

14. Statistics

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

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

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 \times Time

$$\therefore \text{Distance covered in first 7 minutes} = 35 \text{ m/min} \times 7 \text{ min}$$

$$= 245 \text{ m}$$

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

$$\therefore \text{Distance covered in these 5 minutes} = 30 \text{ m/min} \times 5 \text{ min}$$

$$= 150 \text{ m}$$

$$\therefore \text{Total distance covered by Sheetu} = 245 \text{ m} + 150 \text{ m} = 395 \text{ m}$$

$$\text{Total time taken} = 7 \text{ min} + 5 \text{ min} = 12 \text{ min}$$

$$\begin{aligned}\text{Average speed} &= \frac{\text{Total distance covered}}{\text{Total time taken}} \\ &= \frac{395 \text{ m}}{12 \text{ min}} \\ &= 32.9 \text{ m/min}\end{aligned}$$

- 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