

1. Bar Chart

Explanation: A bar chart represents categorical data with rectangular bars, where the length of each bar is proportional to the value it represents. It is used to compare quantities across categories.**Examples:**

1. Sales by product category.
2. Population by country.
3. Number of students enrolled in different courses.
4. Frequency of different types of pets owned.
5. Average monthly rainfall in various cities.
6. Votes received by candidates in an election.
7. Number of books sold by genre.
8. Revenue generated by different departments in a company.
9. Distribution of survey responses (e.g., agree, neutral, disagree).
10. Number of visitors to a website by day of the week.

2. Line Chart

Explanation: A line chart connects data points with lines to show trends over time or continuous data changes.**Examples:**

1. Stock prices over a year.
2. Temperature changes throughout a day.
3. Monthly sales revenue over five years.
4. Population growth over decades.
5. Website traffic trends over weeks.
6. Heart rate during a workout session.
7. Electricity consumption over 24 hours.
8. Water levels in a reservoir over months.
9. Student attendance rates across semesters.
10. COVID-19 cases reported daily.

3. Pie Chart

Explanation: A pie chart displays proportions as slices of a circle, where each slice represents a category's percentage of the whole.**Examples:**

1. Market share of smartphone brands.
2. Budget allocation for household expenses (e.g., rent, groceries).

3. Distribution of survey responses (e.g., yes, no, maybe).
4. Percentage breakdown of students by major.
5. Sources of energy production (e.g., solar, wind, coal).
6. Revenue contribution by product line.
7. Proportion of time spent on daily activities (e.g., work, sleep).
8. Types of vehicles sold in a year.
9. Voter turnout by political party affiliation.
10. Device usage for internet access (e.g., mobile, desktop).

4. Scatter Plot

Explanation: A scatter plot uses points on an X-Y axis to show relationships or correlations between two variables.**Examples:**

1. Relationship between age and income.
2. Correlation between hours studied and exam scores.
3. Daily temperature vs ice cream sales.
4. Weight vs height of individuals in a population.
5. Advertising spend vs revenue generated.
6. Engine size vs fuel efficiency in cars.
7. House size vs market price in real estate data.
8. Number of employees vs company profit margin.
9. Hours worked vs productivity levels.
10. Blood pressure vs cholesterol levels in medical studies.

5. Histogram

Explanation: A histogram displays the distribution of numerical data by grouping values into bins and showing their frequency.**Examples:**

1. Distribution of test scores among students.
2. Frequency of house prices within price ranges.
3. Age distribution in a population survey.
4. Heights of individuals grouped into intervals (e.g., 150-160 cm).
5. Daily rainfall amounts over a year grouped into ranges.
6. Distribution of employee salaries in a company.
7. Frequency of website response times (in seconds).
8. Weight distribution among gym members.

9. Time taken to complete tasks grouped into intervals (e.g., 0-5 minutes).
10. Distribution of grades in an exam.

6. Box Plot (or Box-and-Whisker Plot)

Explanation: A box plot summarizes numerical data through quartiles, showing the median, interquartile range (IQR), and potential outliers.**Examples:**

1. Exam scores across different subjects.
2. Monthly income distribution in various regions.
3. Age distribution among employees in departments.
4. Daily temperatures recorded over a month across cities.
5. Distribution of house prices within neighborhoods.
6. Comparison of test scores between schools or classes.
7. Analysis of commute times for employees across locations.
8. Blood pressure readings across patient groups during trials.
9. Salaries within different industries or job roles.
10. Comparison of rainfall amounts across seasons.

7. Heatmap

Explanation: A heatmap uses colors to represent data values within a matrix or grid format, often used for showing intensity or density.**Examples:**

1. Correlation matrix for variables in a dataset.
2. Website visitor activity by hour and day of the week.
3. Temperature variations across geographical regions on a map.
4. Sales performance across stores and months in retail chains.
5. Student attendance rates across classes and days in schools.
6. Traffic density at intersections during different times of day/weekdays vs weekends.
7. Disease spread intensity across regions during outbreaks (e.g., COVID-19).
8. Performance metrics for employees across departments and months (e.g., KPIs).
9. Energy consumption patterns across appliances and times during the day/yearly cycles per appliance type usage grid
- 10 Heatmaps representing gene expression levels bioinformatics

Graph Type	Best For...	Key Difference from Others...
Bar Chart	Comparing categories	Uses bars; focuses on discrete categories

Graph Type	Best For...	Key Difference from Others...
Line Chart	Showing trends over time	Uses lines; focuses on continuous changes
Pie Chart	Showing proportions	Circular; emphasizes percentage contributions
Scatter Plot	Exploring relationships between variables	Uses points; shows correlation or lack thereof
Histogram	Displaying frequency distributions	Similar to bar charts but used for grouped continuous data
Box Plot	Summarizing distributions and highlighting variability	Includes quartiles and outliers; ideal for comparing multiple groups