Lecture 1: Line Plot Masterclass

What is a Line Plot?

A line plot shows the relationship between two variables, usually how one changes over time. Best used for trends, progress, and continuous data.

Why Use Line Plots?

- Shows upward/downward trends clearly
- Helps compare performance or change
- Common in research, business, engineering, weather forecasting

Things That Always Stay the Same

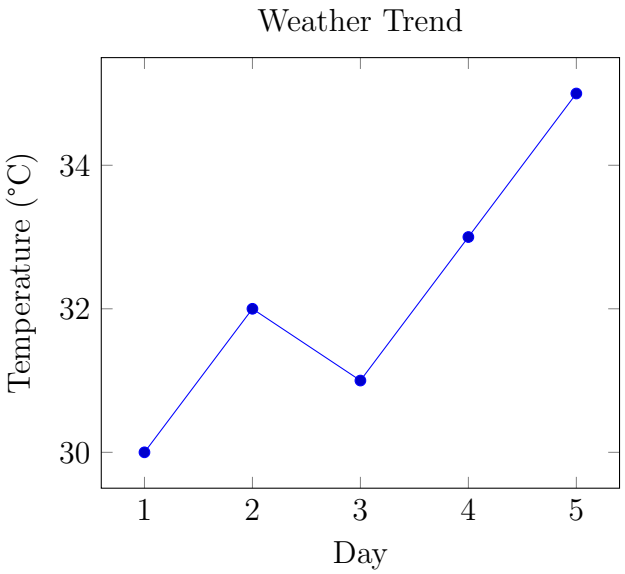
- `tikzpicture` → drawing area
- `axis` → creates grid and axes
- `addplot coordinates` → draws lines

Things That Can Change

- Axis labels
- Line style (dotted, dashed)
- Markers (circle, star)
- Colors
- Title
- Grid (on/off)

Example 1: Simple Line (Weather Temperature Trend)

Code:

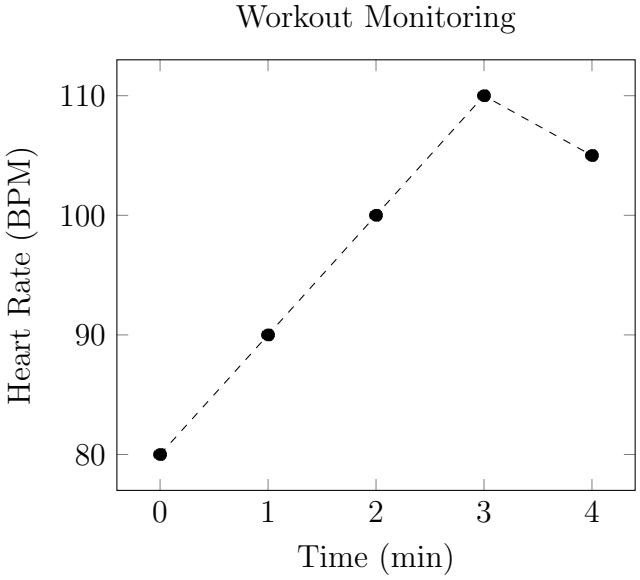


Important Explanation:

- Temperature rises and falls over days → visible trend
- Only basic settings used here

Example 2: Line with Markers (Fitness: Heart Rate Monitoring)

Code:

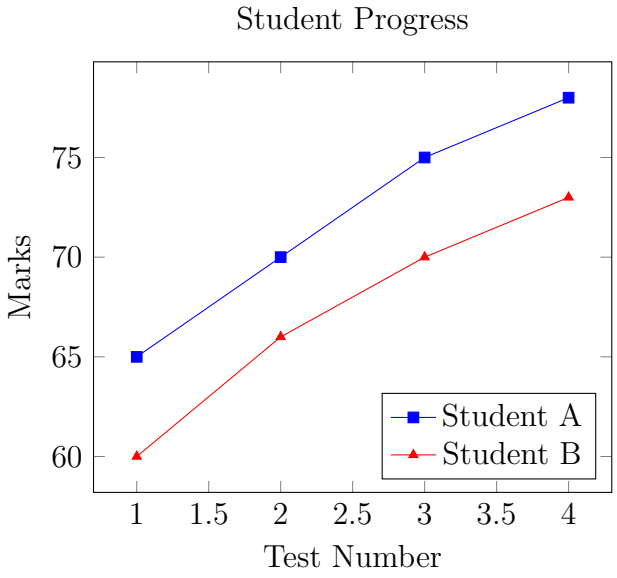


Important Explanation:

- `mark=*` → visible circular markers
- `dashed` → different line style

Example 3: Multiple Style (Student Performance Over 4 Tests)

Code:

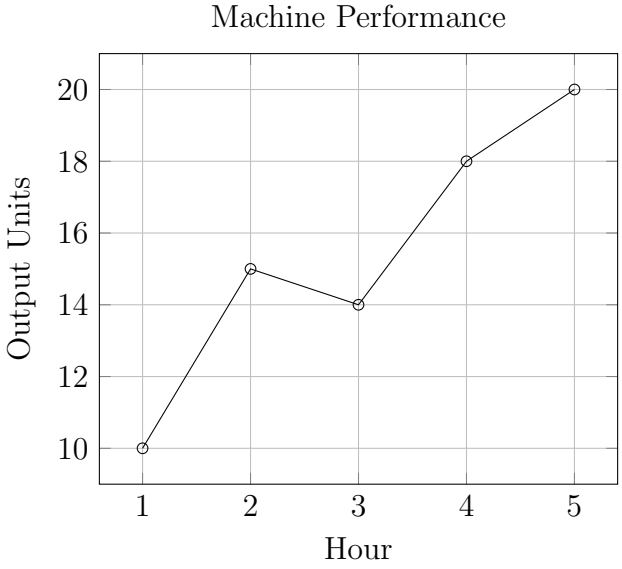


Important Explanation:

- Different markers & colors → easy comparison
- Legend used to distinguish the lines

Example 4: Line with Grid Enabled (Industry Machine Output)

Code:



Important Explanation:

- `grid=major` makes reading values easier

Exercises

Draw the following line plots in LaTeX.

—

Exercise 1: Weather Data

Day	Humidity (%)
1	45
2	50
3	55
4	60

Expected Solution: Line going up smoothly as humidity increases.

—

Exercise 2: Fitness Tracking

Minute	Calories Burnt
1	5
2	9
3	15
4	20
5	25

Expected Solution: Rising line, shows calories increasing with time.

—

Exercise 3: Academics

Semester	CGPA
1	7.2
2	7.5
3	7.9
4	8.2

Expected Solution: Gradual improvement trend.

—

Exercise 4: Manufacturing

Batch	Defect-Free Items
1	80
2	85
3	82
4	90

Expected Solution: Mostly upward line with one dip.