Chapter 9

Data Handling

Introduction to Data Handling

Introduction
A data is a collection of numbers, words, measurements, or just a description of things, gathered to give some information.

In our daily life, we see several kinds of data through newspapers, magazines, television, and other sources.

Example:

i) Your performance in annual examination.

ii) The number of storybooks read by Ethan and his sister during summer vacations.

iii) Marks scored by students of Class VII in the Mathematics Annual Examination.

Marks of 15 students of Class VII in Mathematics Annual Examination (out of 100):
78, 81, 57, 92, 88, 67, 94, 97, 82, 87, 75, 64, 96, 83, 86

Recording and Organisation of Data

The collection, recording, and presentation of data help us to draw inferences from them.

Now the District Football Association recorded the ages (in years) of the football players as well.

The ages (in years) of the players are:
13, 14, 14, 17, 16, 15, 16, 12, 15, 16.

Raw data is the data obtained in its original form.

The data in this form is called raw data.

Now, if we arrange the data in ascending or descending order, then we can interpret the data in a better way.

12, 13, 14, 14, 15, 15, 16, 16, 16, 17 (Ascending order)

The data arranged in an ascending or descending order is called an array or arrayed data.

Now, we can easily tell that

- The youngest player in the team is 12 years old
- The oldest player is 17 years old.

The above data can also be arranged in a tabular form

Name	Ron	Ethan	Roger	Jacob	Ash	Shane	Charlie	Luca	Tom
Age (in years)	12	13	14	15	15	16	16	16	17

Why do we collect data?

We first collect and record data, then it is presented in a way such that it gives meaningful information. We primarily collect data for the following reasons,

1) Analysis
Let us consider an example where we are using data for analysis.
The table given below is the data of the top 5 scorers in the FIFA World Cup 2018.

This data helps us to analyse the performance of the top 5 scorers in the FIFA World Cup 2018.

Scorer	Goals
Harry	6
Romelu	4
Denis	4
Christiano	4
Artem	3

2) Comparison

Data is also useful for comparison of data sets.

The table given below shows the performance of Indian Cricketers.

Name	No. of Matches	Runs Scored	Highest Score	Average	Strike rate
M S Dhoni	341	10500	183	50.72	87.55
Kedar Jadhav	59	1174	120	43.48	102.53
Dinesh Karthik	91	1738	79	31.03	73.70

From the given table we can easily compare the performances of the cricketers. We can find which cricketer among these three have played maximum matches, whose strike rate is the highest?

3) Prediction

We use data for predictions, like weather forecasting where previous data of weather conditions are compared with the present data to predict future weather.

Collecting Data

The District Football Association has recorded the heights (in cm) of the football players of the district team. The heights of the players are: 152, 151, 148, 163, 159, 150, 143, 157, 147 and 167.

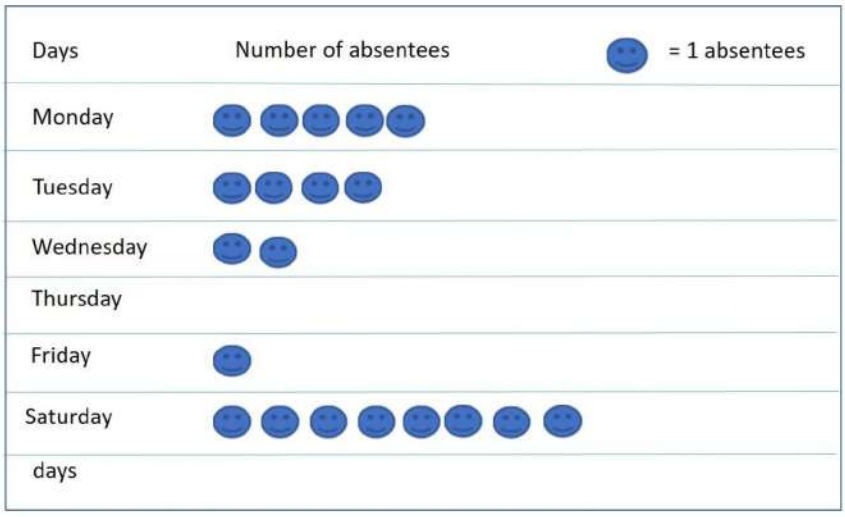
The above data can tell us many things, like the height of the tallest and the shortest player, but is this data sufficient if we want to find the age of the youngest player in the district football team?

The answer is no because for that we need to collect data regarding the age of all the players. Therefore, before collecting the data, we need to know what we would use it for.

Pictograph

A pictograph represents data through pictures of objects. It helps answer the questions on the data at a glance.

Example: The following pictograph shows the number of absentees in a class of 30 students during the previous week:



(a) On which day was the maximum number of students absent?
(b) Which day had full attendance?
(c) What was the total number of absentees that week?
(REFERENCE: NCERT)

Solution:
(a) The maximum absentees were on Saturday. (There are 8 pictures in the row for Saturday; on all other days, the numbers of pictures are less).
(b)Against Thursday, there is no picture, i.e. no one is absent. Thus, on that day the class had full attendance.
(c) There are 20 pictures in all. So, the total number of absentees in that week was 20.

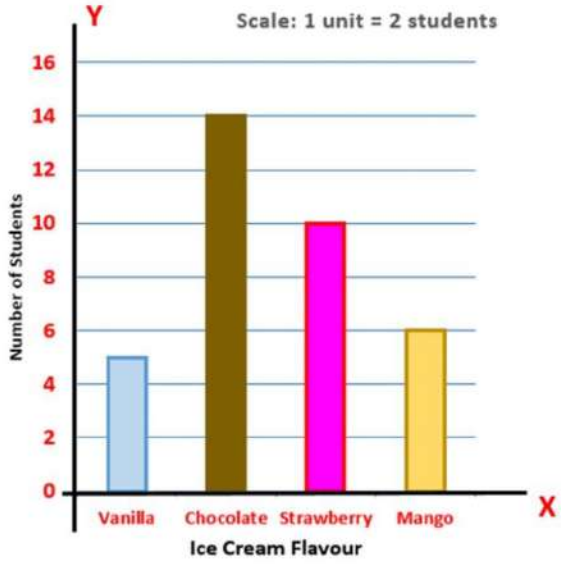
Bar Graph

A bar graph is a pictorial representation of numerical data using bars of uniform width drawn horizontally or vertically with equal spacing between them. The length of the bar depends upon the number it represents.

A bar graph is an effective way of presenting visual information. We see bar graphs in newspapers, magazines comparing sets of data between different groups.

Students of Class VII were asked to name their favourite ice-cream flavour as the school committee had decided to give ice – creams to students on Children's Day. The following bar graph shows the preferences of the students.

Ice Cream Flavour	Vanilla	Chocolate	Strawberry	Mango
Number of Students	5	14	10	6



We see that the bar representing the number of students who like chocolate is the tallest.

So, students' most preferred ice cream is chocolate.

Constructions of Bar Graphs

Example: Numbers of students in six different classes are given below. Represent the data on a bar graph.

Class	Fifth	Sixth	Seventh	Eight	Ninth	Tenth
Number of students	140	120	110	100	90	80

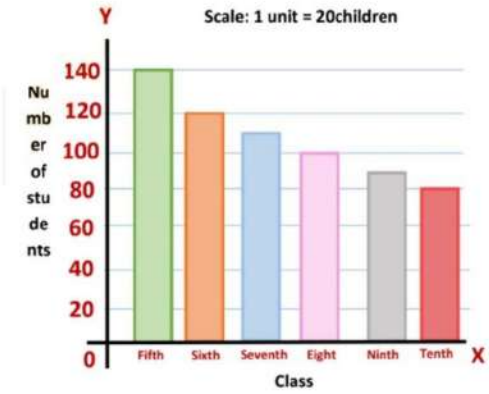
Step 1: Draw two perpendicular lines. Mark them as OX and OY. These lines are called the x − axis and y − axis respectively.

Step 2: Along OX, write classes at points taken at uniform gaps and along OY, write the number of children.

Step 3: Choose a suitable scale on OY. We will choose a scale as 1 unit = 20 children

Step 4: Calculate the heights of the bar according to the scale chosen

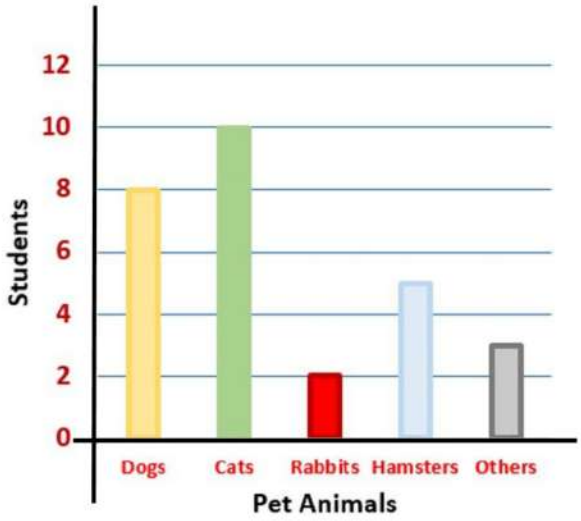
Class	Number of students	Height of the bar (1 division = 20 students)
Fifth	140	$\frac{140}{20} = 7$
Sixth	120	$\frac{120}{20} = 6$
Seventh	110	$\frac{110}{20} = 5.5$
Eight	100	$\frac{100}{20} = 5$
Ninth	90	$\frac{90}{20} = 4.5$
Tenth	80	$\frac{80}{20} = 4$



Example: Use the bar graph to answer the following questions.

i) Which is the most popular pet?

ii) How many children have a dog as a pet?



i) We see that the bar representing the number of students who have a cat as a pet is the tallest; therefore cat is the most popular pet.
ii) We know, from the bar graph that 8 students have a dog as a pet