**Unit 1 Cheat Sheet**

**Variables:**

- `paste0()` - Converts its arguments to character strings and concatenates them.
- `typeof()` - Returns the type of an object.
- `is.character()` - Returns `TRUE` if the provided object is a character. Otherwise, returns `FALSE`.
- `is.integer()` - Returns `TRUE` if the provided object is an integer. Otherwise, returns `FALSE`.
- `is.numeric()` - Returns `TRUE` if the provided object is numeric. Otherwise, returns `FALSE`.
- `is.logical()` - Returns `TRUE` if the provided object is a logical value. Otherwise, returns `FALSE`.
- `as.character()` - Returns the argument as a character.
- `as.integer()` - Returns the argument as an integer.
- `as.double()` - Returns the argument as a double.
- `as.numeric()` - Returns the argument as a numeric value.
- `as.logical()` - Returns the argument as a logical value.

**Math:**

- `+` Addition.
- `-` Subtraction.
- `*` Multiplication.
- `/` Division.
- `^` Exponentiation.
- `%%` Modulus, remainder after division.
- `%/%` Quotient, quotient after division.
- `ceiling(x)` - Returns the smallest integer that is greater than or equal to x.
- `floor(x)` - Returns the largest integer that is less than or equal to x.
- `round(x, n)` - Rounds the values in the first argument, x, to the specific number of decimal places, n (default is 0).
- `sqrt(x)` - Returns the square root of x.
- `log(x, base)` - Returns the logarithm of x, by default the base is *e*.
- `abs(x)` - Returns the absolute value of x.
- `log2(x)` - Returns the logarithm of x with base 2.
- `sum()` - Returns the sum of the elements in the vector.
- `min()` - Returns the minimum element in the vector.
- `max()` - Returns the maximum element in the vector.
- `mean()` - Returns the mean of the elements in the vector.
- `median()` - Returns the median of the elements in the vector.
- `var()` - Returns the variation of the elements in the vector.
- `sd()` - Returns the standard deviation of the elements in the vector.

**Vectors:**

- `c()` - Concatenates the arguments into a vector.
- `seq(x, y, n)` - Returns a vector from x to y incrementing by n.
- `rep(x, n)` - Returns a vector with x repeated n times.
- `length(x)` - Returns the length of the vector x.
- `sort(x)` - Returns x in sorted order.
- `table(x)` - Returns a table with the elements in x and their frequencies.
- `unique(x)` - Returns all the unique elements in x.
- `intersect(x, y)` - Returns the elements that are in both x and y.
- `setdiff(x, y)` - Returns the elements that are in x but not in y.
- `x[4]` - Selects the fourth element.
- `x[2:4]` - Selects elements two to four.
- `x[c(1,5)]` - Selects elements one and five.
- `x[-4]` - Selects all elements but the fourth.
- `x[x < 0]` - Selects all elements that meet the given condition. In this example, selects all elements less than 0.
- `x[x %in% c(1,2,5)]` - Selects elements that are in the set 1, 2, 5.

**Lists:**

- `list(name1 = value1, name2 = value2)` - Creates a list.
- `my_list[[name1]]` - Retrieves the value that corresponds to the given name.
- `my_list$name1` - Retrieves the value that corresponds to the given name.
- `names(my_list)` - Returns all names in the given list.
- `my_list$name1 = NULL` - Removes the given name and its corresponding value from the list.

**Programming:**

*If statements*

```
if (condition) {
      Do something
} else {
      Do something different {
}
```

*Relational Operators*

- > Greater than.
- < Less than.
- >= Greater than or equal to.
- <= Less than or equal to.
- == Are equal.
- != Not equal.

- `5 %in% c(1, 2, 5)` - Returns `TRUE` if the value is in the vector. Otherwise, returns `FALSE`. In this example, it returns `TRUE`.
- `any(my_vector < value)` - Returns `TRUE` if any element in the vector meets the given condition. Otherwise, returns `FALSE`.
- `all(my_vector < value)` - returns `TRUE` if all elements in the vector meet the given condition. Otherwise, returns `FALSE`.
- `which(my_vector < value)` - Returns the indices at which the elements in the vector meet the given condition.
- `is.na()` - Returns `TRUE` if the argument is NA. Otherwise, returns `FALSE`. If a vector is given as the argument, returns a vector with a logical value for each element in the given vector - `TRUE` if the element is NA and `FALSE` otherwise.