

Matplotlib Quick Syntax & Examples

1. Import

```
import matplotlib.pyplot as plt
```

- pyplot = MATLAB-like interface for plots.
-

2. Line Plot

```
plt.plot(x, y, color='blue', linestyle='--', linewidth=2, marker='o', label='Data')
```

```
plt.show()
```

Params:

- x, y → data lists/arrays
 - color → line/marker color ('red', '#123456')
 - linestyle → '-'(solid), '--'(dashed), ':'(dotted)
 - linewidth → thickness of line
 - marker → point style ('o', '^', '*')
 - label → name for legend
-

3. Titles & Labels

```
plt.title("Chart Title")
```

```
plt.xlabel("X-Axis Name")
```

```
plt.ylabel("Y-Axis Name")
```

Params:

- fontsize, color, loc (for title position: 'left', 'center', 'right')
-

4. Axis Limits

```
plt.xlim(min_x, max_x)
```

```
plt.ylim(min_y, max_y)
```

Use: Zoom/focus on data range.

5. Axis Ticks

```
plt.xticks([1, 2, 3], ['One', 'Two', 'Three'])
```

```
plt.yticks([10, 20], ['Low', 'High'])
```

Use: Change tick positions & labels.

6. Legend

```
plt.legend(loc='upper left', fontsize=10)
```

Common loc: 'upper left', 'upper right', 'lower left', 'lower right'

7. Grid

```
plt.grid(True, linestyle='--', color='lightgray')
```

Params: ls (line style), color, alpha (transparency)

8. Bar Chart

```
plt.bar(x, height, color='green', label='Data')
```

```
plt.barh(x, height) # Horizontal
```

Params:

- x → categories
 - height → values
 - width → bar thickness
 - color → bar color
-

9. Pie Chart

```
plt.pie(values, labels=names, autopct='%1.1f%%', colors=['red', 'blue'])
```

Params:

- labels → slice names
 - autopct → format percentage text
 - colors → slice colors
 - startangle → rotate starting point
-

10. Histogram

```
plt.hist(data, bins=5, color='orange', edgecolor='black')
```

Params:

- bins → number of intervals
 - edgecolor → bar border color
-

11. Scatter Plot

```
plt.scatter(x, y, color='purple', marker='^', label='Group A')
```

Params:

- marker → shape ('o', '^', 's')
 - color → point color
-

12. Subplots (Basic)

```
plt.subplot(rows, cols, index)
```

Example:

```
plt.subplot(1, 2, 1);
```

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

```
plt.subplot(1, 2, 2);
```

```
plt.bar(x, y)
```

13. Subplots (Pro/00)

```
fig, ax = plt.subplots(1, 2, figsize=(10,5))  
ax[0].plot(x, y); ax[0].set_title("Line")  
ax[1].bar(x, y); ax[1].set_title("Bar")
```

Params:

- figsize → size of figure in inches (W, H)
-

14. Save Figure

```
plt.savefig('file.png', dpi=300, bbox_inches='tight')
```

Params:

- dpi(Dot per inches) → resolution
 - bbox_inches='tight' → trims white space
-

15. Show

```
plt.show()
```

Use: Displays the plot in a window.