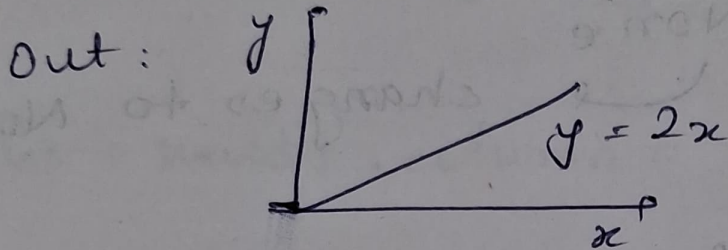


Matplotlib

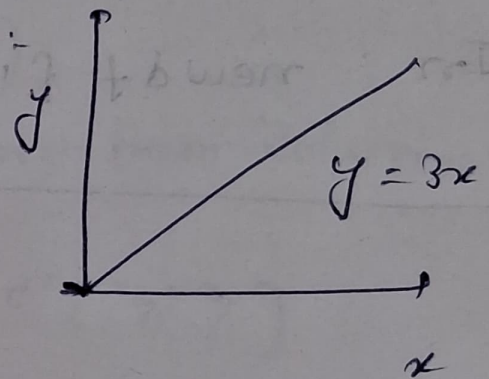
In: `import matplotlib.pyplot as plt`
`import numpy as np`
`import pandas as pd`

In: `plt.plot([1, 2, 3], [2, 4, 6])`
 $\underbrace{\hspace{1cm}}_{x\text{-coord}} \quad \underbrace{\hspace{1cm}}_{y\text{-coord}}$



In: `x = [1, 3, 6]`
`y = [3, 9, 18]`

`plt.plot(x, y)`



In: `plt.plot(x, y)`

or
`plt.show()` → to get better output

`plt.title('Our first Graph!')`

`plt.xlabel('X-Axis')`

`plt.ylabel('Y-Axis')`

`plt.title('Our First Graph', fontdict =`

`{ 'fontname':`

`'comic Sans MS'`

`font size: 20`

same for
labels

In: `plt.xticks([0, 1, 2, 3, 4])`

`plt.yticks([0, 2, 4, 6, 8])`

Out: will decide the length of the graph

In: `x = [1, 2, 3, 4]`

`y = [2, 4, 6, 8]`

`plt.plot(x, y)`

`plt.show()`

`plt.legend()` → ?

will not work
Now

In: `x = [1, 2, 3, 4]`

`y = [2, 4, 6, 8]`

`plt.plot(x, y, label = '2x')`

`plt.legend()`

`plt.show()`

`colour = 'pink'`

`fontSize = 20`

`fontname =`

`plt.plot(x, y, label = '2x', color = 'red',`

`linewidth = 2, marker = '.',`

`markersize = 10,`

`markeredgecolor = 'blue',`

`linestyle = '--'`

shorter method

`plt.plot(x, y, 'r--o', label = '2x')`

`fmt = [color][marker][line] ⇒ shortcut`

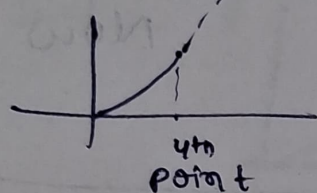
In: `x2 = np.arange(0, 4, 0.5)`

`print(x2)` prints from 0 to 4 with $d=0.5$

```
plt.plot(x2, x2**2, label = 'x^2')
```

$$y = x^2$$

In: `plt.plot(x2[:4], x2[:4]*2, 'x', label='x2')`



formo (4 points only)


```
plt.plot(x2[3:], x2[3:]**2, 'r', label='x^2')
```

Resize for Graph

In: plt. figure(figure size = (5,3)), dpi = 300)

x y ↓
 pixels per inch

In: `plt.savefig('my graph.png', dpi=300)`

↓ to save the graph

BAR CHART

Labels = ['A', 'B', 'C']

values = [1, 4, 2]

plt.bar(values, labels)

points the
bar graph

`plt.show()` (labels, values)

plt.figure(figsize=(6,4))

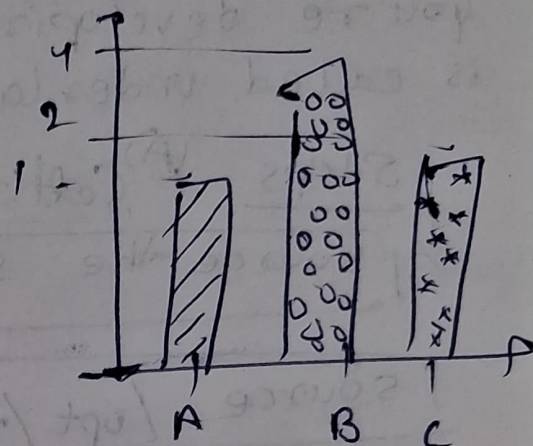
(Same operations as line graph)

bars = plt.bar(labels, values)

bars[0].set_hatch('/')

bars[1].set_hatch('o')

bars[2].set_hatch('*')



or

patterns = ['/', 'o', '*']

for bar in bars:

bar.set_hatch(patterns.pop())