Chapter : 3

Data Handling

SOLUTIONS:

EXERCISE 3.1

Q1. Find the range of height of any ten students of your class.

Ans. We can't find range now because we have to measure the height of smallest students and tallest students.

* Range – The difference between the highest and lowest observation value is the range of the given data.

Q2. Organise the following marks in a class assessment in a tabular form.

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

(i) Which number is the highest?
(ii) Which number is the lowest?
(iii) What is the range of the data?
(iv) Find the arithmetic mean?

Frequency Distribution Table

Mark	Tally mark	Frequency
1	I	1
2	II	2
3	I	1
4	III	3
5	~~IIII~~	5
6	IIII	4
7	II	2
8	I	1
9	I	1

Ans- (i) Highest mark = 9

(ii) Lowest mark = 1

(iii) Range = 9-1=8

(v) Sum of all data = 1+2+2+3+4+4+4+5+5+5+5+5+6+6+6+6+7+7+8+9
= 100

Total no. of observations = 20

⟶ Arithmetic mean = $\frac{Sum\ of\ all\ observations}{No.\ \ of\ observations}$

∴ Arithmetic mean = $\frac{100}{20}$ = 50

Q3. Find the mean of the first five whole numbers.

Ans – Sum of five whole number = 0+1+2+3+4

= 10

No. of observation = 5

∴ Mean = $\frac{10}{5}$

= 2

Q4. A cricketer scores the following runs in eight innings : 58, 76,40, 35, 46, 45, 0, 100

Find the mean score.

Ans – Sum of the runs = 58+76+40+35+46+45+0+100

= 400.

No. of observation = 8

∴ Mean = $\frac{400}{8}$

= 50.

Q5. Following table shows the points of each player scored in four games.

Player	Game	Game	Game	Game	Total Point	No.of game Play
A	14	16	10	10	50	4
B	0	8	6	4	18	4
C	8	11	Did not play	13	32	4

Now answer the following Question:

(i) Find the mean to determine A's average number of points scored per game

Ans – A's average no. of point = $\frac{50}{4}$

= 12.5

(ii) To find the mean number of points per game for C, would you divide the total points by 3 or 4? Why?

Ans – To find the mean number of C, we have to divide by 3 as C played only 3 games.

(iii) B played in all the four games. How would you find the mean?

Ans – To find mean no. of B, we have to divide the total points scored by 4 as they played all 4 games.

∴ Mean for B =$\frac{18}{4}$

= 4.5

(iv) Who is the best Performer?

Ans. Now, Average for C = $\frac{32}{3}$

= 10.66

The average mean 12.5 which is greater than 4.5 and 10.66

∴ The best performer is A whose mean score is 12.5

Q6. The marks (out of 100) obtained by a group of students in a science test are 85, 76, 90, 85, 39, 48, 56, 95, 81 and 75. Find the

(i) Highest and the lowest marks obtained by the students
Highest marks = 95
Lowest marks = 39

(ii) Range of the marks obtained

Range = Highest marks – lowest marks

= 95-39

= 56

(iii) Mean marks obtained by the group

Sum = 85+76+90+85+39+48+56+95+91+75

= 730

No. of observations = 10

∴ Mean = $\frac{730}{10}$

= 73

Q7. The enrolment in a school during six consecutive years was follows.

1555, 1670, 1750, 2013, 2540, 2820

Find the mean enrolment of the school for this period.

Ans. Sum of the enrolment for six years

= 1555+1670+1750+2013+2540+2860

= 12348

No. of years = 6

∴ Mean = $\frac{12348}{6} \quad \frac{2056}{1}$

= 2056

Q8. The rainfall (in mm) in a city on 7 days of a certain week was recorded as follows:

Day	Mon	Tue	Wed	Thurs	Fri	Sat	Sun
Rainfall (in mm)	0.0	12.2	2.1	0.0	20.5	5.5	1.0

(i) Find the range of the rainfall in the above data

Highest = 20.5

Lowest = 0.0

∴ Range = 20.5 - 0.0

= 20.5

(ii) Find the mean rainfall for the week

Sum = 0.0+12.2+2.1+0.0+20.5+5.5+1.0

No. of observation =7

∴ Mean = $\frac{41.3}{7}$

= 5.9

(iii) On how many days was the rainfall less than the mean rainfall

Here, Mean = 5.9

0.0, 2.1, 0.0, 5.5, 1.0, are all less than the mean rainfall

∴ 5 days was the rainfall less than the mean rainfall

Q9. The heights of 10 girls were measured in cm and the results are as follows.

135, 150, 139, 128, 151, 132, 146, 149, 143, 141

(i) What is the height of the tallest girl?

Ans. The height of the tallest girls is 151cm

(ii) What is the height of the shortest girl?

Ans. The height of the shortest girls is 128cm

(iii) What is the range of the data?

Ans. Range = tallest – shortest

= (151 - 128)cm

= 23cm.

(iv) What is the mean height of the girls?

Ans.

Sum = 135+150+139+128+151+132+146+149+143+141

= 1414

No. of girls =10

∴ Mean = $\frac{1414}{10}$

= 141.4 cm

(v) How many girls have height more than the mean height.

Here, Mean= 141.4 cm

150, 151, 146, 149, 143 are all greater than 141.4

So, 5 girls have heights more than the mean height.

EXERCISE 3.2

Q1. The scores in mathematics test (out of 25) of 15 student is as follows

19, 25, 23, 20, 9, 20, 15, 10, 5, 16, 25, 20, 24, 12, 20.

Find the mode and median of this data. Are they same?

Ans. The ascending order of given marks of 15 student are 5, 9, 10, 12, 15, 16, 19, 20, 20, 20, 20, 23, 24, 25, 25.

Mode of this data is 20 because it occurs more frequently than other observation.

∴ Mode =20

Here,

No. of students = 15

n = 15 (odd no.)

Then,

middle observation = $\frac{n+1}{2} = \frac{15+1}{2}$

$= \frac{6}{2}$

$= 8^{th}$ observation.

∴ Median = 20 [counting upto 8^{th} term from beginning]

Yes, the mode and median of this data have same number. i.e 20.

Q2. The runs scored in a cricket match by 11 players is as follows.

6, 15, 120, 50, 100, 80, 10, 15, 8, 10, 15

Find the mean, mode and median of this data. Are the three same?

Ans. Ascending order of runs scored by 11 player

6, 8, 10, 10,15, 15, 15, 50, 80, 100, 120

Sum of all runs = 6+8+10+10+15+15+15+50+80+100+120

= 429

∴ Mean =$\frac{429}{11}$

= 39

Since, observation 15 is repeated 3 times which is highest frequency

∴ Mode =15

Since, Total no. of observation = n = 11 (odd no.)

So, The middle observation = $\frac{n+1}{2} = \frac{11+1}{2} = \frac{12}{2}$

$= 6^{th}$ observation

∴ Median = 15 (counting upto 6^{th} term from beginning)

No, Mean, mode and median are not same

Q3. The weights (in kg) of 15 student of a class are :

38, 42, 35, 37, 45, 50, 32, 43, 40, 36, 38, 43, 38, 47

(i) Find the mode and median of this data
(ii) Is there more than one mode.

Ans.

(i) Ascending order of weigh of 15 student (in kg)

32, 35, 36, 37, 38, 38, 38, 40, 42, 43, 43, 43, 45, 47, 50

Since, observation 38 and 43 are repeated 3 times

i.e highest frequency of the given data.

∴ Mode of given data are 38 and 43

Total no. of observation = n = 15(odd no.)

Then, middle observation = $\frac{n+1}{2} = \frac{15+1}{2} = \frac{16}{2}$

$= 8^{th}$ observation

∴ Median = 40 (Counting upto 8^{th} terms from beginning)

(ii) Yes, there are more than one mode.

Mode are 38 and 43.

Q4. Find the mode and median of the data.

13, 16, 12, 14, 19, 12, 14, 13, 14

Ans. Ascending order of the given data 12, 12, 13, 13, 14, 14, 14, 16, 19

Since, observation 14 is repeated 3 times which is highest frequency

∴ Mode = 14

Total no. of observation = n = 9 (odd.no.)

Then the middle observation = $\frac{n+1}{2}$

$= \frac{9+1}{2} = \frac{10}{2}$

$= 5^{th}$ observation

∴ Median = 14 (counting upto 5^{th} term from beginning)

Q5. Tell whether the statement is true or false:

(i) The mode is always one of the number in a data

Ans. True

(ii) The mean is one of the number in a data

Ans. False

(iii) The median is always one of the number in a data

Ans. True

(iv) The data 6,4,3,8,9,12,13,9 has mean 9

Ans. False

Here, No. of ovservation =8

Sum of data = 6+4+3+8+9+12+13+9

= 64

∴ Mean = $\frac{64}{8}$

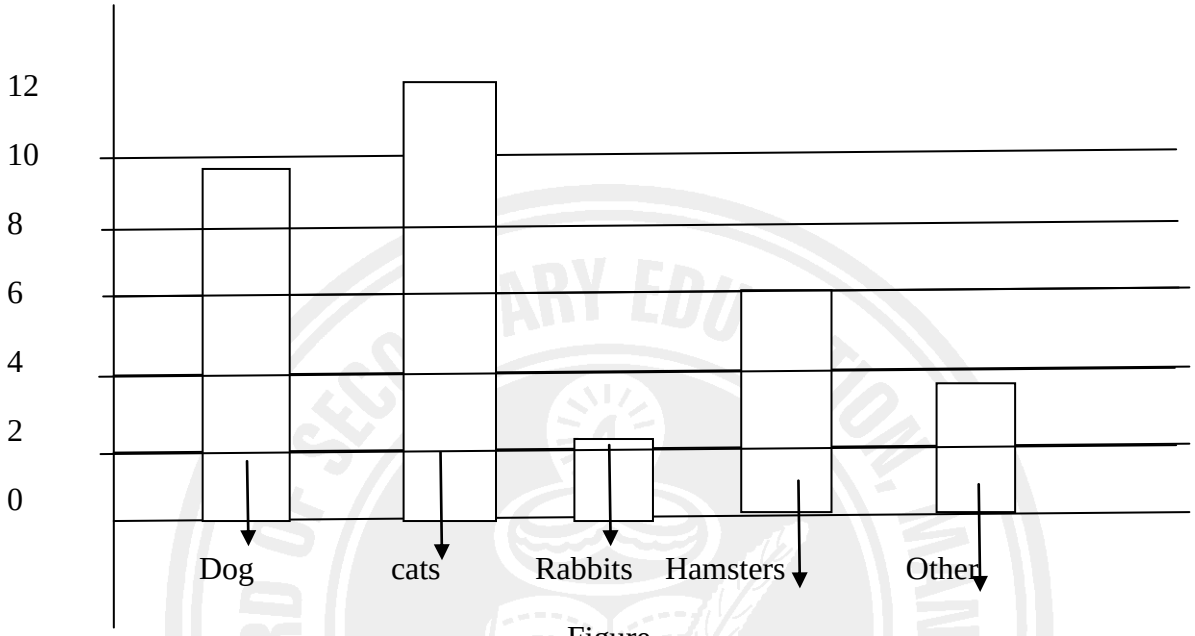
Mean is 8 not 9.

EXERCISE 3.3

Q1. Use the bar (fig) to answer the following question

(a) Which is the most popular pet?

(b) How many student have dog as a pet?



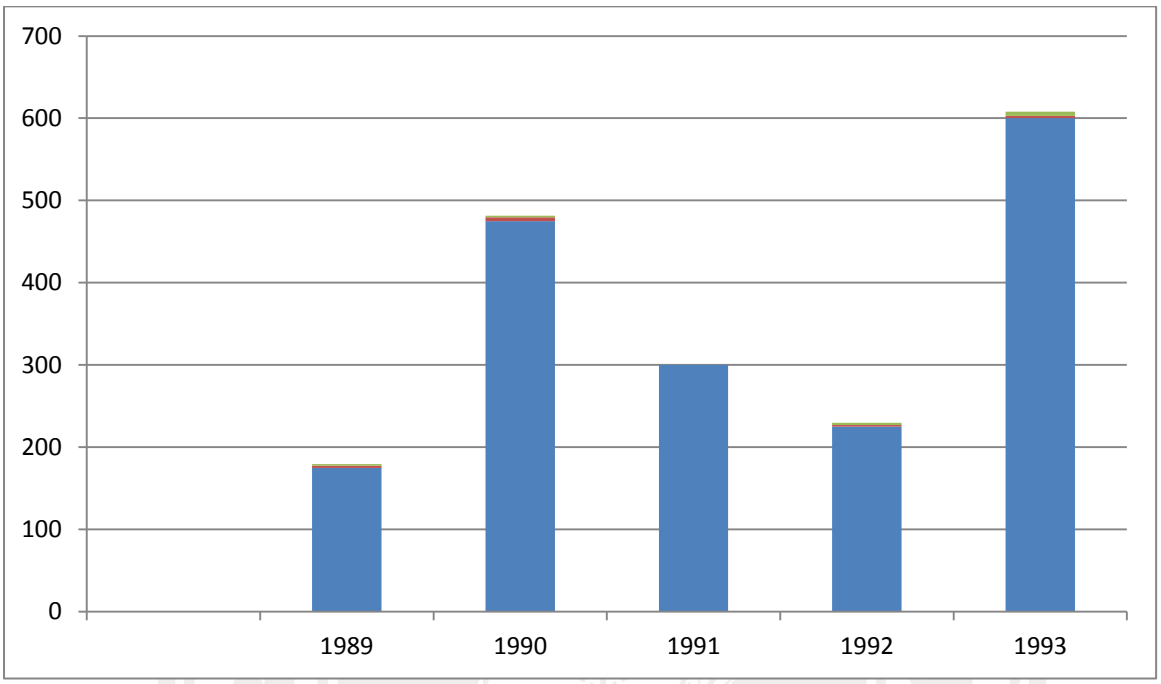
Figure

(a) Since the graph representing cats is the tallest, cat is the most popular pet.

(b) Number of student having dog as pet are 8.

Q2. Read the bar graph in Figure which shows the number of books sold by a bookstore during five consecutive years and answer the following questions.

No. of book



(i) About how many books were sold in 1989? 1990? 1992?

Ans. In 1989, 175 books were sold

In 1990, 475 books were sold

In 1992, 225 books were sold

(ii) In which years were about 475 books sold ? About 225 books sold.

Ans. From the graph, In 1990, 475 books were sold

In 1992, 225 books were sold

(iii) In which years were fewer than 250 books sold

Ans. In the year 1989, 1992, books fewer than 250 were sold.

(iv) Can you explain how many you would estimate the number of books sold in 1989.

Ans. From the graph, we can conclude that no. of books sold in year 1989 is 1cm and $\frac{3th}{4}$ part of 1cm.

∵ Total no. of books sold in 1989 = 1cm + $\frac{3}{4}$ of 1 cm

$= 100 + \frac{3}{\cancel{4}} \times \cancel{100}^{25}$

= 100+75

= 175

∴ In 1989 about 175 books were sold.

Q3. Number of children in six different classes are given below. Represent the data on a bar graph.

Class	Fifth	Sixth	Seventh	Eight	Ninth	Tenth
No.of children	135	120	95	100	90	80

(a) How would choose a scale?

Ans. We will choose a scale as 1 cm = unit = 10 children

(In graph paper 10 small square = 1cm)

(b) Answer the following question.

(i) Which class has the maximum number of children? And the minimum?

Ans. In the graph, class Fifth has the maximum number of children, 135 children and class Tenth has minimum children, 80 children.

(ii) Find the ratio of the student of class sixth to the students of class eight.

Ans. No. of student in class sixth =120

No. of student in class eight = 100

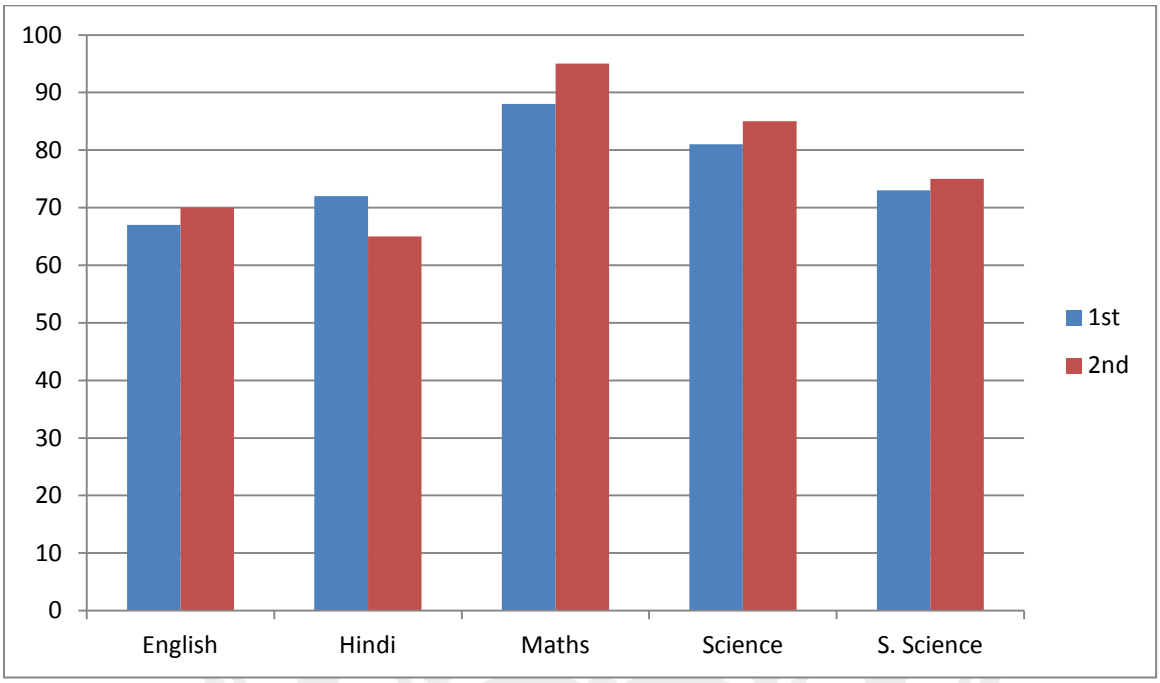
∴ Ratio of student in class sixth to class eight = $\frac{\cancel{120}^{6}}{\cancel{100}_{5}}$

$= \frac{6}{5}$

= 6.5

Q4. The performance of a student in 1st term and 2nd term is given. Draw a double bar graph choosing appropriate scale and answer the following.

Subject	English	Hindi	Maths	Science	S. Science
1st Term(M.M 100)	67	72	88	81	73
2nd Term(M.M 100)	70	65	95	85	75



(i) In which subject, has the child improved his performance the most?

Ans. In Maths, the child improve his performance the most.

1st Term – 88 marks

2nd Term – 95 marks

7 marks has increased.

(ii) In which subject is the improvement the least?

Ans. In social science the improvement the least.

1st Term – 73 marks

2nd Term – 75 marks

Only 2 marks has increased.

(iii) Has the performance gone down in any subject?

Ans. Yes, the performance has gone down in Hindi

1st Term – 72 marks

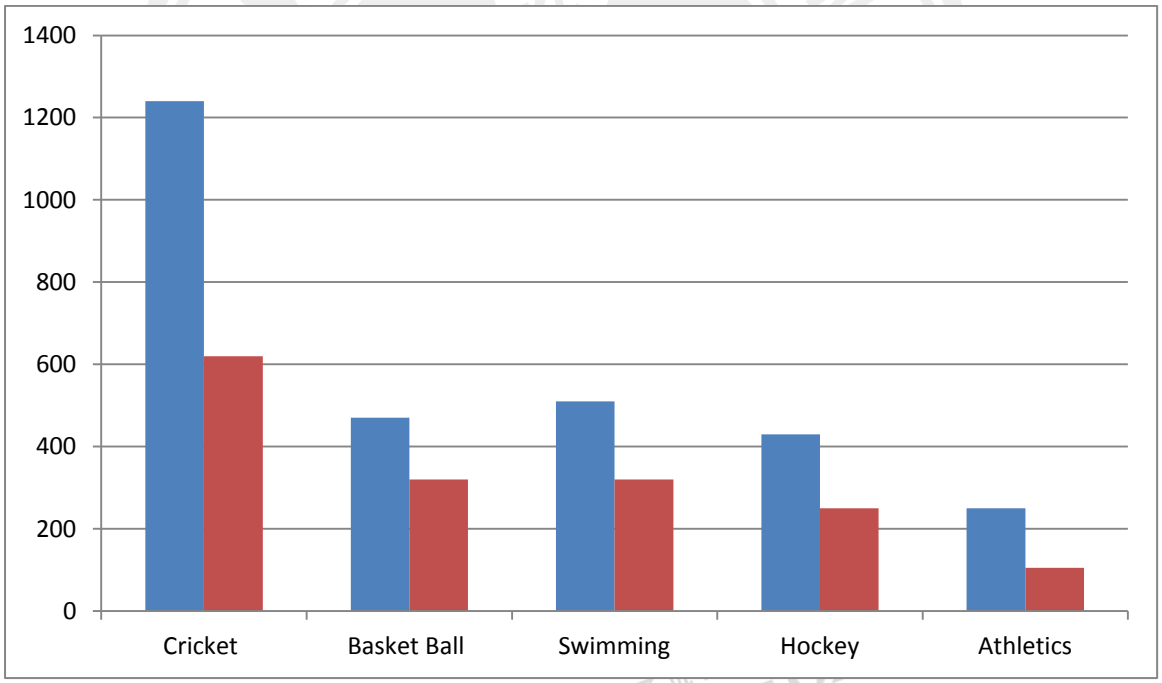
2nd Term – 65 marks

7 marks has gone down.

Q5. Consider this data collected from a survey of a colony.

Favourite Sport	Cricket	Basket Ball	Swimming	Hockey	Athletics
Watching	1240	470	510	430	250
Participating	620	320	320	250	105

(i) Draw a double bar graph choosing ana appropriate scale. What do you infer from the bar graph.



From the bar graph we infer that people are more preferred to watch rather than participating

(ii) Which sport is most popular

Ans. Cricket

(iii) Which is more preferred, watching or participating in sports?

Ans. Watching

Q6. Take the data giving the minimum and the maximum temperature of various cities given in the beginning of this chapter (Table 3.1). Plot a double bar graph using the data and answer the following.

Temperature of the cities as on 20.6.2006

City	Max	Min
Ahmedabad	38°C	29°C
Amritsar	37°C	26°C
Bangalore	28°C	21°C
Chennai	36°C	27°C
Delhi	38°C	28°C
Jaipur	39°C	29°C
Jammu	41°C	26°C
Mumbai	32°C	27°C

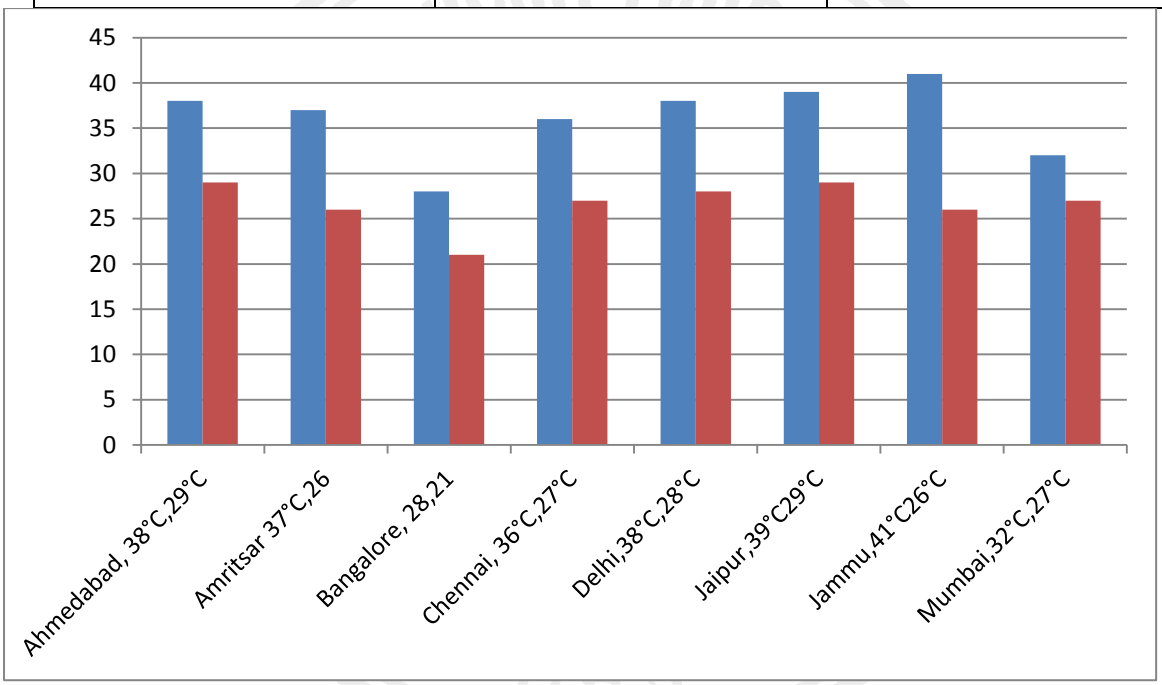


Fig. Double bar graph.

(i) Which city has the largest different in the minimum and maximum temperature on the given date?

Ans. Since, the bar graph has maximum gap in Jammu city, there is large difference in minimum and maximum temperature.

(ii) Which is the hottest city and which is the coldest city?

Ans. Jammu city is the hottest (41°C)

Bangalore city is the coldest (28°C)

(iii) Name two city where maximum temperature of one was less than the minimum temperature of the other.

Ans. Bangalore and Ahmedabad i.e maximum temperature of Bangalore is 28°C but minimum temperature of Ahmedabad is 29°C.

(iv) Name the city which has the least difference between its minimum and the maximum temperature.

Ans. Mumbai has least difference in maximum and minimum temperature i.e the gap between the bars is very narrow.

EXERCISE 3.4

1. Tell whether the following is certain to happen impossible, can happen but not certain.

(i) You are older today than yesterday

Ans. Certain to happen

(ii) A tossed coin will land head up.

Ans. Can happen but not certain.

(iii) A die when tossed shall land up with 8 on top

Ans. Impossible.

(iv) The next traffic light seen will be given.

Ans. Can happen but not certain

(v) Tomorrow will be cloudy day.

Ans. Can happen but not certain.

Q2. There are 6 marbles in a box with numbers from 1 to 6 marked on each of them.

(i) What is the probability of drawing a marble with numbers?
No. of marble in the box = 6
Total possible outcome = 6
Favourable outcome = 1

∴ Probability of drawing a marble with no. 2= $\frac{1}{6}$

(ii) What is the probability of drawing a marble with number 5

Here,

Favourable outcome = 1

∴ Probability of drawing a marble with no. 5= $\frac{1}{6}$

Q3. A coin is flipped to decide which team starts the game. What is the probability that your team will start?

Ans. When a coin flipped, total number of outcome = 2

To start the game, one team can choose either head or tail.

∴ Favourable outcome = 1

∴ Probability to start the game by our team = $\frac{1}{2}$