

Data Handling

IMPORTANT POINTS

The word statistics is used for two different meanings.

In the singular sense, it is used as a science or a subject which deals with the collection, classification, tabulation, representation and interpretation of the data.

In the plural sense, it is sometimes used for the numerical facts collected in the form of numbers.

If we have collected information about the heights of class 6 children from ten different schools of Delhi, then this information in the form of numbers is called statistics.

1. Data : Each number, collected for giving a required information, is called the data.

2. Bar Graph (Column Graph) : Bar graph is the simplest form of presenting a data. It consists of bars (usually vertical), all of same widths. The heights of these bars are drawn according to the number they represent.

3. Pie Graph : When the given data is represented by the sectors of a circle, the resulting diagram (graph) obtained is called a pie-graph or a pie-chart.

EXERCISE 33 (A)

Question 1.

Marks scored by 30 students of class VI are as given below :

38, 46, 33, 45, 63, 53, 40, 85, 52, 75, 60, 73, 62, 22, 69, 43, 45, 33, 47, 41, 29, 43, 37, 49, 83, 44, 55, 22, 35 and 45. State:

(i) the highest marks scored.

(ii) the lowest marks scored.

(iii) the range of marks.

Solution:

(i) Highest marks scored = 85 .

(ii) Lowest marks scored = 22

(iii) Range of marks = $85 - 22 = 63$

Question 2.

For the following raw data, form a discrete frequency distribution :

30,32,32, 28,34,34,32,30,30,32,32,34,30,32,32. 28,32,30, 28,30,32,32,30,28 and 30.

Solution:

The required frequency table will be as shown below :

Marks	Tally-marks	Frequency
28		4
30		8
32		10
34		3
Total		25

Question 3.

Define :

(i) data

(ii) frequency of an observation.

Solution:

(i) **Data** : The word data means information in the form of numerical figures.

(ii) **Frequency of an observation** : The number of times a particular observation occurs is called its frequency.

Question 4.

Rearrange the following raw data in descending order :

5.3, 5.2, 5.1, 5.7, 5.6, 6.0, 5.5, 5.9, 5.8, 6.1, 5.5, 5.8, 5.7, 5.9 and 5.4. Then write the :

(i) highest value

(ii) lowest value

(iii) range of values

Solution:

Writing these numbers in descending order we get:

6.1, 6.0, 5.9, 5.9, 5.8, 5.8, 5.7, 5.7, 5.6, 5.5, 5.5, 5.4, 5.3, 5.2, 5.1

(i) Highest value = 6.1

(ii) Lowest value = 5.1

(iii) Range of values = Highest value – lowest value = $6.1 - 5.1 = 1.0$

Question 5.

Represent the following data in the form of a frequency distribution :

52, 56, 72, 68, 52, 68, 52, 68, 52, 60, 56, 72, 56, 60, 64, 56, 48, 48, 64 and 64.

Solution:

The required frequency table will be as shown below :

Marks	Tally-marks	Frequency
48		2
52		4
56		4
60		2
64		3
68		3
72		2
Total		20

Question 6.

In a study of number of accidents per day, the observations for 30 days were obtained as follows :

6	3	5	6	4	3	2	5	4	2
4	0	5	3	6	1	5	5	2	6
2	1	2	2	0	5	4	6	1	6

Construct a suitable frequency distribution table.

Solution:

The required frequency table will be as shown below :

No. of accidents	Tally marks	Frequency
0		2
1		3
2		6
3		3
4		4
5		6
6		6
Total		30

Question 7.

The following data represents the weekly wages (in ₹) of 15 workers in a factory : 900, 850, 800, 850, 800, 750, 950, 900, 950, 800, 750, 900, 750, 800 and 850.

Prepare a frequency distribution table. Now find,

(i) how many workers are getting less than ₹850 per week?

(ii) how many workers are getting more than ₹800 per week?

Solution:

The required frequency table will be as shown below :

Weekly wages in (₹)	Tally-marks	Frequency
750		3
800		4
850		3
900		3
950		2
Total no. of workers		15

(i) Workers getting less than ₹850 per week

No. of workers getting ₹750 = 3 workers

No. of workers getting ₹800 = 4 works

∴ Workers getting less than ₹ 850 = 4 + 3 = 7 workers

(ii) Workers are getting more than ₹800 per week

No. of workers getting ₹850 = 3

No. of workers getting ₹900 = 3

No. of workers getting ₹950 = 2

∴ Workers getting more than ₹800 = 3 + 3 + 2 = 8 workers

Question 8.

Using the data, given below, construct a frequency distribution table : 9, 17, 12, 20, 9, 18, 25, 17, 19, 9, 12, 9, 12, 18, 17, 19, 20, 25, 9 and 12. Now answer the following :

(i) How many numbers are less than 19?

(ii) How many numbers are more than 20?

(iii) Which of the numbers, given above, is occurring most frequently?

Solution:

The required frequency table will be as shown below :

Marks	Tally marks	Frequency
9		5
12		4
17		3
18		2
19		2
20		2
25		2
Total		20

(i) There are 14 numbers are less than 19.

(ii) There are 2 numbers more than 20.

(iii) 9 is occurring most frequently i.e. 5 times.

Question 9.

Using the following data, construct a frequency distribution table : 46, 44, 42, 54, 52, 60, 50, 58, 56, 62, 50, 56, 54, 58 and 48.

Now answer the following :

- (i) What is the range of the numbers?
- (ii) How many numbers are greater than 50?
- (iii) How many numbers are between 40 and 50?

Solution:

Marks	Tally marks	Frequency
42		1
44		1
46		1
48		1
50		2
52		1
54		2
56		2
58		2
60		1
62		1
Total		15

(i) Range of numbers = Highest number – Lowest number = $62 - 42 = 20$

(ii) 9 numbers are greater than 50

(iii) 6 numbers are between 40 and 50 Ans.

EXERCISE 33 (B)**Question 1.**

The sale of vehicles, in a particular city, during the first six months of the year 2016 is shown below :

Month	Jan	Feb	March	April	May	June
Number of vehicles sold	3000	2500	4000	1000	1500	3500

vehicles sold

Draw a pictograph to represent the above data.

Solution:

18.

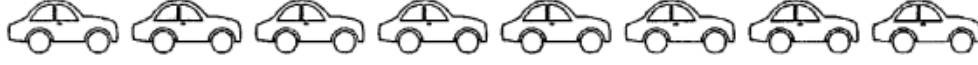
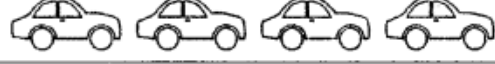
Month	Number of Vehicles sold
Jan	     
Feb	    
March	       
April	 
May	  
June	      

We have taken,  = 500 vehicles sold

Question 2.

The following pictograph shows the number of cars sold by four dealers A, B, C and D

in a city. Scale :  = 50 cars.

Dealer	Number of cars
A	
B	
C	
D	

Using the pictograph, drawn above, answer the following questions :

- How many more cars has dealer A sold as compared to dealer D ?
- What is the total number of cars sold by all the dealers ?

Solution:

(i) Cars sold by dealer A = $6 \times 50 = 300$

Cars sold by dealer D = $4 \times 50 = 200$,

$\therefore$ A sold more cars than dealer D by = $300 - 200 = 100$

$\therefore$ A has sold 100 more cars than dealer D.

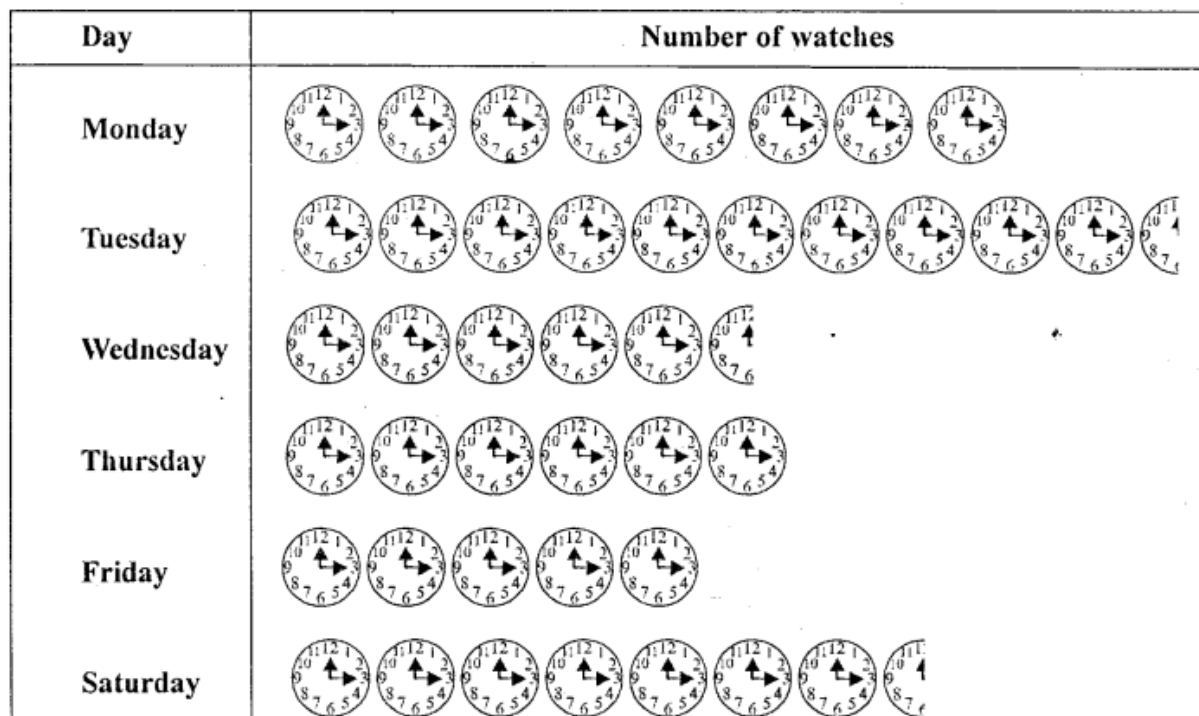
(ii) No. of cars = 23

Scale = 50 cars

$\therefore$ Total no. of cars = $23 \times 50 = 1150$ cars Ans.

Question 3.

The following pictograph shows the number of watches manufactured by a factory, in a particular weeks.



Scale :  = 100 watches

Find

- on which day were the least number of watches manufactured ?
- total number of watches manufactured in the whole week ?

Solution:

- On Friday least no. of watches manufactured by = $100 \times 5 = 500$ watches
- Total no. of watches manufactured in the whole week = $100 \times 42.5 = 4250$ watches

Question 4.

The number or animals in five villages are as follows :

Village	A	B	C	D	E
No. of animals	160	240	180	80	120

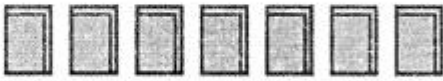
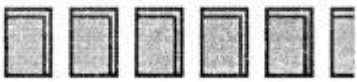
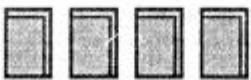
Prepare a pictograph of these animals using one symbol to represent 20 animals.

Solution:

Village	Number of animals
A	
B	
C	
D	
E	

Question 5.

The following pictograph shows different subject books which are kept in a school library.

Subject	Number of books
Hindi	
English	
Math	
Science	
History	

Taking symbol of one book = 50 books, find :

- how many History books are there in the library ?
- how many Science books are there in the library ?
- which books are maximum in number ?

Solution:

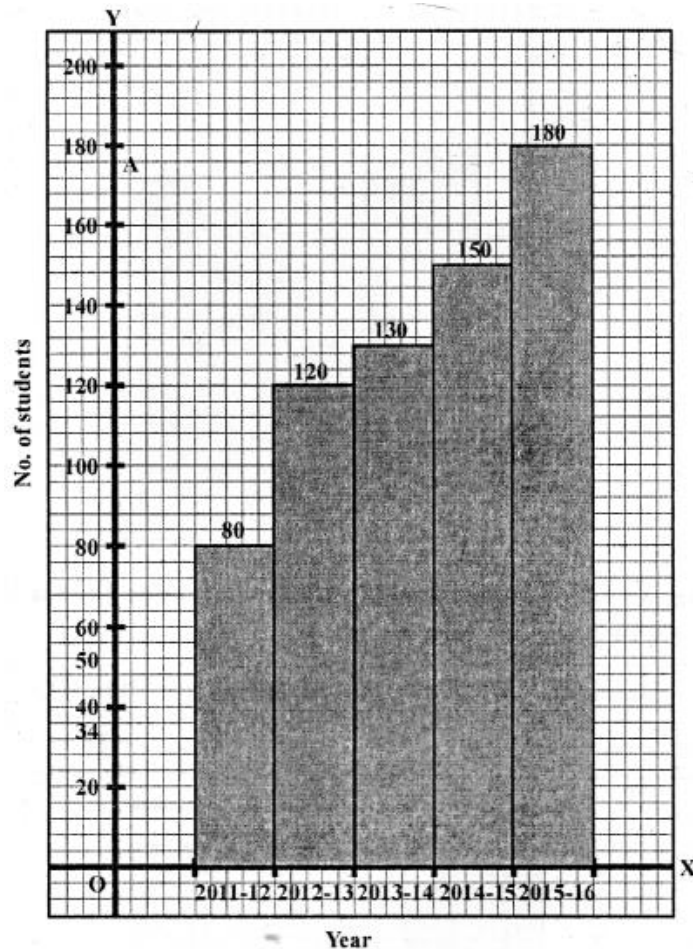
- (i) There are $50 \times 4 = 200$ History books in the library.
- (ii) There are $50 \times 5.5 = 275$ Science books in the library.
- (iii) English books are maximum in number = $500 \times 9 = 450$ books.

EXERCISE 33 (C)**Question 1.**

The following table gives the number of students in class VI in a school during academic years 2011-2012 to 2015-2016.

Academic years	2011-12	2012-13	2013-2014	2014-2015	2015-16
No. of students	80	120	130	150	180

Represent the above data by a bar graph.

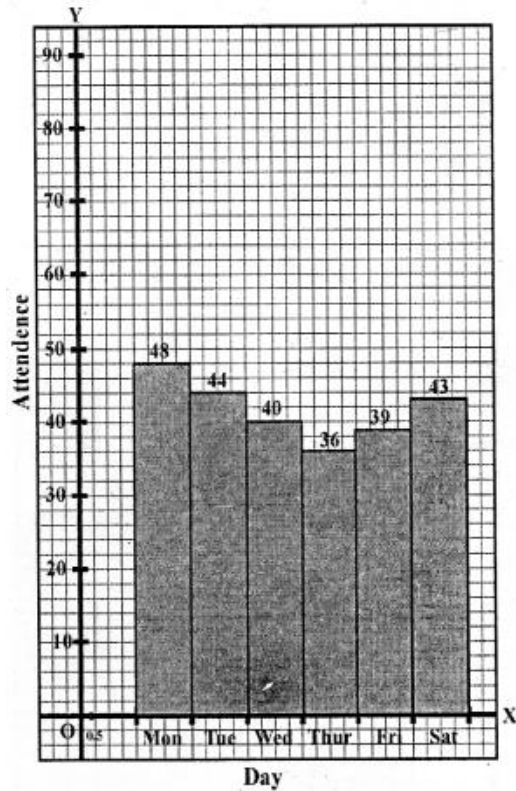
Solution:**Question 2.**

The attendance of a particular class for the six days of a week are as given below

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Attendance	48	44	40	36	39	43

Draw a suitable graph.

Solution:

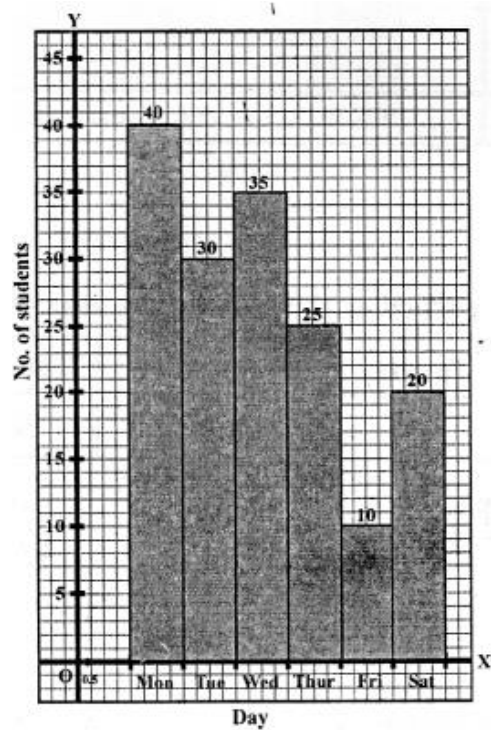


Question 3.

The total number of students present in class VI B, for the six days in a week were as given below. Draw a suitable bar graph.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
No. of student present	40	30	35	25	10	20

Solution:



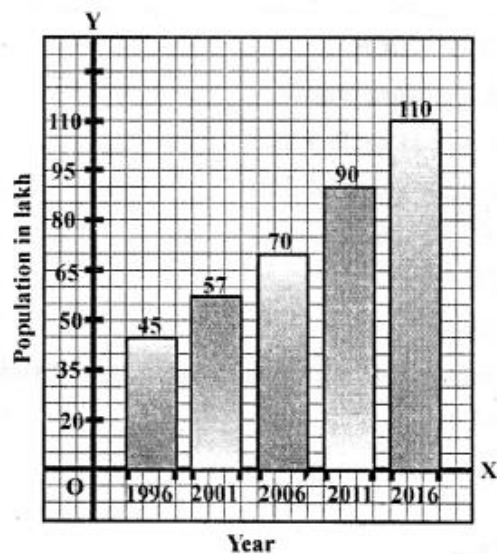
Question 4.

The following table shows the population of a particular city at different years :

Year	1996	2001	2006	2011	2016
Population in Lakh	45	57	70	90	110

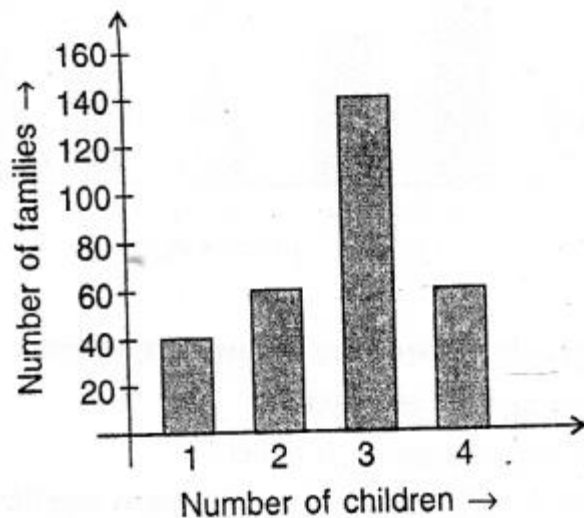
Represent the above information with the help of a suitable bar graph.

Solution:



Question 5.

In a survey of 300 families of a colony, the number of children in each family was recorded and the data has been represented by the bar graph, given below :



Read the graph carefully and answer the following questions :

- (i) How many families have 2 children each ?
- (ii) How many families have no child ?
- (iii) What percentage of families have 4 children ?

Solution:

(i) 60 families have 2 children each.

(ii) Zero

(iii) The percentage of families having 4 children = $\frac{60}{300} \times 100 = 20\%$

Question 6.

Use the data, given in the following table, to draw' a bar graph

A	B	C	D	E	F
250	300	225	350	275	325

Out of A, B, C, D, E and F

- (i) Which has the maximum value.
- (ii) Which is greater A + D or B + E.

Solution:

(i) D has the maximum value of 350

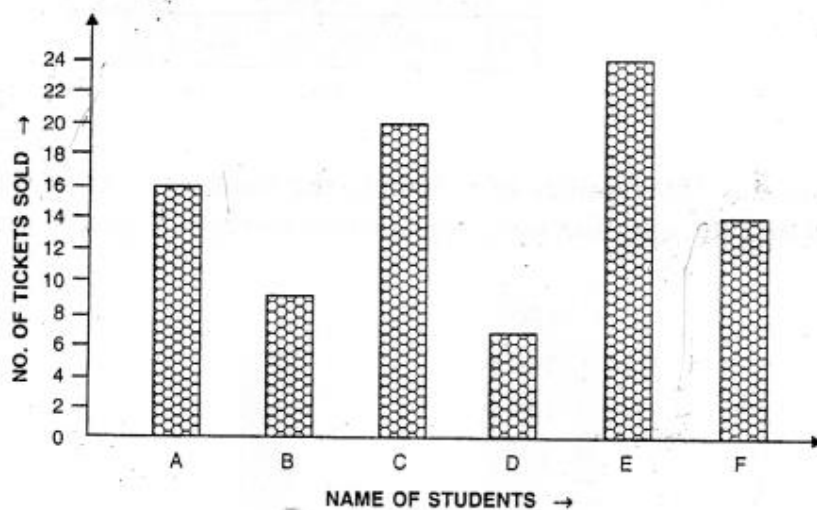
(ii) $A + D = 250 + 350 = 600$

$B + E = 300 + 275 = 575$

Hence A + D is greater.

Question 7.

The bar graph drawn below shows the number of tickets sold during a fair by 6 students A, B, C, D, E and F.



Using the Bar graph, answer the following questions :

- Who sold the least number of tickets?
- Who sold the maximum number of tickets ?
- How many tickets were sold by A, B and C taken together ?
- How many tickets were sold by D, E and F taken together ?
- What is the average number of tickets sold per student ?

Solution:

- Student D sold the least number of tickets, *i.e.* 7 tickets.
- Student E sold the maximum number of tickets *i.e.* 24 tickets
- The tickets sold by A, B and C taken together

$$= \text{Tickets sold by A} + \text{Tickets sold by B} + \text{Tickets sold by C}$$

$$= 16 + 9 + 20 = 45 \text{ tickets}$$
- The tickets sold by D, E and F taken together

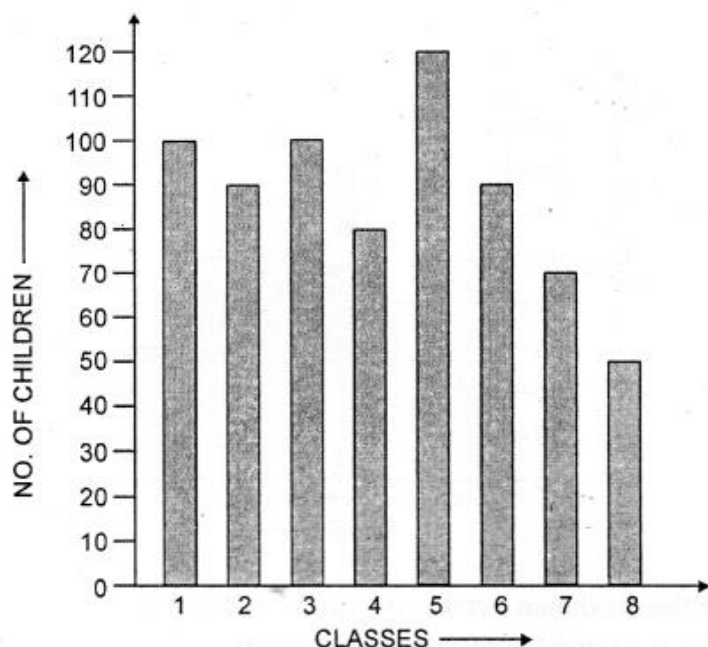
$$= \text{Tickets sold by D} + \text{Tickets sold by E} + \text{Tickets sold by F}$$

$$= 7 + 24 + 14 = 45 \text{ tickets}$$

$$\begin{aligned}
 \text{(v) Average Number of tickets sold per student} &= \frac{\text{Tickets sold by A} + \text{B} + \text{C} + \text{D} + \text{E} + \text{F}}{6} \\
 &= \frac{16+9+20+7+24+14}{6} \\
 &= \frac{90}{6} = 15 \text{ tickets}
 \end{aligned}$$

Question 8.

The following bar graph shows the number of children, in various classes, in a school in Delhi.



Using the given bar graph, find :

- the number of children in each class.
- the total number of children from Class 6 to Class 8.
- how many more children there are in Class 5 compared to Class 6 ?
- the total number of children from Class 1 to Class 8.
- the average number of children in a class.

Solution:

(i) In, Class 1 = 100, Class 2 = 90, Class 3 = 100, Class 4 = 80,
Class 5 = 120, Class 6 = 90, Class 7 = 70, Class 8 = 50

(ii) Class 6 = 90, Class 7 = 70, Class 8 = 50, Total number = 210

(iii) Number of student in class 5 = 120, Number of student in class 6 = 90
More children is class 5 = $(120 - 90) = 30$

(iv) Total number of children class 1 to 8 = $100 + 90 + 100 + 80 + 120 + 90 + 70 + 50 = 700$

(v) Average number of children in each class = $\frac{\text{Total number of children}}{\text{Number of classes}} = \frac{700}{8} = 87.5$

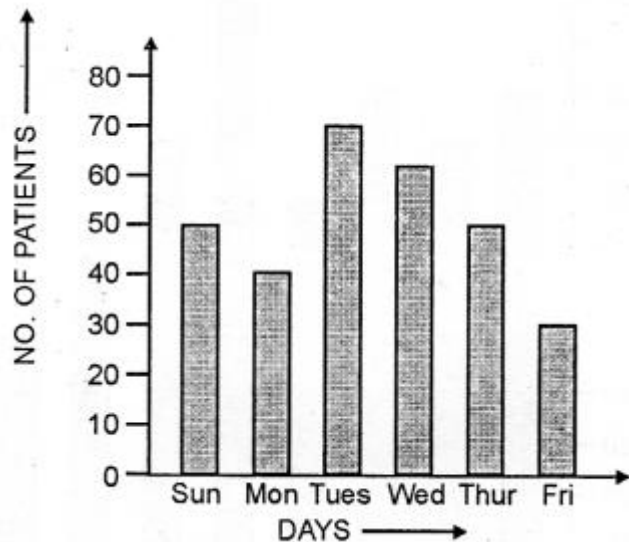
Question 9.

The column graph, given above , shows the number of patients, examined by Dr. V.K. Bansal, on different days of a particular week.

Use the graph to answer the following:

- On which day were the maximum number of patients examined ?
- On which day were the least number of patients examined ?
- On which days were equal number of patients examined ?
- What is the total number of patients examined in the week ?

Solution:



- (i) Tuesday were the maximum number of patients examined.
- (ii) Friday were the least number of patients examined.
- (iii) Sunday and Thursday were equal number of patient examined.
- (iv) Total number of patients examined in the week .
 $= 50 + 40 + 70 + 60 + 50 + 30 = 300$

Question 10.

A student spends his pocket money on various items, as given below :

Books : Rs. 380, Postage : Rs. 30, Cosmetics : Rs. 240, Stationary : Rs. 220 and Entertainment : Rs. 120.

Draw a bar graph to represent his expenses.

Solution:

Amount spent on

Books = Rs. 380

Postage = Rs. 30

Cosmetics = Rs. 240

Stationary = Rs. 220

Entertainment = Rs. 120

The bar graph of the above given data is below.

