

OLYMPIAD · EVERYDAY MATHEMATICS · OLYMPIAD PREPARATION · SHORT NOTES

Chapter 18: Reading Tables and Graphs

Topic-wise short notes with solved examples

How to read a table, a bar graph, a line graph and a pie chart, and how to turn what you read into a total, an average, a percentage or an angle.

1 Reading a table

- A **table** lists data in rows and columns. Read the title and the column headings first, and note the **unit** (rupees, kilograms, thousands).
- Most questions ask for a **total**, an **average**, the **highest** or **lowest** value, a **difference**, or a **percentage change**.
- Percentage change = $\frac{\text{change}}{\text{old value}} \times 100$. The old value is the earlier one.

Example 1.1 The table shows the number of books sold by a shop from Monday to Friday. Find the total, the average, the best day, and the percentage increase from Monday to Tuesday.

Day	Mon	Tue	Wed	Thu	Fri
Books sold	40	50	30	60	40

SOLUTION

$$\text{Total} = 40 + 50 + 30 + 60 + 40 = 220.$$

$$\text{Average} = \frac{220}{5} = 44.$$

The highest number is 60, on Thursday.

$$\text{Mon to Tue: change} = 10, \text{ and } \frac{10}{40} \times 100 = 25.$$

Total 220, average 44, best day Thursday, increase 25%

2 Bar graphs and line graphs

- In a **bar graph** the height of each bar shows the value. Read the scale on the vertical axis carefully: one square may not be one unit.
- A **line graph** joins points. It is best for showing how something **changes over time**, like temperature or the height of a plant.
- A line going up means an increase, going down means a decrease, and flat means no change. The steeper the line, the faster the change.

Example 2.1 A line graph of the temperature at 6 am, 9 am, 12 noon and 3 pm gives 24, 27, 30 and 28 degrees Celsius. By how much did the temperature rise from 6 am to noon, and when did it fall?

SOLUTION

Rise = $30 - 24 = 6$ degrees.

It fell after noon, because 28 is less than 30.

It rose by 6 degrees. It fell between noon and 3 pm.

3 Pie charts

- A **pie chart** is a circle divided into sectors. The whole circle is 360° and stands for the total.
- The angle of a sector = $\frac{\text{value}}{\text{total}} \times 360^\circ$.
- The value of a sector = $\frac{\text{angle}}{360^\circ} \times \text{total}$.
- The angles of all sectors add up to 360° . The percentages add up to 100%, and $1\% = 3.6^\circ$.

Example 3.1 A family spends its monthly income of Rs 36 000 as follows: Food 120° , Rent 90° , Education 60° , Savings 54° , Others 36° . Find the amount spent on food and on rent. Check the angles.

SOLUTION

The angles add up to $120 + 90 + 60 + 54 + 36 = 360$, so they are correct.

$$\text{Food} = \frac{120}{360} \times 36\,000 = 12\,000.$$

$$\text{Rent} = \frac{90}{360} \times 36\,000 = 9000.$$

Food Rs 12 000 and rent Rs 9000

REMEMBER

Check that the angles add to 360° and the percentages to 100% before you use a pie chart. It catches reading mistakes.