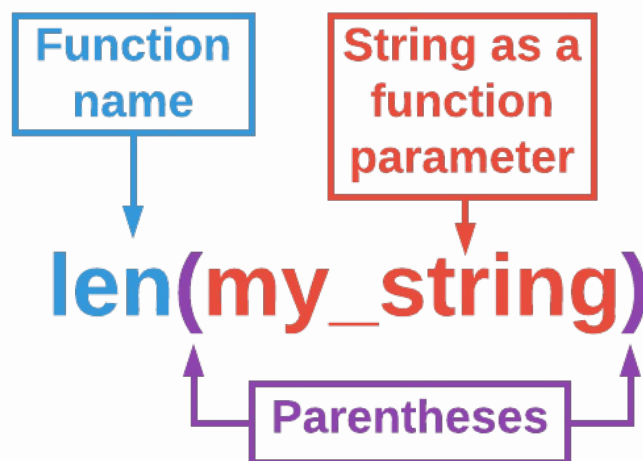
Limitations

- This section will only cover the most essential arithmetic functions.

Functions and Descriptive statistics

String Functions

String functions are predefined functions that perform an action on a string. Functions have a specific syntax — function name, parentheses, and a string (often a variable) between the parentheses. The string between the parentheses is called a parameter, which is a piece of information the function requires so it can do its job.



images/string-function-syntax

In fact, `len` is a string function. There are a few other functions that work with strings.

The Min Function

The `min` function returns the “smallest” character from a string. Often times this is the character that appears first in alphabetical order. When characters are numbers and symbols, things are not so clear.

```
my_string = "abcdefghijklmnopqrstuvwxyz"
print(min(my_string))
```

The Max Function

The `max` function is the opposite of the `min` function. Instead of returning the “smallest” character, it returns the “biggest”.

```
my_string = "xyz321"  
print(max(my_string))
```

List functions

The `max` and the `min` function can also be applied to lists. Often when working with data sets, we will have lists that are comprised of integers and we want to quickly find the maximum or the minimum integer present in that list.

```
my_list = [13, 23, 4, 54, 2, 56, 546]  
max_list = max(my_list)  
min_list = min(my_list)  
  
print(max_list)  
print(min_list)
```

Descriptive statistics

Descriptive statistics, in short, help describe and understand the features of a specific data set by giving short summaries about the sample and measures of the data.

The most recognized types of descriptive statistics are measures of center: the mean, median, and mode, which are used at almost all levels of math and statistics. In order for us to use some of the functions we first need to import statistics.

As a reminder, here are brief definitions of those terms:

- **Mean** is the average of all the value that appears in our data set.
- **Median** is the middle number in a sorted data set.
- **Mode** is the value that appears most frequently in a data set.

The mean, median and mode functions are not readily available for use without importing them. For example,

```
x=[1,2,3,4,5]
mode_x= mode(x)
```

This will give us an error because mode has not been imported. Therefore our Python code does not know what to do with that value.

The import statement is the most common way of invoking the import machinery, but it is not the only way. Python modules can get access to code from another module by importing the file/function using import.

```
import statistics
x=[1,2,3,4,5,6,4]
print(statistics.mode(x))
print(statistics.mean(x))
print(statistics.median(x))
```

Please Note you only have to call `import statistics` once, then we use the format `statistics.function(x)` in order to call the functions stored in that library.

