26 Data Representation and Interpretation

By studying this lesson you will be able to

- represent data in column/bar graphs and multiple column graphs and
- interpret data represented in column graphs and multiple column graphs

26.1 Column/Bar Graphs

Let us consider briefly what you learnt in Grade 6 about representing data in tables and pie-charts.

The given table provides information on how 39 employees of a certain office travel to work. The employees have been divided into four groups based on their mode of transport. Each group is called a category.

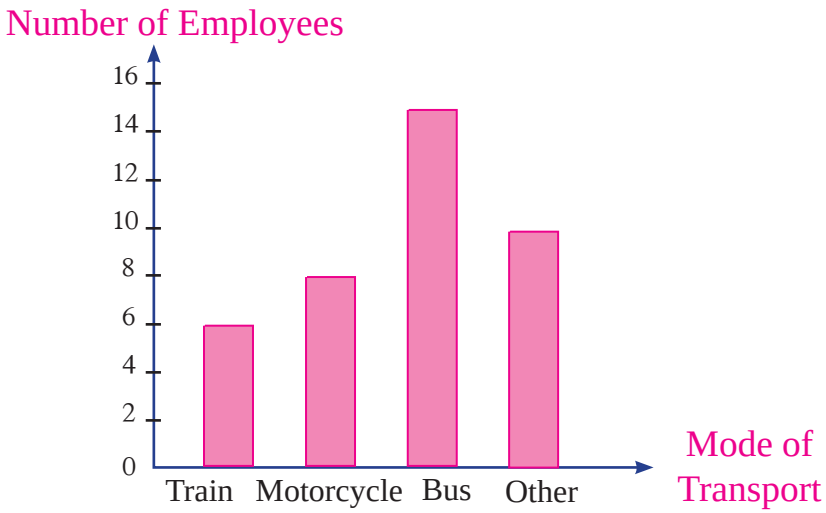
Mode of Transport	Number of Employees
Train	6
Motorcycle	8
Bus	15
Other	10

Let us represent this information in a picture graph. Let us represent 4 employees by ◯. Accordingly, two employees are represented by half a circular shape ◗, three employees are represented by three quarter of a circular shape ◕ and one employee is represented by a quarter of a circular shape ◹.

Mode of Transport	Number of Employees
Train	◯ ◗
Motorcycle	◯ ◯
Bus	◯ ◯ ◯ ◕
Other	◯ ◯ ◗

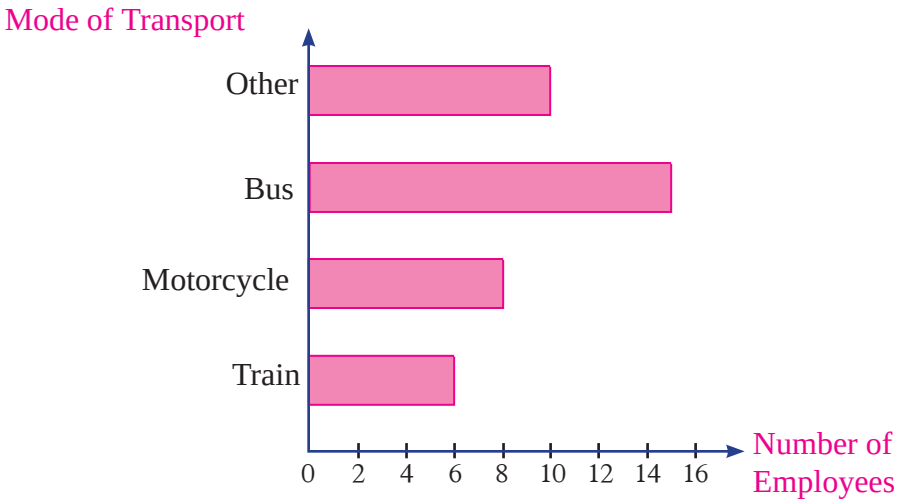
◯ Represents four employees

Let us represent this information using columns of equal width instead of pictures. Then a graph of the following form is obtained.



Graphs of the above form are called **column graphs**. These columns are of equal width and the gaps between the columns too are equal in size. The height of each column is equal to the number (amount) corresponding to the given category.

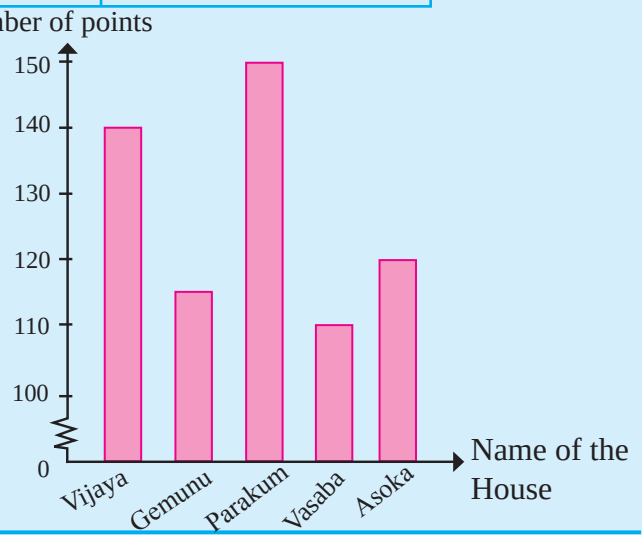
This information can also be represented by horizontal bars. Then the graph of the following form is obtained.



Example 1

The total points gained by each of the houses at the 2015 annual sports meet of a school with more than 5000 students are given in the following table. Represent this information in a column graph.

Name of the House	Total number of points
Vijaya	140
Gemunu	115
Parakum	150
Vasaba	110
Asoka	120



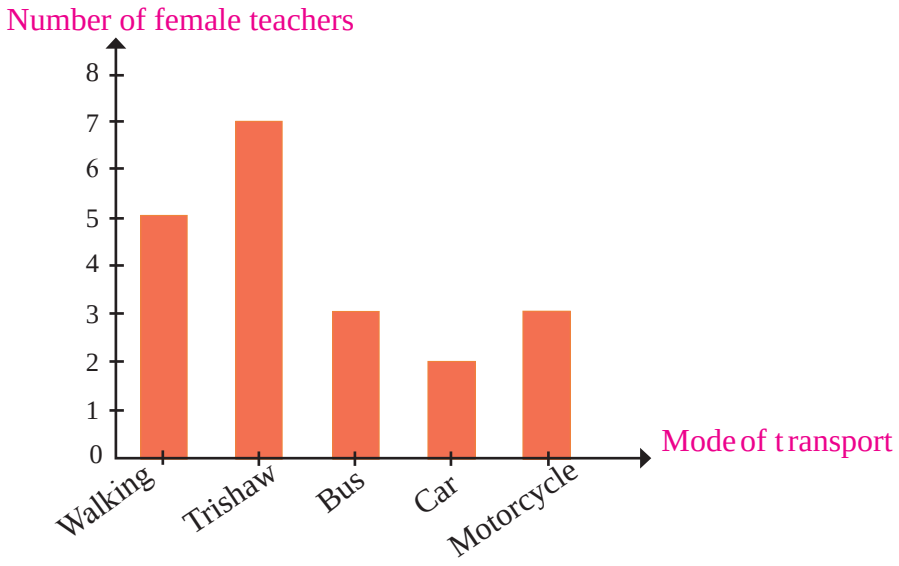
To indicate that the distance between 0 and 100 along the vertical axis in the column graph, which represents the total number of points, is less than what is should be, the symbol ≠ is used.

26.2 Multiple Column Graphs

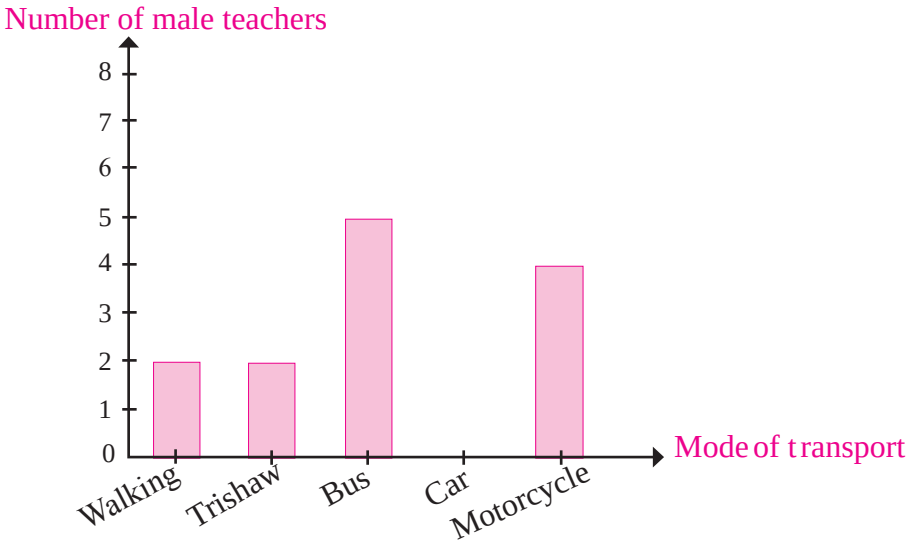
The following table provides information on how the teachers of a certain Maha Vidyalaya in a rural area travel to school. The teachers have been separated into five categories, and each category has been further divided into two subcategories named Male and Female.

Mode of Transport	Teacher	
	Female	Male
Walking	5	2
Trishaw	7	2
Bus	3	5
Car	2	0
Motorcycle	3	4

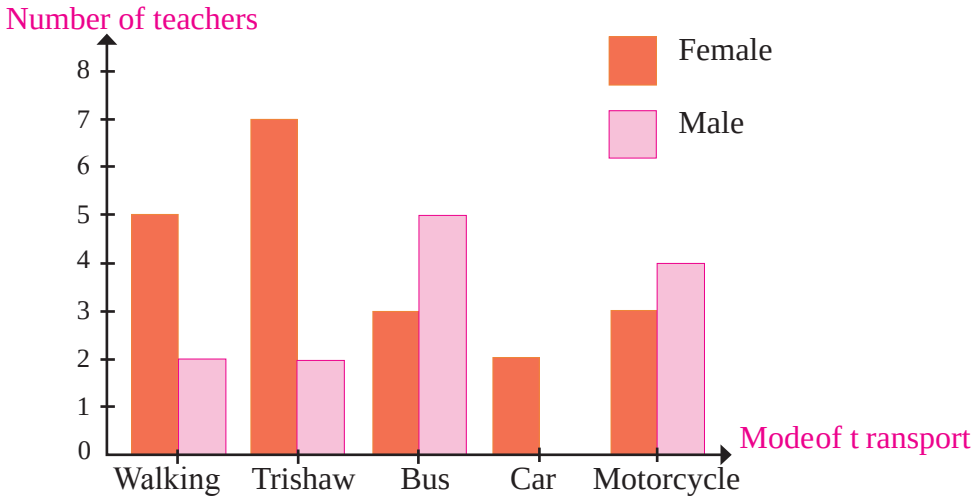
Information on how the female teachers travel to school is represented in the following column graph.



Information on how the male teachers travel to school is represented in the following column graph.



Information on how all the teachers travel to school is represented in the following multiple column graph.



In this graph too the columns are of equal width. The columns corresponding to the subcategories of each category have been drawn such that they border each other. Such graphs are called **multiple column graphs**.

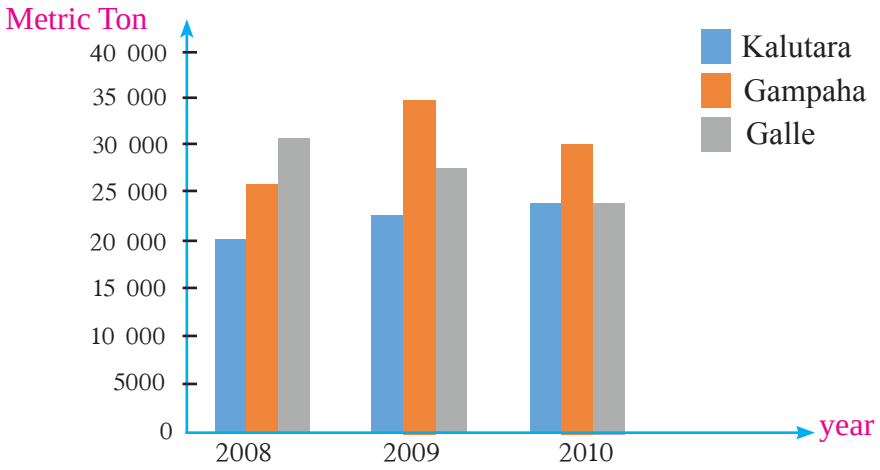
In the above example, the first two graphs have been drawn to provide an explanation. When drawing such graphs, represent all the information in one graph as in the third graph.

By representing the information by a multiple column graph, the information can be compared more easily.

26.3 Interpretation of Data

Now let us extract information from column graphs and multiple column graphs.

The following graph provides information on the paddy production during the Yala season in the districts of Gampaha, Kalutara and Galle.



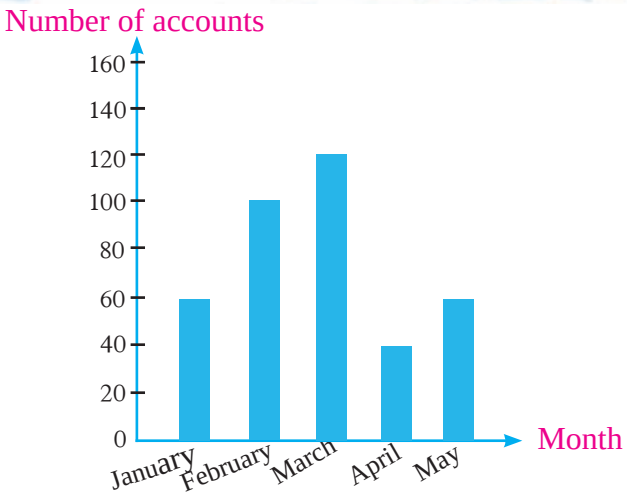
Let us carefully observe the above graph.

- It is a multiple column graph.
- During the Yala season, in the Gampaha district, the paddy production was highest in the year 2009 and lowest in the year 2008.
- The paddy production in the Kalutara district gradually increased during the period 2008 – 2010.
- The paddy production in the Galle district gradually decreased during the period 2008 – 2010.
- The paddy production in the year 2008 in all three districts was 75 000 metric tons.

Several conclusions that were drawn from the graph have been given above.

Exercise 26.1

(1) The following graph represents information on the savings accounts that were opened during the first five months of a year at a branch of a certain bank.



(i) In which month has the most number of savings accounts been opened?

(ii) In which month has the least number of savings accounts been opened?

(iii) In which two months have an equal number of savings accounts been opened?

(iv) How many savings account holders opened their accounts in the month of January?

(v) How many savings account holders in total opened accounts during the period from January to March?

(vi) How many more people had opened accounts in March than in April?

(2) A table with information on the number of coconuts that were plucked from a certain estate during the year 2014 is given below.

Month	**Coconut Yield (To the nearest 10 fruits)**
January	200
March	280
May	200
July	400
September	250
November	150

Represent this information by a column graph and answer the following questions based on the graph.

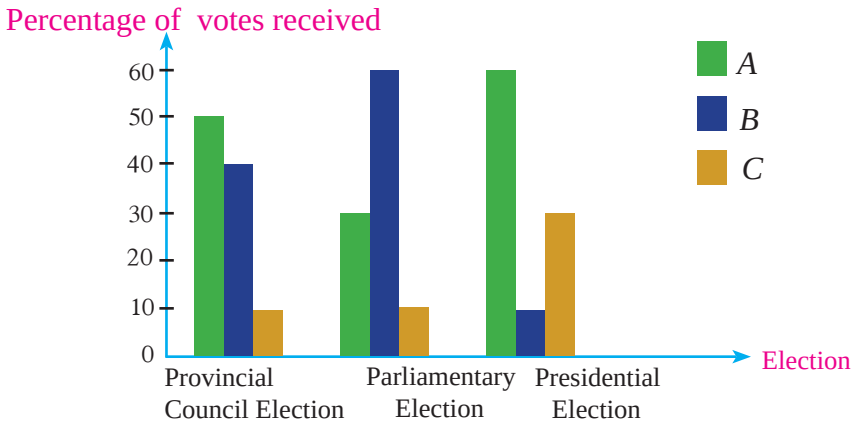
(i) Name the month with the highest yield.

(ii) In which month was the yield the lowest?

(iii) Write down the two months in which the yields were the same.

(iv) Is it easier to extract information from the table or from the column graph?

(3) The following graph represents information on the percentage of votes received by three political parties from the total votes cast during the three most recently held elections in a certain electoral district.



(a) Answer the following questions based on the above multiple column graph.

(i) Which party has received the most number of votes in the Provincial Council Election?

(ii) Which party has succeeded in increasing their percentage of votes from the Provincial Council Election to the Parliamentary Election?

(iii) In which election has the political party *A* received the highest percentage of votes?

(iv) Which party has received a lesser percentage of votes in the Presidential Election than in the Parliamentary Election?

(v) Which party received the highest percentage of votes in the Parliamentary Election?

(b) Draw another multiple column graph to represent the above information with the horizontal axis denoting the percentage of votes received by the three parties *A*, *B* and *C* and the vertical axis representing the three elections.

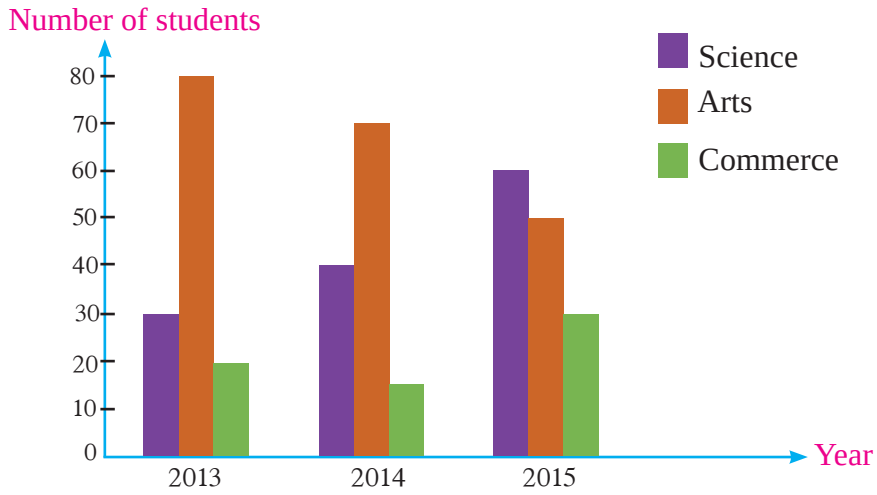
(4) A table prepared by the sports teacher of a certain school on the types of sports that students in grades 6 – 11 participate in is given below. Each grade has 100 students. (Assume that students who participate in one type of sport do not participate in the other type).

Grade	Number of Students	
	Indoor sports	Outdoor sports
6	10	90
7	35	65
8	15	85
9	15	85
10	40	60
11	45	55

Represent the information in the above table by a suitable multiple column graph and answer the following questions.

(i) Students of which grade participate in outdoor sports the most?
(ii) Which grade has the most number of students participating in indoor sports?
(iii) Which grade has the least number of students participating in outdoor sports?
(iv) Which grade has the greatest difference between the number of students who participate in outdoor sports and the number of students who participate in indoor sports?

(5) The following multiple column graph provides information on the number of students who entered the different A'level subject streams at a certain school during three successive years.



(i) Which stream shows a gradual increase in the number of students entering the stream?

(ii) Which stream shows a gradual decrease in the number of students entering the stream?

(iii) In which year has the greatest number of students joined the A'level classes of this school?

(iv) If all the students who joined the A'level class in 2013 sat the examination in 2015, how many students in total faced the A'level examination in 2015 from this school?

Summary

- When data has been represented in a column graph or a multiple column graph, it can be interpreted, and information can be compared by considering the heights of the columns of the graph.