14. Statistics

- When the speed is not uniform, we calculate the average speed by using the formula:

$$\textbf{Average speed} = \frac{\textbf{Total distance covered}}{\textbf{Total time taken}}$$

Example:

Sheetu goes to a park near her house for morning walk. She walks at 35 m/min for the first 7 minutes. Her speed goes on decreasing as a result of tiredness. Then, she walks at 30 m/min for 5 minutes. Find her average speed.

Solution:

Here, it is given that Sheetu walks at 35 m/min for 7 minutes.

We know that distance = Speed × Time

∴Distance covered in first 7 minutes = 35 m/min × 7 min

= 245 m

Also, Sheetu walks at 30 m/min for 5 minutes.

∴Distance covered in these 5 minutes = 30 m/min × 5 min

= 150 m

∴Total distance covered by Sheetu = 245 m + 150 m = 395 m

Total time taken = 7 min + 5 min = 12 min

$$\text{Average speed} = \frac{\text{Total distance covered}}{\text{Total time taken}}$$

$$= \frac{395\,\text{m}}{12\,\text{min}}$$

= 32.9 m/min

- When we have x observations each at the value a, y observations each at the value b and z observations each at the value c then the average value can be calculated using the formula:

$$\text{Average value} = \frac{xa+yb+zc}{x+y+z}$$

- In a pictograph, pictures of objects are used for representing data. Tally marks cannot be used for representing huge numbers. However, these numbers can be represented with the help of pictographs.

- Data can also be represented by using bar diagram or bar graph. In a bar graph, bars of uniform width are drawn horizontally or vertically. These bars are placed at equal distance from each other. The length of each bar gives the required information.
- The data in an unorganised form is called raw data. In order to draw meaningful inferences from a data, we need to organise the data systematically.

  We can organise a data in the following ways:

  - Frequency distribution table
  - Histogram
  - Pie chart