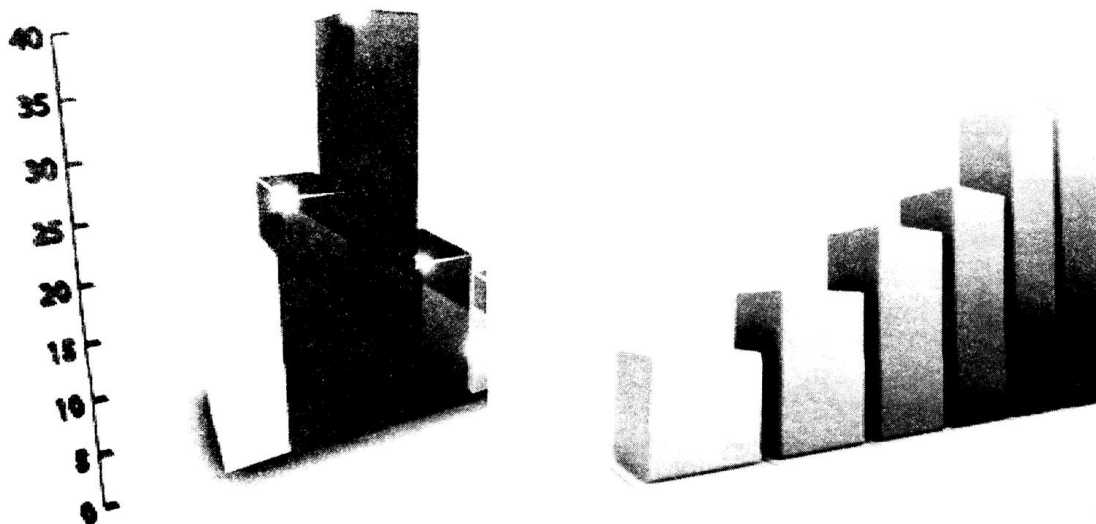


Data Handling and Graphs

NOTES



FUNDAMENTALS

Collection and Tabulation of data:

- Data obtained in the original form is called a raw data.
- Data means information in the form of numerical figures
- Each numerical figure in a data is called an observation.
- Arranging the data in ascending or descending order is called an array.
- Arranging the data in a systematic tabular form is called tabulation.
- The number of times a particular observation occurs is called its frequency.
- The difference between the highest and the lowest values of the observations in a given data is called its range.
- When the number of observations is large, we make use of tally marks to find the frequencies.
- Tallies are usually marked in a bunch of five for ease of counting.
- For example, consider heights of students of class - X in cm 150, 151, 149, 148.5, 152, 160, 163, 140, 138, 136.2, 131, 136, 136, 137.5, 137.9,

Raw data. Array, Frequency and Range

Above is called Raw data

Array for this data will be 131, 136, 136, 136.2, 137.5, 137.9, 138, 140, 148.5, 149, 150, and 151, 152, 160, 163

Taking example of 136,

Frequency for 136 \rightarrow 2

$$\text{Range} = \underset{\substack{\downarrow \\ \text{highest} \\ \text{value}}}{163} - \underset{\substack{\downarrow \\ \text{lowest value}}}{131} = 32\text{cm}$$

Bar Graphs

- Representing data with the help of bars or rectangles of uniform width in a diagram is called a bar graph or a bar diagram.
- Each bar represents only one value of the data and hence there are as many bars as there are values in the data.
- The length of the bar indicates the value of the item. The width of the bar does not indicate anything.
- All bars should rest on the same line called the base.
- The bars may be drawn horizontally or vertically.
- A double bar graph helps us to compare two collections of data at a glance.

Mean, mode and median: These are also known as the central tendencies of a group of observations.

- Mean in statistics is the same as average in the field of arithmetics.

For a raw data;

$$\text{Mean} = \frac{\text{Sum of observations}}{\text{Number of observations}};$$

$$\text{Mean of 'n' numbers} = \frac{\text{Sum of the numbers}}{\text{Numbers of addends}}$$

- **Mode:** The observation which occurs for a maximum number of times is called the mode of the given data.
- **Median:** After arranging data in ascending or descending order of magnitudes, the value of the middle term is called the median of the data.
 - (a) When the number of observations is odd, there will be only one middle term and this term is the median.
 - (b) When the number of observations is even, there will be two middle terms. The average of these two middle terms is the median of the data.
- Some situations in our life happen certainly. Some are impossible and some that may or may not happen. This is called chance or probability of an event to occur.

Probability is also represented as $P = \frac{\text{no. of favourable events}}{\text{Total no. of events}}$ for. e.g.. Probability that a coin when tossed will

$$\text{given either head or tail (certain event)} = \frac{2}{2} = 1$$

$$\text{Probability that a coin when tossed gives only head} = \frac{1}{2} = 0.5$$