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CLASS 7th

MATHS

CHAPTER- 3rd

Data Handling

EXERCISE- 3.1

NCERT SOLUTION

1. Find the range of heights of any ten students of your class.

Ans.

Name of students	Height (in feet)
1. Ajay	4.6
2. Ayush	4.8
3. Ashish	5
4. Dipti	4.4
5. Faizaan	4.0
6. Govind	5.9
7. Jayita	5.5
8. Kavita	4.7
9. Manisha	4.2
10. Neeraj	5.7

Range = Highest Height – Lowest Height
= 5.9 – 4.0 = 1.9 feet

2. 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.

Ans.

S.No.	Marks	Tally marks	Frequency
1.	1	I	1
2.	2	II	2
3.	3	I	1
4.	4	III	3
5.	5	IIII	5
6.	6	IIII	4
7.	7	II	2
8.	8	I	1
9.	9	I	1

(i) Highest Number = 9

(ii) Lowest Number = 1

(iii) Range of the data = 9 – 1 = 8

(iv) Arithmetic mean = $\frac{4+6+7+5+3+5+4+5+2+6+2+5+1+9+6+5+8+4+6+7}{20} = \frac{100}{20} = 5$

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

Ans.

The first five whole number are 0, 1, 2, 3 and 4

$\therefore$ Mean of first five whole number $= \frac{Sum\ of\ Number}{Total\ Number}$

$= \frac{0+1+2+3+4}{5} = \frac{10}{5} = 2$

4. A cricketer scores the following runs in eight innings:

58, 76, 40, 35, 46, 45, 0, 100.

Find the mean score.

Ans.

Number of innings $= 8$

Means score $= \frac{58+76+40+35+46+45+0+100}{8} = \frac{400}{8} = 50$

Thus, the mean score is 50

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

Player	Game 1	Game 2	Game 3	Game 4
A	14	16	10	10
B	0	8	6	4
C	8	11	Did not play	13

Now answer the following questions:
(i) Find the mean to determine A's average number of points scored per game.
(ii) To find the mean number of points per game for C, would you divide the total points by 3 or by 4? Why?
(iii) B played in all the four games. How would you find the mean?
(iv) Who is the best performer?
Ans.

(i) Mean of player A $= \frac{Sum\ of\ scores\ by\ A}{No.of\ games\ played\ by\ A} = \frac{14+16+10+10}{4}$

$= \frac{50}{4} = 12.5$

(ii) We have to divide the total points by 3 because player C played only three games.

(iii) Mean of player B $= \frac{Sum\ of\ scores\ by\ B}{No.of\ games\ played\ by\ B} = \frac{0+8+6+4}{4} = \frac{18}{4} = 4.5$

(iv) To know who performed the best, we have to calculate mean of all players.

Mean of player A $= 12.5$

Mean of player B $= 4.5$

Mean of player C $= \frac{8+11+13}{3} = \frac{32}{3} = 10.67$

After comparing means of all players, Player A is the best performer.

6. 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.
(ii) Range of the marks obtained.
(iii) Mean marks obtained by the group.
Ans.
(i) Highest marks obtained by the student $= 95$
Lowest marks obtained by the student $= 39$
(ii) Range of the marks obtained $=$ Highest marks – lowest marks
$= 95 - 39 = 56$
(iii) Mean marks obtained by the group $= \frac{85+76+90+85+39+48+56+95+81+75}{10} = \frac{730}{10} = 73$

7. The enrolment in a school during six consecutive years was as follows:
1555, 1670, 1750, 2013, 2540, 2820

Find the mean enrolment of the school for this period.
Ans.

Mean Enrolment $= \frac{1555+1670+1750+2013+2540+2820}{6} = \frac{12348}{6} =$ **2058**

Thus, the mean enrolment in a school is 2058.

8. 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.
(ii) Find the mean rainfall for the week.
(iii) On how many days was the rainfall less than the mean rainfall.
Ans.

(i) The range of rainfall = Highest Rainfall – Lowest Rainfall
= 20.5 – 0.0 = 20.5mm

(ii) Mean Rainfall $= \frac{0.0+12.2+2.1+0.0+20.5+5.5+1.0}{7} = \frac{41.3}{7} = 5.9$

(iii) 5 days i.e., Monday, Wednesday, Thursday, Saturday and Sunday rainfall were less than the mean rainfall.

9. 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?

(ii) What is the height of the shortest girl?
(iii) What is the range of the data?
(iv) What is the mean height of the girls?
(v) How many girls have heights more than the mean height.

Ans.

(i) Height of the tallest girl = 151 cm

(ii) Height of the shortest girl = 128 cm

(iii) Range of the Height = Highest height – lowest height

$$= 151 - 128 = 23 \text{ cm}$$

(iv) Mean height = $\frac{135+150+139+128+151+132+146+149+143+141}{10} = \frac{1414}{10}$

= 141.4cm.

(v) Five girls have height (in cm) of more than the mean height 150, 151, 146, 149 and 143

EXERCISE-3.2

NCERT SOLUTION

1. The scores in mathematics test (out of 25) of 15 students 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.
Arrange the given data in ascending order,
5, 9, 10, 12, 15, 16, 19, 20, 20, 23, 24, 25, 25
Mode is that observation which occurred highest number of times.
∴ Mode = 20
Median is the middle observation = 20
Yes, mode and Median are same for given data.

2. 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.
Arrange the given data in ascending order,
6, 8, 10, 10, 15, 15, 15, 50, 80, 100, 120

$$\text{Mean} = \frac{6+8+10+10+10+15+15+15+50+80+100+120}{11} = \frac{429}{11} = 39$$

Mode is the observation that occurred highest number of times = 15

Median is the middle observation = 15
No, all three are not same.

3. The weights (in kg.) of 15 students of a class are:
38, 42, 35, 37, 45, 50, 32, 43, 43, 40, 36, 38, 43, 38, 47
(i) Find the mode and median of this data.
(ii) Is there more than one mode?
Ans.
Arrange the following data in ascending order,
32, 35, 36, 37, 38, 38, 38, 40, 42, 43, 43, 43, 45, 47, 50
(i) Mode is the observation that occurred highest number of times = 38 and 43

Median is the middle observation = 40

(ii) Yes there are 2 modes.

4. Find the mode and median of the data: 13, 16, 12, 14, 19, 12, 14, 13, 14
Ans.
Arrange the given data in ascending order,
12, 13, 13, 14, 14, 14, 16, 19
Mode is the observation that occurred highest number of times = 14

Median is the middle observation = 14

5. Tell whether the statement is true or false:
(i) The mode is always one of the numbers in a data.
(ii) The mean is one of the numbers in a data.
(iii) The median is always one of the numbers in a data.
(iv) The data 6, 4, 3, 8, 9, 12, 13, 9 has mean 9.
Ans.

(i) The mode is always one of the numbers in a data. True
(ii) The mean is one of the numbers in a data. False
(iii) The median is always one of the numbers in a data. True

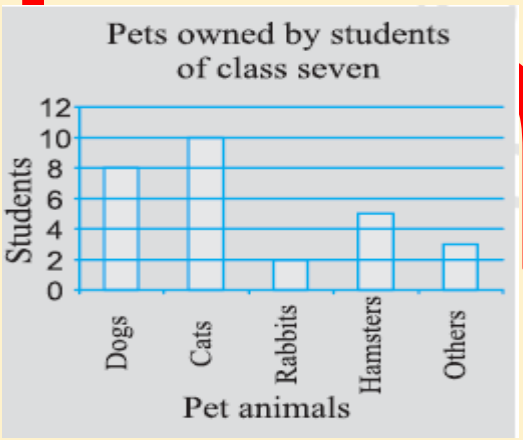
(iv) The data 6, 4, 3, 8, 9, 12, 13, 9 has mean 9. False

EXERCISE-3.3

NCERT SOLUTION

1. Use the bar graph (Fig 3.3) to answer the following questions.
(a) Which is the most popular pet?

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



Ans.

(a) The most popular pet is cats.

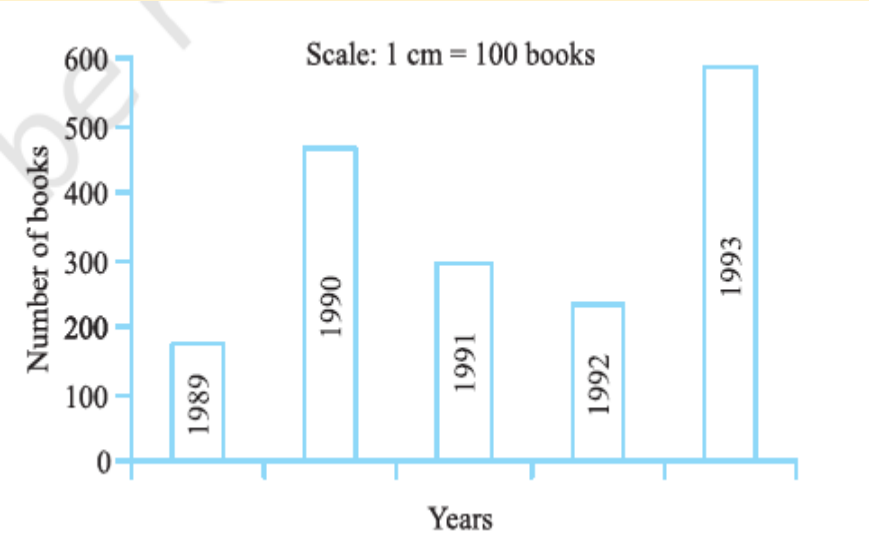
(b) 8 students have dog as a pet.

2. Read the bar graph (Fig 3.4) which shows the number of books sold by a bookstore during five consecutive years and answer the following questions:
(i) About how many books were sold in 1989? 1990? 1992?

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

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

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



Ans.

(i) (a) In 1989, 180 books were sold,

(b) In 1990, 475 books were sold.

(c) In 1992, 225 books were sold.

(ii) In 1990 about 475 books were sold and in 1992 225 books were sold.

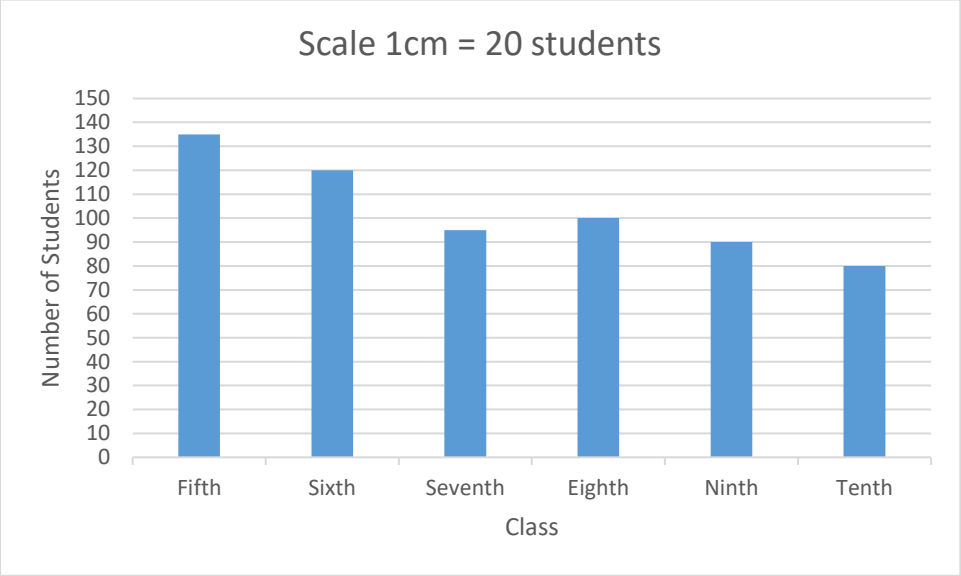
(iii) In 1989 and 1192 fewer than 250 books were sold

(iv) By reading graph, we calculate that approximately, 180 books were sold in 1989.

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

Class	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth
Number of Children	135	120	95	100	90	80

(a) How would you choose a scale?
(b) Answer the following questions:
(i) Which class has the maximum number of children? And the minimum?
(ii) Find the ratio of students of class sixth to the students of class eight.



Ans.

(a) Scale 1cm = 10 students

(b) (i) Fifth class has the maximum number of students.

Tenth class has the minimum number of students.

(ii) Ratio $= \frac{Number\ of\ students\ in\ class\ sixth}{Number\ of\ students\ in\ class\ eight}$

$= \frac{120}{100} = \frac{6}{5} = 6:5$

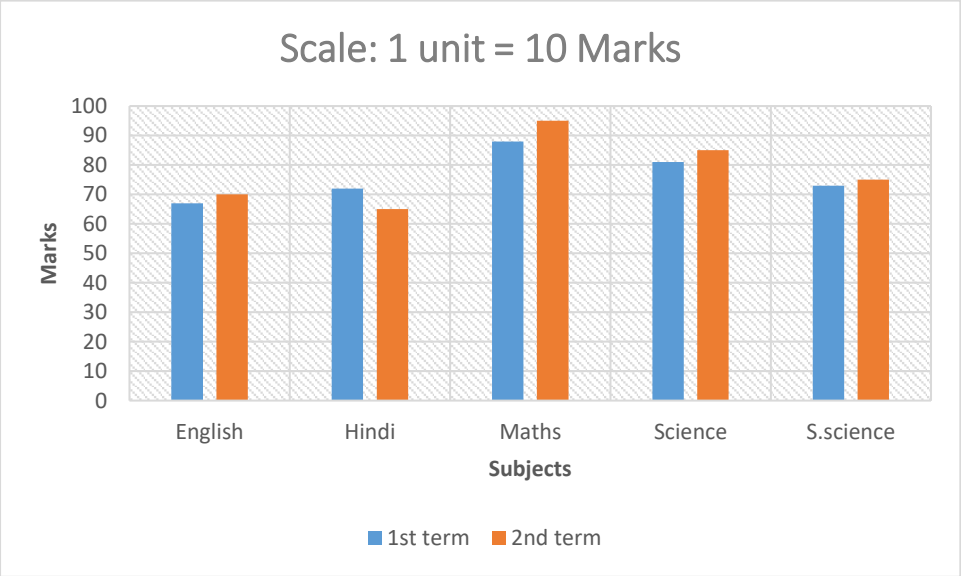
4. The performance of a student in 1st Term and 2nd Term is given. Draw a double bar graph choosing appropriate scale and answer the following:

Students	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?
(ii) In which subject is the improvement the least?
(iii) Has the performance gone down in any subject?
Ans.

Data are represented by double bar graph



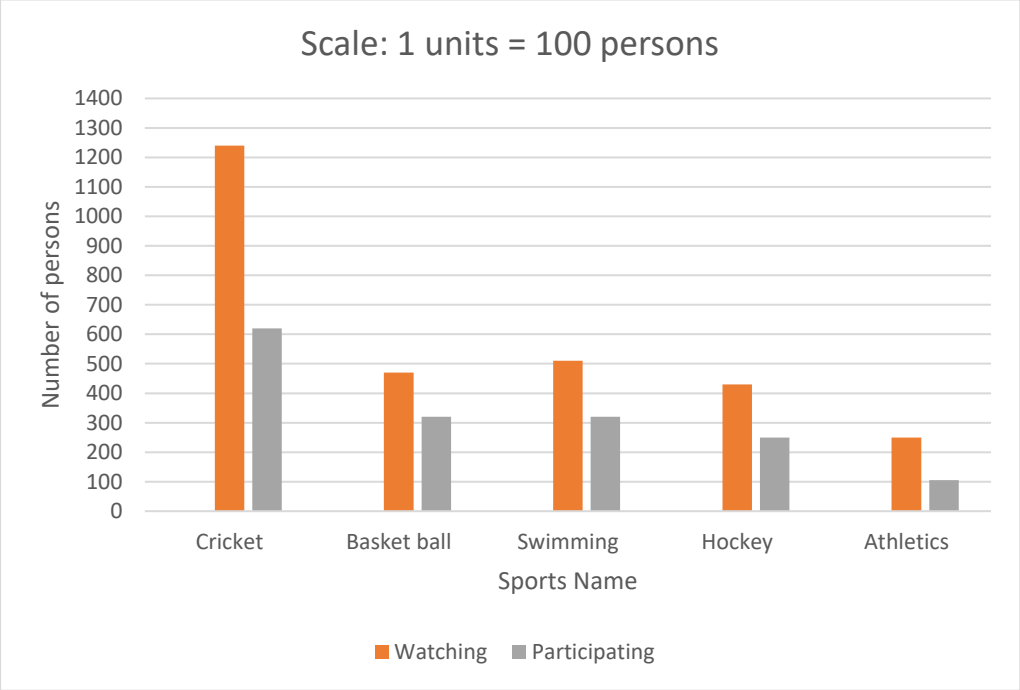
(i) He has most improved in Maths subject.
(ii) In S. Science his improvement is less.
(iii) Yes in Hindi his performance has gone down.

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

Favourite Sports	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 an appropriate scale. What do you infer from the bar graph?
(ii) Which sport is most popular?

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



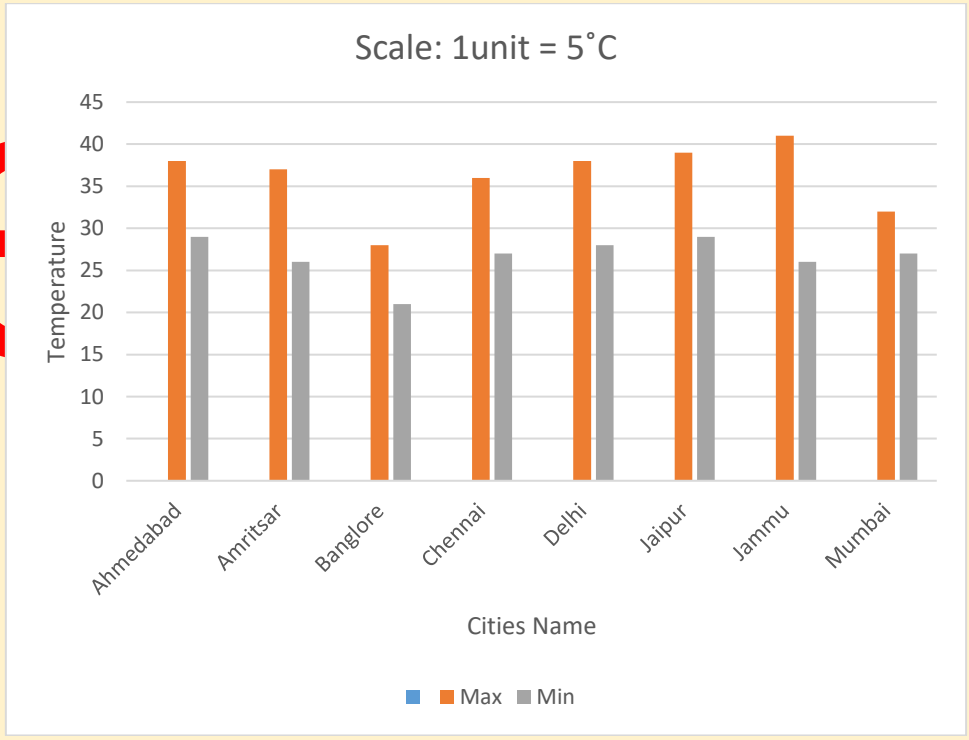
(i) This bar graph represent the number of person who are watching and participating in their favourite sports.
(ii) Cricket is most popular.
(iii) Watching sports is more preferred.

6. 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:
(i) Which city has the largest difference in the minimum and maximum temperature on the given date?
(ii) Which is the hottest city and which is the coldest city?
(iii) Name two cities where maximum temperature of one was less than the minimum temperature of the other.
(iv) Name the city which has the least difference between its minimum and the maximum temperature.

Temperature of 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

Ans.



(i) Jammu has the largest difference in temperature i.e.,
Maximum temperature = 41°C
Minimum temperature = 26°C
Difference in temperature = 41°C − 26°C = 15°C

(ii) Jammu is the hottest city due to maximum temperature and Bangalore is the coldest city due to lowest minimum temperature.

(iii) Bangalore and Jaipur, Bangalore and Ahmedabad.
The maximum temperature of Bangalore was 28°C while minimum temperature of the two cities, Ahmedabad and Jaipur was 29°C
(iv) The city which has the least difference between its minimum and maximum temperatures is Mumbai.
i.e. Maximum temperature = 32°C Minimum temperature =27°C
Therefore, Difference = 32°C − 27°C = 5°C