UNIT 5

DATA HANDLING

(A) Main Concepts and Results

- The data can be arranged in a tabular form using tally marks.
- A pictograph represents data through pictures of objects.
- Interpretation of a pictograph and drawing a pictograph.
- Representation of data using a bar diagram or bar graph.
- In a bar graph, bars of uniform width are drawn horizontally or vertically with equal spacing between them. Length of each bar gives the required information.
- Interpretation of a bar graph and drawing a bar graph.

(B) Solved Examples

Write the correct answer from the given four options:

Example 1: Using tally marks which one of the following represents the number five?

(A) ||||| (B) √√√√√ (C) 𝍸| (D) 𝍸𝍸

Solution: Answer is (D).

Example 2: State whether the following statements are true or false:

(a) A tabular form of data is also a pictorial representation of the data.

(b) A pictograph represents data in the form of pictures of objects or parts of objects.

Solution: (a) False (b) True

Example 3: The blood groups of 25 students are recorded as under:

A, B, O, A, AB, O, A, O, B, A, O, B, A, AB, AB, A, A, B, B, O, B, AB, O, A, B.

Arrange the information in a table using tally marks.

Solution:

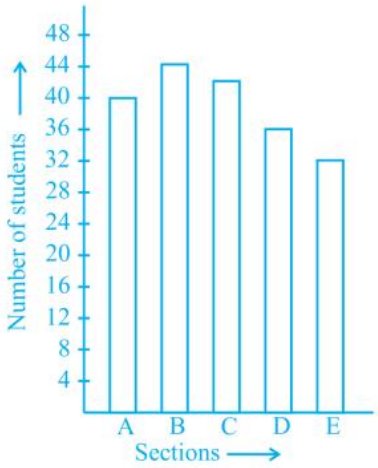
Blood group	Tally marks	Number of students
A	𝍸 |||	8
B	𝍸 ||	7
O	𝍸 |	6
AB	|||	4

Example 4: In a school, there are five sections of Class VI. The number of students in each section is given below:

Section	A	B	C	D	E
Number of students	40	44	42	36	32

Represent the above data using a bar graph.

Solution: First of all, draw a horizantal line and a vertical line. Choose a suitable scale along the vertical line, say 1 unit length= 4 students. On the horizontal line, write the sections A, B, C, D and E. Draw vertical bars on the respective section showing the number of students in that section.



Example 5: The number of vistors in a science exhibition on different days of a week is shown below:

Look at the above pictograph and answer the following questions:

Day	Number of Visitors = 100 visitors
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	

(a) What is the total number of visitors from Monday to Saturday?

(b) On which day was the number of visitors maximum? What was their total number?

(c) On which day was the number of visitors minimum?

(d) On which day was the number of visitors same as the number of visitors on two days taken together?

Solution: Number of visitors on Monday, Tuesday, Wednesday, Thursday, Friday and Saturday were 550, 700, 1000, 900, 900, and 1250 respectively.

(a) The total number of visitors from Monday to Saturday
= 550 + 700 + 1000 + 900 + 900 + 1250 = 5300

(b) The number of visitors was maximum on Saturday and the number was 1250.

(c) The number of visitors was minimum on Monday and the number was 550.

(d) The number of visitors on Saturday was 1250 which was equal to the total number of visitors on Monday (550) and Tuesday (700).

(C) Exercise

In questions 1 to 5, out of the four options, only one is correct. write the correct answer.

1. Using tally marks, which one of the following represents the number eight:

(A)  (B)  (C)  (D) 

2. The marks (out of 10) obtained by 28 students in a Mathematics test are listed as below:

8, 1, 2, 6, 5, 5, 5, 0, 1, 9, 7, 8, 0, 5, 8, 3, 0, 8, 10, 10, 3, 4, 8, 7, 8, 9, 2, 0

The number of students who obtained marks more than or equal to 5 is

(A) 13 (B) 15 (C) 16 (D) 17

3. In question 2 above, the number of students who scored marks less than 4 is

(A) 15 (B) 13 (C) 12 (D) 10

4. The choices of the fruits of 42 students in a class are as follows:

A , O , B , M , A , G , B , G , A , G ,

B , M , A , G , M , A , B , G , M , B ,

A , O , M , O , G , B , O , M , G , A ,

A , B , M , O , M , G , B , A , M , O , M , O,

where A, B, G, M and O stand for the fruits Apple, Banana, Grapes, Mango and Orange respectively.

Which two fruits are liked by an equal number of students?

(A) A and M (B) M and B (C) B and O (D) B and G

5. According to data of question 4, which fruit is liked by most of the students?

(A) O (B) G (C) M (D) A

In questions 6 to 13, state whether the given statements are true (T) or false (F).

6. In a bar graph, the width of bars may be unequal.

7. In a bar graph, bars of uniform width are drawn vertically only.

8. In a bar graph, the gap between two consecutive bars may not be the same.

9. In a bar graph, each bar (rectangle) represents only one value of the numerical data.

10. To represent the population of different towns using bar graph, it is convenient to take one unit length to represent one person.

11. Pictographs and bar graphs are pictorial representations of the numerical data.

12. An observation occurring five times in a data is recorded as | | | | |, using tally marks.

13. In a pictograph, if a symbol  represents 50 books in a library shelf, then the symbol  represents 25 books.

In questions 14 to 20, fill in the blanks to make the statements true:

14. A _____ is a collection of numbers gathered to give some meaningful information.

15. The data can be arranged in a tabular form using _____ marks.

16. A _____ represents data through pictures of objects.

17. In a bar graph, _____ can be drawn horizontally or vertically.

18. In a bar graph, bars of _____ width can be drawn horizontally or vertically with _____ spacing between them.

19. An observation occurring seven times in a data is represented as _____ using tally marks.

20. In a pictograph, if a symbol  represents 20 flowers in a basket then  stands for _____ flowers.

21. On the scale of 1 unit length = 10 crore, the bar of length 6 units will represent _____ crore and of ——— units will represent 75 crore.

22. In an examination, the grades achieved by 30 students of a class are given below. Arrange these grades in a table using tally marks:

B, C, C, E, A, C, B, B, D, D, D, D, B, C, C, C, A, C, B, E, A, D, C, B, E, C, B, E, C, D

23. The number of two wheelers owned individually by each of 50 families are listed below. Make a table using tally marks.

1, 1, 2, 1, 1, 1, 2, 1, 2, 1, 0, 1, 1, 2, 3, 1, 2, 1, 1, 2, 1, 2, 3, 1, 0, 2, 1, 0, 2, 1, 2, 1, 2, 1, 1, 4, 1, 3, 1, 1, 2, 1, 1, 1, 1, 2, 3, 2, 1, 1

Find the number of families having two or more, two wheelers.

24. The lengths in centimetres (to the nearest centimetre) of 30 carrots are given as follows:

15, 22, 21, 20, 22, 15, 15, 20, 20, 15, 20, 18, 20, 22, 21,

20, 21, 18, 21, 18, 20, 18, 21, 18, 22, 20, 15, 21, 18, 20

Arrange the data given above in a table using tally marks and answer the following questions.

(a) What is the number of carrots which have length more than 20 cm?

(b) Which length of the carrots occur maximum number of times? Minimum number of times?

25. Thirty students were interviewed to find out what they want to be in future. Their responses are listed as below:

doctor, engineer, doctor, pilot, officer, doctor, engineer, doctor, pilot, officer, pilot, engineer, officer, pilot, doctor, engineer, pilot, officer, doctor, officer, doctor, pilot, engineer, doctor, pilot, officer, doctor, pilot, doctor, engineer

Arrange the data in a table using tally marks.

26. Following are the choices of games of 40 students of Class VI:

football, cricket, football, kho-kho, hockey, cricket, hockey, kho-kho, tennis, tennis, cricket, football, football, hockey, kho-kho, football, cricket, tennis, football, hockey, kho-kho, football, cricket, cricket, football, hockey, kho-kho, tennis, football, hockey, cricket, football, hockey, cricket, football, kho-kho, football, cricket, hockey, football.

(a) Arrange the choices of games in a table using tally marks.

(b) Which game is liked by most of the students?

(c) Which game is liked by minimum number of students?

27. Fill in the blanks in the following table which represents shirt size of 40 students of a school.

Shirt size	**Tally Marks**	**Number of students**
30	|||	3
32	𝍸	—
34	—	8
36	𝍸 ||	—
38	𝍸 —	10
40	—	7

28. Following pictograph represents some surnames of people listed in the telephone directory of a city

Surname	**Number of people**  = 100 people
Khan	
Patel	
Rao	
Roy	
Saikia	
Singh	

Observe the pictograph and answer the following questions:

(a) How many people have surname 'Roy'?

(b) Which surname appears the maximum number of times in the telephone directory?

(c) Which surname appears the least number of times in the directory?

(d) Which two surnames appear an equal number of times?

29. Students of Class VI in a school were given a task to count the number of articles made of different materials in the school. The information collected by them is represented as follows:

Material used	**Articles** = 20 articles
Wood	
Glass	
Metal	
Rubber	
Plastic	

Observe the pictograph and answer the following questions:

(a) Which material is used in maximum number of articles?

(b) Which material is used in minimum number of articles?

(c) Which material is used in exactly half the number of articles as those made up of metal?

(d) What is the total number of articles counted by the students?

30. The number of scouts in a school is depicted by the following pictograph:

Class	**Number of scouts** = 10 scouts
VI	
VII	
VIII	
IX	
X	

Observe the pictograph and answer the following questions:

(a) Which class has the minimum number of scouts?

(b) Which class has the maximum number of scouts?

(c) How many scouts are there in Class VI?

(d) Which class has exactly four times the scouts as that of Class X?

(e) What is the total number of scouts in the Classes VI to X?

31. A survey was carried out in a certain school to find out the popular school subjects among students of Classes VI to VIII. The data in this regard is displayed as pictograph given below:

Subject	**Number of Students**  = 50 students
Hindi	
English	
Mathematics	
Science	
Social Studies	

(a) Which subject is most popular among the students?

(b) How many students like Mathematics?

(c) Find the number of students who like subjects other than Mathematics and Science.

32. The following pictograph depicts the information about the areas in sqkm (to nearest hundred) of some districts of Chhattisgarh State:

District	**Area (in km²)** = 1000sqkm
Raigarh	
Rajnandgaon	
Koria	
Mahasamund	
Kabirdham	
Jashpur	

(a) What is the area of Koria district?

(b) Which two districts have the same area?

(c) How many districts have area more than 5000 square kilometres?

33. The number of bottles of cold drinks sold by a shopkeeper on six consecutive days is as follows:

Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
Number of bottles	350	200	300	250	100	150

Prepare a pictograph of the data using one symbol to represent 50 bottles.

34. The following table gives information about the circulation of newspapers (dailies) in a town in five languages.

Language	English	Hindi	Tamil	Punjabi	Gujarati
Number of newspapers	5000	8500	500	2500	1000

Prepare a pictograph of the above data, using a symbol of your choice, each representing 1000 newspapers.

35. Annual expenditure of a company in the year 2007-2008 is given below:

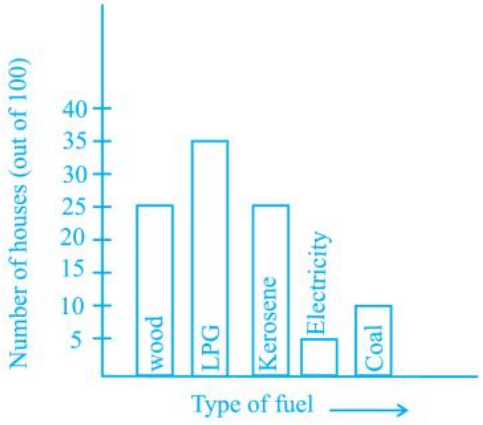
Items	**Expenditure (Rs in lakh)**
Salaries of employees	65
Advertisement	10
Purchase of machinery	85
Electricity and water	15
Transportation	25
Other expenses	30

Prepare a pictograph of the above data using an appropriate symbol to represent Rs 10 lakh.

36. The following bar graph shows the number of houses (out of 100) in a town using different types of fuels for cooking.

Read the bar graph and answer the following questions:

Scale: 1 unit length = 5 houses

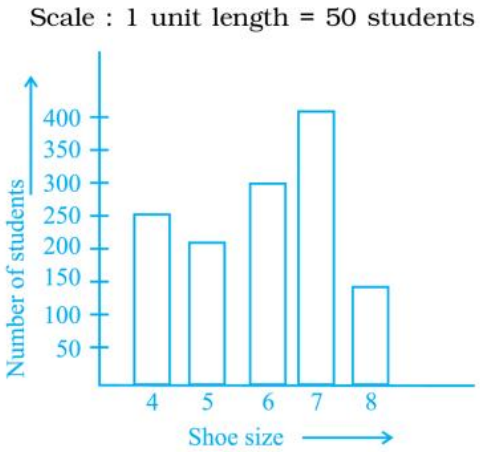


(a) Which fuel is used in maximum number of houses?

(b) How many houses are using coal as fuel?

(c) Suppose that the total number of houses in the town is 1 lakh. From the above graph estimate the number of houses using electricity.

37. The following bar graph represents the data for different sizes of shoes worn by the students in a school. Read the graph and answer the following questions.



(a) Find the number of students whose shoe sizes have been collected.

(b) What is the number of students wearing shoe size 6?

(c) What are the different sizes of the shoes worn by the students?

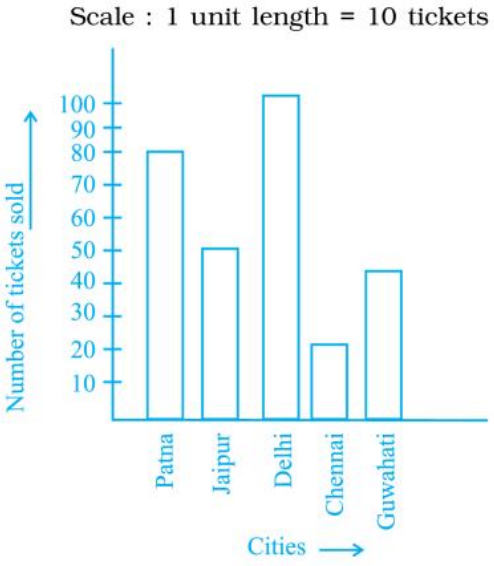
(d) Which shoe size is worn by the maximum number of students?

(e) Which shoe size is worn by minimum number of students?

(f) State whether true or false:

The total number of students wearing shoe sizes 5 and 8 is the same as the number of students wearing shoe size 6.

38. The following graph gives the information about the number of railway tickets sold for different cities on a railway ticket counter between 6.00 am to 10.00 am. Read the bar graph and answer the following questions.



(a) How many tickets were sold in all?

(b) For which city were the maximum number of tickets sold?

(c) For which city were the minimum number of tickets sold?

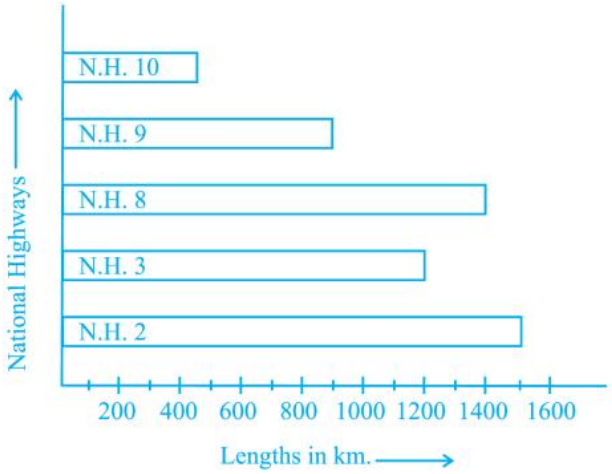
(d) Name the cities for which the number of tickets sold is more than 20.

(e) Fill in the blanks:

Number of tickets sold for Delhi and Jaipur together exceeds the total number of tickets sold for Patna and Chennai by _____.

39. The bar graph given below represents approximate length (in kilometres) of some National Highways in India. Study the bar graph and answer the following questions:

Scale : 1 unit length = 200km



(a) Which National Highway (N.H.) is the longest among the above?

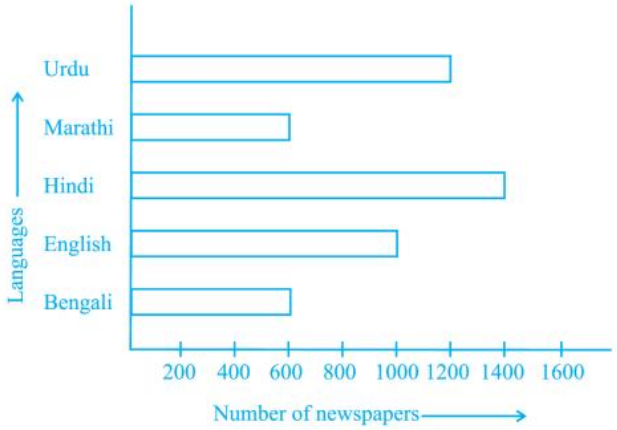
(b) Which National Highway is the shortest among the above?

(c) What is the length of National Highway 9?

(d) Length of which National Highway is about three times the National Highway10?

40. The bar graph given below represents the circulation of newspapers in different languages in a town. Study the bar graph and answer the following questions:

Scale : 1 unit length = 200 Newspapers



(a) What is the circulation of English newspaper?

(b) Name the two languages in which circulation of newspaper is the same.

(c) By how much is the circulation of newspaper in Hindi more than the newspaper in Bengali?

41. Read the bar graph given below and answer the following questions:

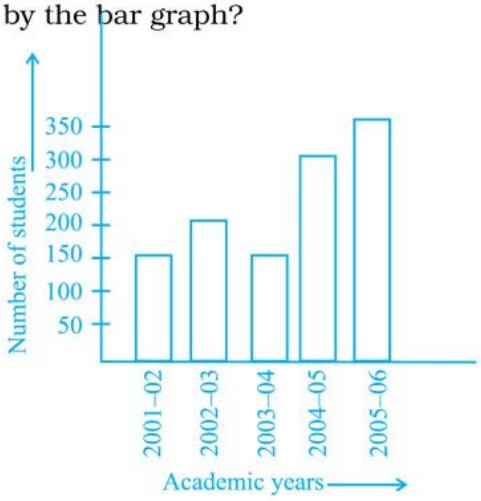
Scale : 1 unit = 50 students

(a) What information is given by the bar graph?

(b) In which year is the number of students maximum?

(c) In which year is the number of students twice as that of 2001-02?

(d) In which year did the number of students decrease as compared to previous year?



(e) In which year is the increase in number of students maximum as compared to the previous year?

42. The lengths in km (rounded to nearest hundred) of some major rivers of India is given below:

River	Length (in km)
Narmada	1300
Mahanadi	900
Brahmputra	2900
Ganga	2500
Kaveri	800
Krishna	1300

Draw a bar graph to represent the above information.

43. The number of ATMs of different banks in a city is shown below:

Bank	Number of ATMs
Syndicate Bank	5
Dena Bank	15
Indian Bank	20
State Bank of India	25
Vijaya Bank	10

Draw a bar graph to represent the above information by choosing the scale of your choice.

44. Number of mobile phone users in various age groups in a city is listed below:

Age group (in years)	Number of mobile users
1—20	25000
21—40	40000
41—50	35000
61—80	10000

Draw a bar graph to represent the above information.

45. The following table gives the number of vehicles passing through a toll gate, every hour from 8.00 am. to 1.00 pm:

Time Interval	8.00 to 9.00	9.00 to 10.00	10.00 to 11.00	11.00 to 12.00	12.00 to 1.00
Number of vehicles	250	450	300	250	150

Draw a bar graph representing the above data.

46. The following table represents income of a Gram Panchayat from different sources in a particular year:

Sources	**Income (in Rs.)**
Income from local taxes	75000
Funds received from government	150000
Donations	25000
Income from other resources	50000

Draw a bar graph to represent the above information.

47. The following table gives the data of number of schools (stage-wise) of a country in the year 2002.

Stage	**Number of schools (in thousands)**
Primary	80
Upper Primary	55
Secondary	30
Higher Secondary	20

Draw a bar graph to represent the above data:

48. Home appliances sold by a shop in one month are given as below:

Home appliance	Number of home appliances
Refrigerator	75
Television	45
Washing Machine	30
Cooler	60
DVD Player	30

Draw a bar graph to represent the above information.

49. In a botanical garden, the number of different types of plants are found as follows:

Type of the plant	Number of plants
Herb	50
Shrub	60
Creeper	20
Climber	45
Tree	95

Draw a bar graph to represent the above information and answer the following questions:

(a) Which type of plant is maximum in number in the garden?

(b) Which type of plant is minimum in number in the garden?

50. Prepare a bar graph of the data given in question 28.

51. Refer to question 39. Prepare a pictograph of the data by taking a suitable symbol to represent 200 kilometers.

52. Prepare a pictograph of the information given in question 38.

53. Refer to question 23. Prepare a bar graph of the data.

54. The following table shows the area of the land on which different crops were grown.

Crop	Area of land (in million hectares)
Rice	50
Wheat	30
Pulses	20
Sugarcane	25
Cotton	15

Prepare a pictograph by choosing a suitable symbol to represent 10 million hectares.

55. Refer to question 54. Prepare a bar graph of the data.

Rough Work

11.4.2018