Matplotlib.

can to visualize the data in the graph format using the python.

(import matplotlib.pyplot as plt) → for importing matplotlib

eg.

```
import matplotlib.pyplot as plt
import numpy as np
n = np.array([0,6])              ──→ n axis
y = np.array([0,250])            ──→ y axis
plt.plot(x,y)                    ──→ for plotting (x,y)
plt.show()                       ──→ for showing i-e visualising.
                                     the output.
```

we can change the format default it will give line graph we can change it to any symbol such as o, +, --, etc just by adding condition as

```
plt.plot(x,y,'ro')
        or
plt.plot(x,y,'+') or plt.plot(x,y,'--')
```

we can change color of symbol by writing it as 'ro' (red o) or bo (blue o) or 'r+' (red +) or 'y+' ('yellow +'). etc.

line

note

If we didn't mention the x axis points, It will tak the default values as 0,1,2,3,4. etc.

line width can be used to give width to the line

ex:

plt. plot (x, y, line width = '20.5')

We can do multiple ploting by simply adding one more plt.plot()
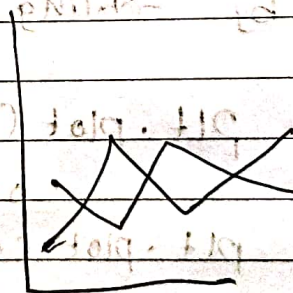
ex:

Import matplotlib.pyplot as plt
import numpy as np

y_1 = np. array ([3, 8, 1, 10])
y_2 = np. array ([6, 2, 7, 11])

plt.plot (y1)
plt.plot (y2)
plt.show()

We also view our add many lines by simply using separate x_1, y_1, x_2, y_2 as variable

we can label the axis by using
plt . xlabel ("")
plt . ylabel (" ")

ex.
x = np.array ([1,2,3,4])
y = np.array ([2,8,10,12)]
plt.
plt . xlabel (" year ")
plt . y label (" days ")
plt . plot (x, y)
plt show ()
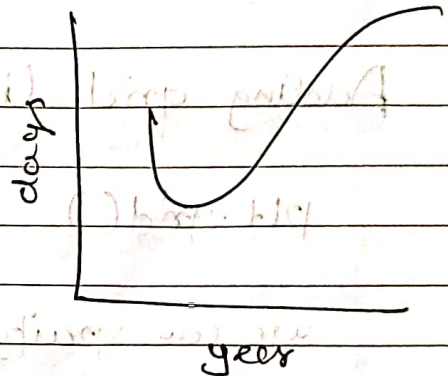
by using   plt . title ()
    we can give the title to the graph.

we can use font dict for diffrent diffe fonts

import matplotlib.pyplot as plt
import numpy as np
x = np.array ([1, 2,3,4])
y = np.array ([3,4,5,6])
font 1 = { 'family': 'serif' , 'color': blue, 'size' = 20}
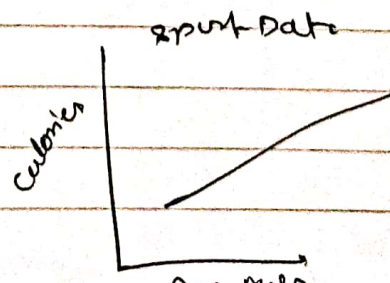font 2 = { 'family': 'serif' , 'color' : 'red', 'size' = 15}
plt . title (" sports data " , fontdict = font 1)
plt . xlabel (" Avg pulse", font dict = font 2)
plt . ylabel (" calorie ", font dict = font 2)
plt . plot (x, y)
plt . show ()

we can align the position of title
by mentioning loc = 'left' or 'right'

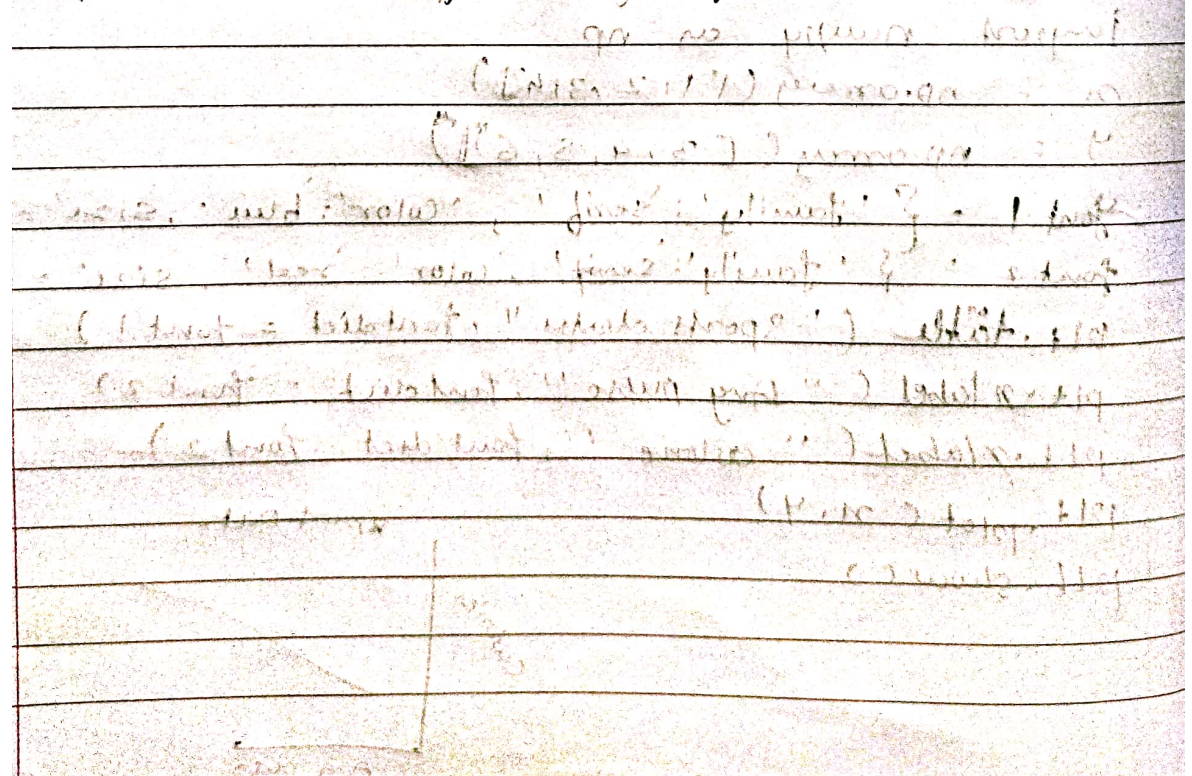plt.title ("Sport data" , loc = 'left')

adding grid lines to plot the axis

plt.grid()

we can specify the axis to add grid for
specific axis like

plt.grid(axis = 'x')

we can add grid line properties like

plt.grid (color = 'green' , linestyle = '---' , linewidth = 0.5)

Matplotlib Subplot

Subplot() used to draw multiple plots in one figure.

```
import —— // ——
import —— , ——
n = np.array([0,1,2,3])
y = np.array([5,8,1,10])        #plot 1
plt.subplot(1,2,3)
plt.plot(n,y)
```

```
x = np.array([0,1,2,3])
y = np.array([10,20,30,40])
plt.subplot(1,2,2)
plt.plot(n,y)
plt.show()
```

figure has 1 row, 2 column, A this will be first (1,2,1,
figure has 1 rows, 2 colum, & this will be second (1,2,2)

we can change position by simple (2,1,1)
                                  (2,1,2)

```
┌─────────────┐
│  graph 1    │
└─────────────┘
┌─────────────────┐
│  graph 2        │
└─────────────────┘
```

* Supertitle() used to give supertitles
                  a title for all graphs

Matplot Scatter

plt. scatter (x,y)

Colour map.
~~Cmap~~(

plt. scatter (x,y, c = color & map ='viridis')

Alpha un for transperancy

Bars.

plt. bar (x,y)

plt. barh(x, y) #horizontal bar

Histograms

plt.hist (ang)

Pie chart

plt.pie(y)

legend ( )