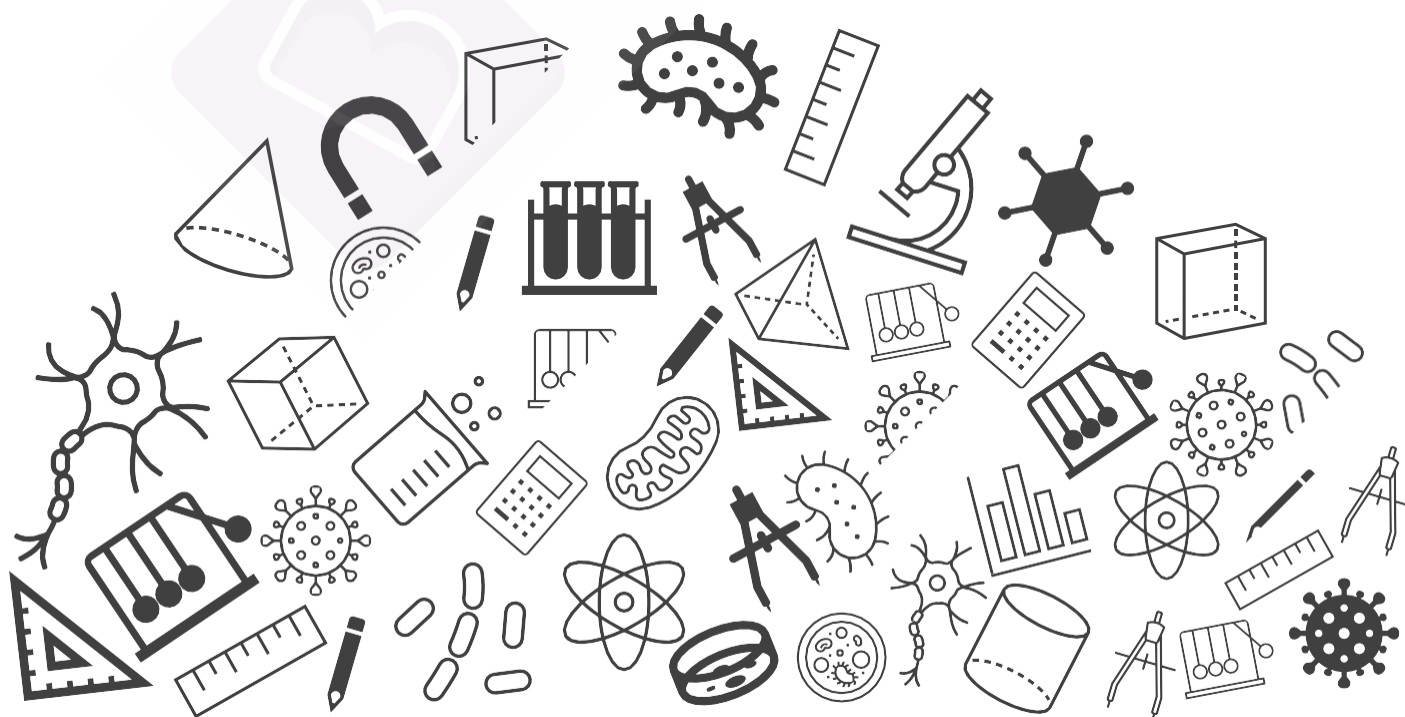




Grade 07: Maths

Chapter Notes

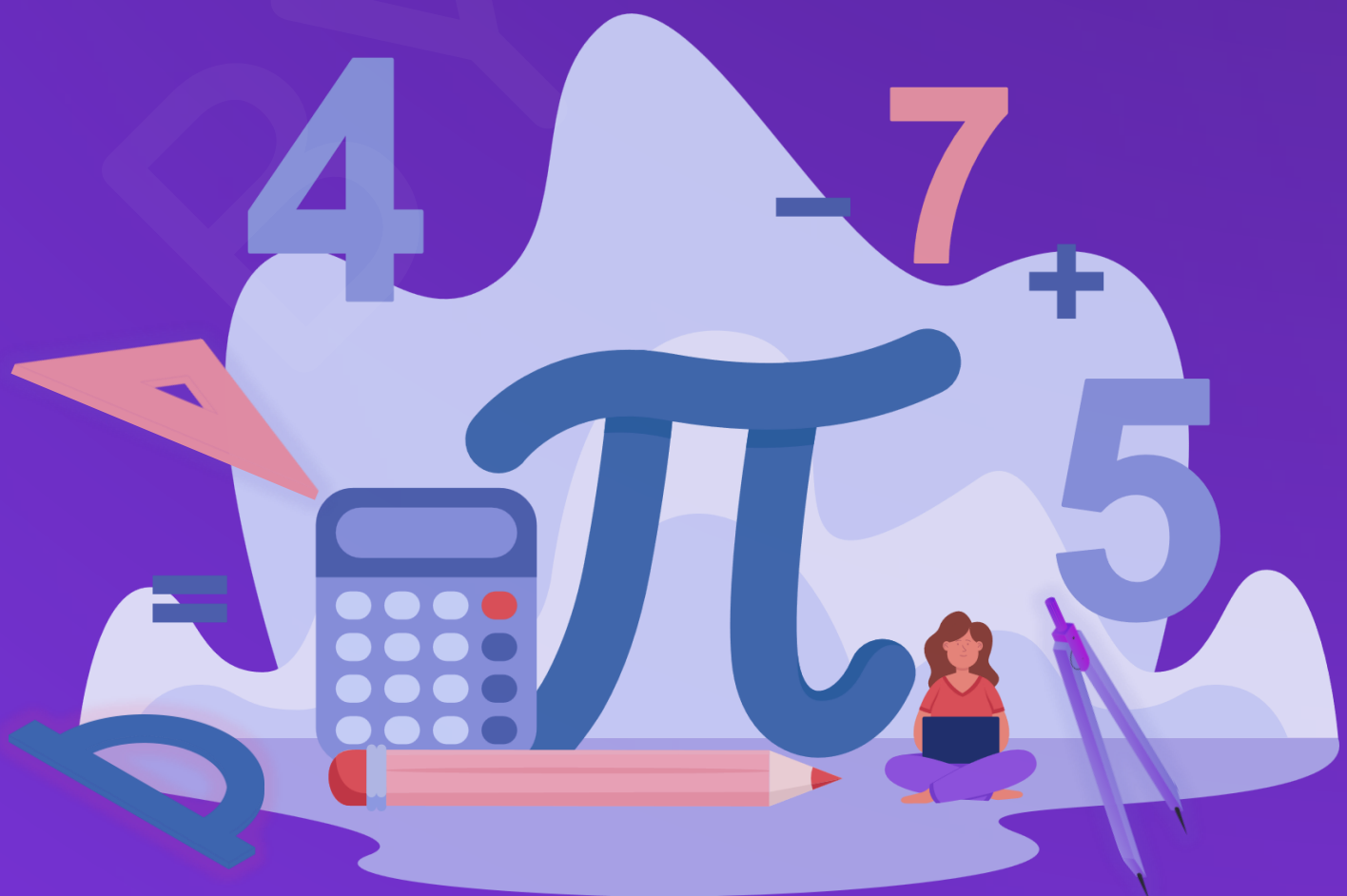


BYJU'S Classes

Chapter Notes

Data Handling

Grade 07



Topics to be Covered

1. Data

- 1.1. Data Collection
- 1.2. Data Organisation
- 1.3. Frequency

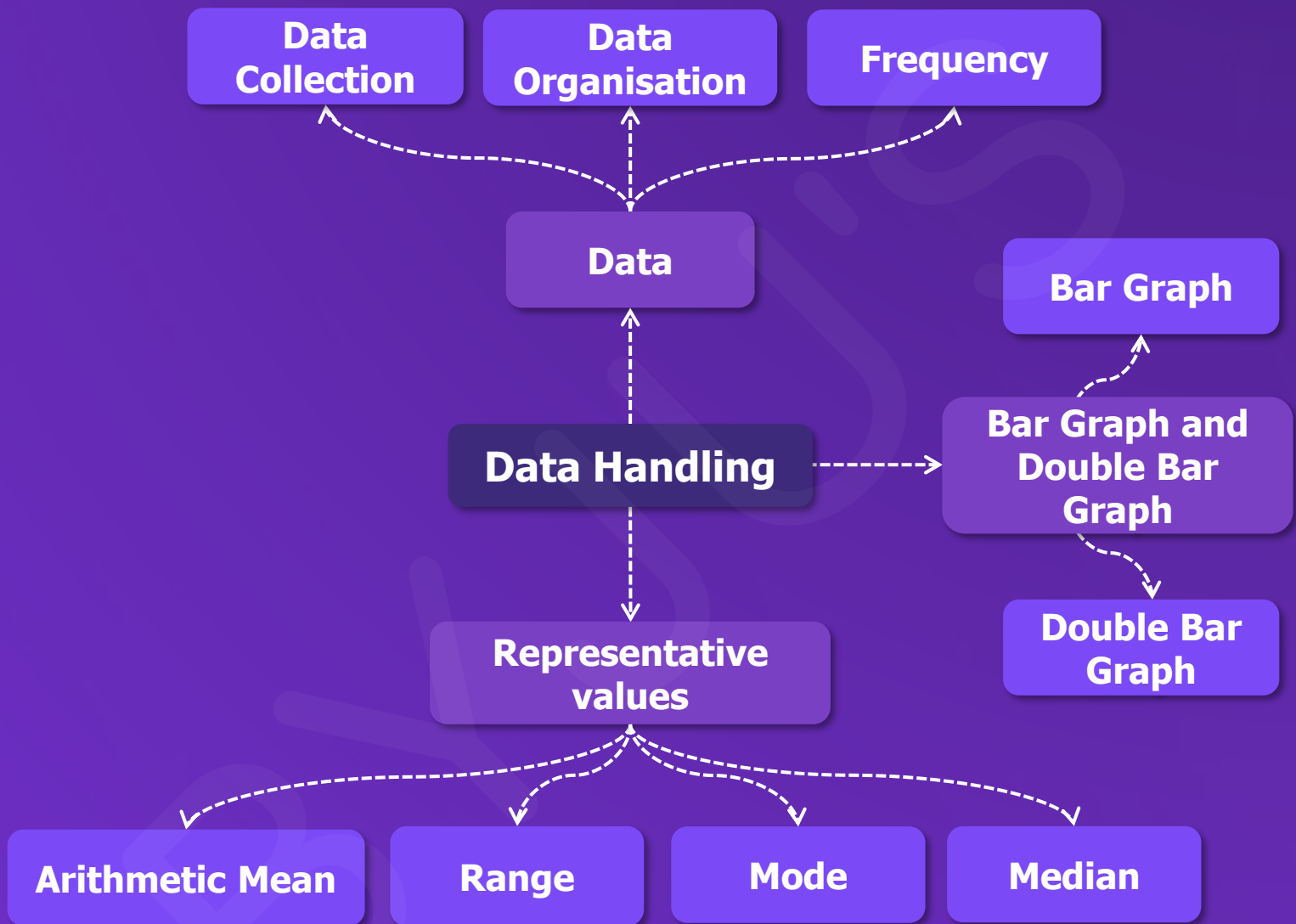
2. Representative Values

- 2.1. Arithmetic Mean
- 2.2. Range
- 2.3. Mode
- 2.4. Median

3. Bar Graph and Double Bar Graph

- 3.1. Bar Graph
- 3.2. Double Bar Graph

Mind Map



1. Data

1.1. Data Collection

Data collection is a process of gathering information from all the relevant sources to find a solution to the research problem. It helps to evaluate the outcome of the problem.

- The **collection of observations** which are **gathered initially** is called **raw data**.

1.2. Data Organisation

Data organization is arranging the collected data in a proper format so that it becomes easy to understand and interpret.

- When the **collected data is organised or arranged** so that it can be **easily understood or interpreted** then it is known as **organised data**.

Example:

- A data set is given as: 5, 9, 13, 2, 6
- **Organising** the given data by **arranging it in ascending order** we get: 2, 5, 6, 9 and 13.

1. Data

1.3. Frequency

The frequency of a data refers to the number of times a data occurs in the given data set.

Example:

- Consider the following data set:
5, 4, 7, 10, 10, 10, 7, 10, 5, 10
- The frequency of each data entry is represented in the following table:

Entry	Tally marks	Frequency
4	I	1
5	II	2
7	II	2
10		5

- The above table is known as **frequency distribution table**.

2. Representative Values

2.1. Arithmetic Mean

Arithmetic mean is the average of the given set of values. It is the most common representative value of a data set.

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

Example:

- The arithmetic mean of the numbers 6, 8, and 10
$$= \frac{6+8+10}{3} = \frac{24}{3} = 8$$

2.2. Range

The difference between the highest and lowest observation is called the range. Range gives us an idea of the spread of the observations.

$$\text{Range} = \text{Highest Observation} - \text{Lowest Observation}$$

Example:

- A data set is given as: 2, 5, 6, 9, 13
- Range = $13 - 2 = 11$

2. Representative Values

2.3. Mode

Mode is the value that occurs the highest number of times.

Example:

- A data set is given as: 4, 5, 6, 6, 8, 6, 6, 5
- 6 occurs the **highest** number of times.
- So, the **mode** of the given data is 6.

Mode of Large Data

Putting the same observations together and counting them is not easy if the number of observations is large. In such cases we tabulate the data.

Example:

- Find the mode of below data:
1, 3, 2, 5, 1, 4, 6, 2, 5, 2, 2, 2, 4, 1, 2, 3, 1, 1, 2, 3, 2,
6, 4, 3, 2, 1, 1, 4, 2, 1, 5, 3, 3, 2, 3, 2, 4, 2, 1, 2

Data	Tally Bars	Number of occurrences
1		9
2		14
3		7
4		5
5		3
6		2
	Total	40

- Looking at the table, we can quickly say that 2 is the **mode** since 2 has occurred the **highest** number of times.

2. Representative Values

2.4. Median

The observation that lies in the middle of a set of observations (after arranging in ascending or descending order) is called the median of the data.

Example:

Consider the following data set: 3, 5, 5, 7, 3, 5, 3, 7, 3, 7, 5

Ascending order

3, 3, 3, 3, 5, **5**, 5, 5, 7, 7, 7

Descending order

7, 7, 7, 5, 5, **5**, 5, 3, 3, 3, 3



Let N be the number of observations in the data.

- After arranging the data in ascending or descending order, $\left(\frac{N+1}{2}\right)^{\text{th}}$ term is the median, when N is an odd number.
- After arranging the data in ascending or descending order, the median is calculated as
$$\frac{\left(\frac{N}{2}\right)^{\text{th}} \text{ term} + \left(\frac{N}{2} + 1\right)^{\text{th}} \text{ term}}{2},$$
 when N is an even number.

3. Bar Graph and Double Bar Graph

3.1. Bar Graph

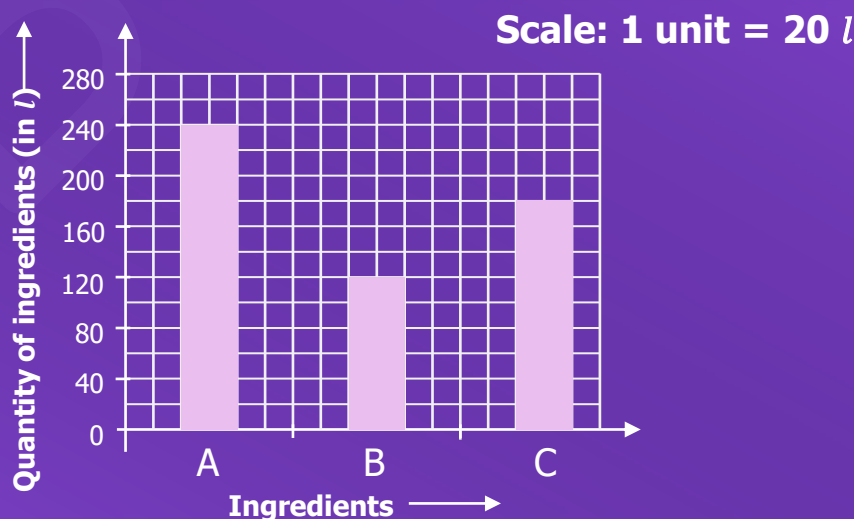
Bar graphs are a display of information using bars of uniform width whose heights are proportional to the respective values.



- Heights of bars are proportional to the values that they represent.
- Bar graphs have two axes:
x(horizontal) axis y(vertical) axis
- The scale of a bar graph helps us to represent large numbers within the page size.

A bar graph representing quantity of ingredients A, B, and C in litres is shown.

- The scale of the graph is taken as: **1 unit = 20 l**
- Along x axis ingredients are shown.
- Along y axis the quantity in litres are shown.
- The quantity of ingredient A is 200 l.
- Similarly the quantity of ingredient B and C are 120 l and 170 l, respectively.



3. Bar Graph and Double Bar Graph

3.2. Double Bar Graph

A double bar graph is a graphical display of information using two bars besides each other at various heights. It may be drawn both horizontally and vertically. It is useful for the comparison of the data.



Conditions for drawing a joint bar graph:

- **Number of samples** must be **same**.
- **Scale** also must be **same**.
- **Data type** must be **same**.

A double bar graph representing the quantity of ingredients A, B and C in zone-i and zone-ii is shown.

- The scale of the graph is taken as: 1 unit = 20 l
- The quantity of ingredient A in zone-i is 240 l and in zone-ii is 60 l.
- The quantity of ingredient B in zone-i is 120 l and in zone-ii is 160 l.
- The quantity of ingredient C in zone-i is 180 l and in zone-ii is 220 l.

