Reference Sheet

Jupyter notebooks
Shift + Enter *to execute a cell*
Inserting a Markdown cell
Cell → Cell Type → Markdown
If you restart a notebook, must re-execute cells

Variables
Assigning variables
```
variable_name = value
```
Printing
```
print(variable_name)
```
Multiple assignment
```
name1, name2 = value1, value2
```
Determining data type
```
type(variable_name)
```
Recasting as a float
```
float_name = float(variable_name)
```

Lists and Slices
```
list_name = [item1, item2, item3]
```
Addressing an element of a list
Counting starts at 0
```
list_name[i]
```
Taking a slice
```
slice_name = list_name[start:end]
```
Appending to a list
```
list_name.append(new_thing)
```
for loops
```
for variable in list:
  do things using variable
```
Keeping up with line numbers in a list
```
for counter, variable in enumerate(listname):
  do things with counter and variable
```

Functions
Defining a function
```
def function_name(parameters = default_value):
   ** function body code **
   return value_to_return
```

Logic
if statements
```
if logic_statement:
  do things if true
```
logic options
equal to ==
greater than >
less than <
greater than or equal to >=
less than or equal to <=

Working with files
Setting a filepath
```
filepath = os.path.join('folder_name',
'filename')
```
Reading a file with readlines()
```
file = open("filename","r")
data=file.readlines()
```
Searching for a pattern in a file
```
for line in data:
  if 'Search Phrase' in line
   do things with line
```
Splitting on white space
```
new_list = variable_name.split()
```
Open a file for writing
```
filehandle = open('file_name.txt', 'w+')
```
Printing to a file
You can only print strings to a file
```
filehandle.write(F'String goes here')
```
Always close files so they will write.
```
filehandle.close()
```

Plotting
```
import matplotlib.pyplot as plt
plt.figure()
plt.xlabel('XLabel')
plt.ylabel('YLabel')
fig = plt.plot(data, label)
plt.legend()
plt.savefig(F'filename')
```

Libraries
Importing a library
```
import library_name
```
Using a function in a library
```
function_output = library_name.funtion_name(input)
```
Using the help function
```
help(library_name.function_name)
```

Pandas
Importing pandas
```
import pandas as pd
```
Reading from csv
```
df = pd.read_csv(csv_file)
```
Calculating statistics
```
df.describe()
```
Accessing data by row and column number
```
df.iloc[row_start:row_stop, column_start:column_stop]
```
Accessing data by row and column name
```
df.loc[row_name, column_name]
```
Adding a new column to a DataFrame
```
df[new_column_name] = list
```
Filtering data
```
df.query('your query here')
```

Version Control with git and GitHub
Commit your changes to your local copy.
```
git add .
git commit -m "Commit message"
```
Push your changes to your copy of the repository on GitHub.
```
git push origin branch_name
```
Pull changes from GitHub respository
```
git pull origin branch_name
```
Display current branch and which files are staged.
```
git status
```
Display commit history
```
git log
```