UNIQUE STUDY POINT

By Sumeet Sahu

www.uniquestudyonline.com

Unique Study Point, Amitesh Nagar, Indore, MP | Contact: 8103405051

Class: VI	**Subject:** Science	**Session:** 2025-26
Chapter: 04 - Data Handling and Presentation	**Time:** 1½ Hours	**Max. Marks:** 40

General Instructions:

1. All questions are compulsory.
2. This question paper contains 20 questions divided into five sections A, B, C, D and E.
3. Section A contains 10 MCQs of 1 mark each.
4. Section B contains 4 questions of 2 marks each.
5. Section C contains 3 questions of 3 marks each.
6. Section D contains 1 question of 5 marks.
7. Section E contains 2 Case Study Based questions of 4 marks each.

SECTION A - Multiple Choice Questions (1 mark each)

Q1. Raw data becomes useful when it is:

(a) Written in different colors

(b) Organized and analyzed

(c) Kept secret

(d) Made longer

Q2. The tally mark |||| |||| represents:

(a) 8

(b) 9

(c) 10

(d) 11

Q3. A pictograph is most suitable when:

(a) Data involves very large numbers

(b) Presenting to young children

(c) Exact precision is required

(d) Data has decimal values

Q4. In a bar graph, which axis typically shows categories?

(a) Y-axis only

(b) X-axis only

(c) Both axes

(d) Neither axis

Q5. Data that has been counted and organized in a table is called:

(a) Raw data

(b) Grouped data

(c) Old data

(d) Wrong data

Q6. If ⚽ = 12 footballs in a pictograph, then ⚽⚽⚽⚽⚽ represents:
(a) 48 footballs
(b) 50 footballs
(c) 60 footballs
(d) 72 footballs

Q7. The scale in a bar graph must start from:
(a) Any number
(b) Always 100
(c) Zero
(d) The smallest data value

Q8. Which type of data representation shows information at a glance?
(a) Paragraph form
(b) Graphs
(c) Long tables
(d) Written descriptions

Q9. A column graph is the same as a bar graph with:
(a) Curved bars
(b) Vertical bars
(c) No bars
(d) Circular bars

Q10. Which is a disadvantage of pictographs?
(a) Not colorful
(b) Difficult to show fractional values precisely
(c) Takes less space
(d) Too accurate

SECTION B - Short Answer Questions (2 marks each)

Q11. List four types of information where data collection would be necessary. Explain one in detail.

Q12. In a pictograph, if 🚌 = 25 buses, explain how you would represent 88 buses. Show your calculation.

Q13. Why do we leave uniform spaces between bars in a bar graph? What would happen if spaces were unequal?

Q14. Compare the advantages of organizing data in ascending order versus using a frequency table.

SECTION C - Short Answer Questions (3 marks each)

Q15. The number of books in different sections of a library are:
Fiction: 450, Non-fiction: 380, Reference: 290, Magazines: 150, Comics: 230

(a) Which section has the most books and which has the least?
(b) If you want to draw a bar graph for this data, what scale would you choose? Justify.
(c) How many more Fiction books are there than Comics?

Q16. Explain why visual representations of data (like graphs) are more effective than just reading numbers in a table. Give three specific reasons with examples.

Q17. A teacher wants to analyze attendance patterns in her class. What steps should she follow to collect, organize, and present this data effectively? Mention at least 5 steps.

SECTION D - Long Answer Question (5 marks)

Q18. The daily temperature (in °C) of a city for 2 weeks in January was recorded as:
18, 20, 18, 22, 20, 18, 22, 20, 22, 18, 20, 22, 20, 18

(a) Organize this data in a frequency table using tally marks. (2 marks)
(b) Draw a bar graph for this data using scale 1 unit = 1°C. (2 marks)
(c) On how many days was the temperature 20°C or above? (1 mark)

SECTION E - Case Study Based Questions (4 marks each)

Q19. Case Study 1: Mobile Phone Usage Survey

A survey was conducted among 200 students about daily mobile phone usage. The results showed:
Less than 1 hour: 45 students, 1-2 hours: 80 students, 2-3 hours: 50 students, More than 3 hours: 25 students

Based on this data, answer the following:
(a) What percentage of students use mobile phones for 1-2 hours daily? (1 mark)
(b) How many students use mobile phones for less than 2 hours daily? (1 mark)
(c) Which category has the highest number of students? What does this indicate? (1 mark)
(d) If you were to make recommendations for healthy mobile usage, what would you suggest based on this data? (1 mark)

Q20. Case Study 2: Waste Segregation Drive

A school conducted a waste segregation drive. The amount of waste collected (in kg) over 5 days was:
Plastic: 45 kg, Paper: 65 kg, Metal: 25 kg, Glass: 15 kg, Organic: 80 kg

Based on this data, answer the following:
(a) What is the total waste collected during the drive? (1 mark)
(b) Which type of waste was collected the most? Why might this be? (1 mark)
(c) What percentage of the total waste was plastic? (Round to one decimal place) (1 mark)
(d) How can presenting this data visually help in environmental awareness? (1 mark)

DETAILED ANSWER KEY - PAPER 04

SECTION A - Answers to MCQs

1. (b) Organized and analyzed

2. (c) 10

3. (b) Presenting to young children

4. (b) X-axis only

5. (b) Grouped data

6. (c) 60 footballs

7. (c) Zero

8. (b) Graphs

9. (b) Vertical bars

10. (b) Difficult to show fractional values precisely

SECTION B - Answers to Short Answer Questions

11.

Four types requiring data collection:
1. Student performance in exams
2. Weather patterns
3. Sales figures in a shop
4. Traffic volume at different times

Detailed example - Student performance:
- Collect marks of all students in a subject
- Organize by ranges (0-20, 21-40, etc.)
- Helps identify overall class performance
- Teacher can plan remedial classes for weak areas
- Shows which topics need more attention

12.

Representing 88 buses:
Given: 🚌 = 25 buses
Calculation:
- 88 ÷ 25 = 3 remainder 13
- 13/25 = 0.52 (slightly more than half)

Representation:
- Draw 3 full bus symbols: 🚌🚌🚌 (represents 75 buses)
- Draw approximately half a bus symbol for the remaining 13 buses
- Total: 🚌🚌🚌 and about half a bus symbol
- This gives approximately 88 buses (3 × 25 + 13 = 88)

13.

Importance of uniform spacing:
• Uniform spacing ensures visual consistency
• Makes the graph look professional and organized
• Prevents misinterpretation - all categories appear equally important
• Easier to compare bars when spacing is consistent

If spaces were unequal:
• Graph would look cluttered or disorganized
• Might give false impression of importance to certain categories
• Difficult to make accurate visual comparisons

14.

Ascending Order:
Advantages:
• Easy to identify highest and lowest values
• Can see the range clearly
• Good for finding median

Frequency Table:
Advantages:
• Shows how many times each value appears
• Easy to identify most common values
• Better for creating graphs
• More compact representation

Comparison:
Both are useful - choice depends on what information we need to extract from the data.

SECTION C - Answers to Short Answer Questions

15.

(a) Most books: Fiction (450)
Least books: Magazines (150)

(b) Appropriate scale: 1 unit = 50 books
Justification:
• Highest value is 450, so we need at least 9 units (450 ÷ 50 = 9)
• All values are divisible or close to multiples of 50
• Makes the graph manageable and differences clearly visible
• Using 1 unit = 10 would make bars too tall; 1 unit = 100 would make differences less clear

(c) Difference = 450 - 230 = 220 more Fiction books than Comics

16.

Why visual representations are more effective:

Reason 1 - Quick Comparison:
Example: In a bar graph showing class test scores, you can immediately see which student scored highest just by looking at the tallest bar. In a table, you'd need to read all numbers.

Reason 2 - Pattern Recognition:
Example: A graph showing monthly rainfall can quickly show if there's an increasing or decreasing trend. In a table, this pattern is harder to spot.

Reason 3 - Better Memory Retention:

Example: People remember visual images better than numbers. A colorful pictograph of favorite fruits is more memorable than a list of numbers.

17.

Steps to analyze attendance patterns:

Step 1 - Data Collection:
• Mark attendance daily in a register
• Record present/absent for each student

Step 2 - Choose Time Period:
• Decide duration (e.g., one month, one term)

Step 3 - Organization:
• Count total present and absent days for each student
• Create a frequency table

Step 4 - Representation:
• Choose appropriate graph type (bar graph showing days present/absent)
• Select suitable scale

Step 5 - Analysis:
• Identify students with poor attendance
• Look for patterns (e.g., more absences on certain days)

Step 6 - Action:
• Use findings to contact parents of frequently absent students
• Plan interventions if needed

SECTION D - Answer to Long Answer Question

18.

(a) Frequency Table:

Temperature (°C)	Tally Marks	Frequency (Days)
18	||||	5
20	||||	5
22	||||	4

(b) Bar Graph:
• X-axis: Temperature (18°C, 20°C, 22°C)
• Y-axis: Number of Days (Scale: 1 unit = 1 day)
• Draw bars:
  - 18°C: height 5 units
  - 20°C: height 5 units
  - 22°C: height 4 units
• Label axes and give title: "Daily Temperature Record"

(c) Days with temperature 20°C or above:
• 20°C: 5 days
• 22°C: 4 days
• Total = 5 + 4 = 9 days

SECTION E - Answers to Case Study Based Questions

19.

(a) Percentage using phones for 1-2 hours:
= (80/200) × 100
= 40%

(b) Students using phones less than 2 hours:
= Less than 1 hour + 1-2 hours
= 45 + 80
= 125 students

(c) Highest category: 1-2 hours (80 students)
Indication:
• Most students have moderate mobile usage
• This suggests relatively balanced digital habits
• Majority are not excessive users

(d) Recommendations for healthy usage:
• Encourage the 25 students using phones more than 3 hours to reduce usage
• Promote awareness about digital wellbeing
• Suggest breaks during phone usage
• Encourage outdoor activities as alternatives
• The 45 students with less than 1 hour usage show healthy pattern - this can be promoted

20.

(a) Total waste collected:
= 45 + 65 + 25 + 15 + 80
= 230 kg

(b) Most collected: Organic waste (80 kg)
Possible reasons:
• Schools generate lot of food waste from canteen/tiffins
• Garden waste from school premises
• Leftover food from mid-day meals
• Paper waste may have been categorized separately

(c) Percentage of plastic:
= (45/230) × 100
= 19.565...%
= 19.6% (rounded to one decimal place)

(d) Benefits of visual presentation:
• Bar graph or pictograph makes impact more dramatic
• Students can immediately see which waste type is highest
• Comparing quantities becomes easier
• More likely to motivate action when people see visual representation
• Can be displayed on notice boards for ongoing awareness
• Helps set targets for reduction in specific waste categories

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