MATHS

NCERT - NCERT MATHEMATICS(HINGLISH)

STATISTICS

Exercise 14 4

1. The following number of goals were scored by a team in a series of 10 matches: 2, 3, 4, 5, 0, 1, 3, 3, 4, 3 Find the mean, median and mode of these scores

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2. In a mathematics test given to 15 students, the following marks (out of 100) are recorded:41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60 Find

the mean, median and mode of this data

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3. The following observations have been arranged in ascending order. If the median of the data is 63, find the value of x. 29, 32, 48, 50, x, x + 2, 72, 78, 84, 95

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4. Find the mode of 14, 25, 14, 28, 18, 17, 18, 14, 23, 22, 14, 18.

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5. Give one example of a situation in which(i) the mean is an appropriate measure of central tendency.(ii) the mean is not an appropriate measure of central tendency but the median is an appropriate measure of central tendency.

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6. Find the mean salary of 60 workers of a factory from the following table

Salary (in Rs)	Number of workers
3000	16
4000	12
5000	10
6000	8
7000	6
8000	4
9000	3
10000	1
Total	60

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Solved Examples

1. A family with a monthly income of Rs 20,000 had planned the following expenditures per month under various heads

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2. The points scored by a Kabaddi team in a series of matches are as follows: 17, 2, 7, 27, 15, 5, 14, 8, 10, 24, 48, 10, 8, 7, 18, 28 Find the median of the points scored by the team.

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3. Find the mean of the marks obtained by 30 students of Class IX of a school, 10 20 36 92 95 40 50 56 60 70 92 88 80 70 72 70 36 40 36 40 92 40 50 50 56 60 70 60 60 88

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4. 5 people were asked about the time in a week they spend in doing social work in their community. They said 10, 7, 13, 20 and 15 hours, respectively. Find the mean (or average) time in a week devoted by them for social work.

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5. Consider a small unit of a factory where there are 5 employees : a supervisor and four labourers. The labourers draw a salary of $Rs5,000$ per month each while the supervisor gets $Rs15,000$ per month. Calculate the mean, median and mode of the salaries of this unit of the factory.

A. mean = rs 7000, median = rs 5000, mode = rs 5000

B. mean = rs 6000, median = rs 5000, mode = rs 4000

C. mean = rs 8000, median = rs 8000, mode = rs 6000

D. mean = rs 7600, median = rs 5670, mode = rs 5900

Answer: A

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6. Find the mode of the following marks (out of 10) obtained by 20 students:4, 6, 5, 9, 3, 2, 7, 7, 6, 5, 4, 9, 10, 10, 3, 4, 7, 6, 9, 9

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7. Consider the marks obtained by 10 students in a mathematics test as given below: 55 36 95 73 60 42 25 78 75 62 The data in this form is called raw data. By looking at it in this form, can you find the highest and the lowest marks?

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8. Consider the marks obtained (out of 100 marks) by 30 students of Class IX of a school: 10 20 36 92 95 40 50 56 60 7092 88 80 70 72 70 36 40 36 4092 40 50 50 56 60 70 60 60 88 Recall that the number of students who have obtained a certain number of marks is called the frequency of those marks. For instance, 4 students got 70 marks. So the frequency of 70 marks is 4. To make the data more easily understandable, tabulate the data.

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9. 100 plants each were planted in 100 schools during Van Mahotsava. After one month, the number of plants that survived were recorded as:

95 67 28 32 65 65 69 33 98 9676 42 32 38 42 40 40 69 95 9275 83 76 83 85 62 37 65 63 4289 65 73 81 49 52 64 76 83 9293 68 52 79 81 83 59 82 75 8286 90 44 62 31 36 38 42 39 8387 56 58 23 35 76 83 85 30 6869 83 86 43 45 39 83 75 66 8392 75 89 66 91 27 88 89 93 4253 69 90 55 66 49 52 83 34 36

Tabulate the given data in suitable groups using tally marks.

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10. Let us now consider the following frequency distribution table which gives the weights of 38 students of a class:

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11. In a particular section of Class IX, 40 students were asked about the months of their birth and the following graph was prepared for the data so obtained:Observe the bar graph given above and answer the following

questions:

(i) How many students were born in the month of November? (ii) In which month were the maximum number of students born?

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12. A teacher wanted to analysis the performance of two sections of students in a mathematics test of 100 marks. Looking performance, she found that a few students got under 20 marks and a few got 70 marks or above. So she decided to group them into intervals of varying sizes as follows :

0-20, 20-30, ..., 60-70, 70-100. Then she formed the following table :

Marks	Number of students
$0-20$	7
$20-30$	10
$30-40$	10
$40-50$	20
$50-60$	20
$60-70$	15
$70-$ above	8
Total	90

(i) Find the probability that a student obtained less than $20\,\%$ in the

mathematics test.

(ii) Find the probability that a student obtained marks 60 or above .

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13. Consider the marks, out of 100, obtained by 51 students of a class in a test, given in Table 14.9

Table 14.9

Marks	Number of students
0 - 10	5
10 - 20	10
20 - 30	4
30 - 40	6
40 - 50	7
50 - 60	3
60 - 70	2
70 - 80	2
80 - 90	3
90 - 100	9
Total	51

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14. In a city of weekly observations made in a study on the cost of loving index are given in the following to draw a frequency polygon (without

constructing histogram)

Table 14.10

Cost of living index	Number of weeks
140 - 150	5
150 - 160	10
160 - 170	20
170 - 180	9
180 - 190	6
190 - 200	2
Total	52

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Exercise 14 2

1. Three coins were tossed 30 times simultaneously. Each time the number of heads occurring was noted down as follows: 0 1 2 2 1 2 3 1 3 0 1 3 1 1 2 2 0 1 2 1 3 0 0 1 1 2 3 2 2 0 Prepare a frequency distribution table for the data given above.

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2. The value of πupto 50 decimal places is given below:3.14159265358979323846264338327950288419716939937510. What

are the most and the least frequently occuring digits?

A. $3, 0$

B. $9, 0$

C. $1, 2$

D. Option 1 and Option 2 both are correct

Answer: D

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3. The heights of 50 students, measured to the nearest centimetres, have been found to be as follows:

$161, 150, 154, 165, 168, 161, 154, 162, 150, 151, 162, 164, 171, 165, 158, 154, 1$
$160, 161, 173, 166, 161, 159, 162, 167, 168, 159, 158, 153, 154, 159,$

(i) Represent the data given above by a grouped frequency distribution table, taking the class intervals as $160 - 165, 165 - 170,$ etc.

(ii) What can you conclude about their heights from the table?

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4. A study was conducted to find out the concentration of sulphur dioxide in the air in parts per million (ppm) of a certain city. The data obtained for 30 days is as follows:

0.03 0.08 0.08 0.09 0.04 0.170.16 0.05 0.02 0.06 0.18 0.200.11 0.08 0.12 0.13 0.22 0.070.08 0.01 0.10 0.06 0.09 0.180.11 0.07 0.05 0.07 0.01 0.04

(i) Make a grouped frequency distribution table for this data with class intervals as 0.00 - 0.04, 0.04 - 0.08, and so on.

(ii) For how many days, was the concentration of sulphur dioxide more than 0.11 parts per million?

A. 6

B. 7

C. 9

D. 8

Answer: D

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5. The distance (in km) of 40 engineers from their residence to their place of work were found as follows:

$5, 3, 10, 20, 25, 11, 13, 7, 12, 31, 19, 10, 12, 17, 18, 11, 32, 17, 16, 2, 7, 9, 7, 8, 3$

Construct a grouped frequency distribution.

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6. The relative humidity (in $\%$) of a certain city for a month of 30 days was as follows: 98.1 98.6 99.2 90.3 86.5 95.3 92.9 96.3 94.2 95.189.2 92.3 97.1 93.5 92.7 95.1 97.2 93.3 95.2 97.396.2 92.1 84.9 90.2 95.7 98.3 97.3 96.1 92.1 89 (i) Construct a grouped frequency distribution table with classes 84 - 86, 86 - 88, etc.(ii) Which month or season do you think this data is about?(iii) What is the range of this data?

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7. The blood groups of 30 students of Class VIII are recorded as follows:

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

Represent this data in the form of a frequency distribution table. Which is the most common, and which is the rarest, blood group among these students?

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8. Thirty children were asked about the number of hours they watched TV programmes in the previous week. The results were found as follows: 1 6 2 3 5 12 5 8 4 810 3 4 12 2 8 15 1 17 63 2 8 5 9 6 8 7 14 12 (i) Make a grouped frequency distribution table for this data, taking class width 5 and one of the class intervals as 5 - 10.(ii) How many children watched television for 15 or more hours a week?

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9. A company manufactures car batteries of a particular type. The lives (in years) of 40 such batteries were recorded as follows: 2.6 3.0 3.7 3.2 2.2 4.1 3.5 4.53.5 2.3 3.2 3.4 3.8 3.2 4.6 3.72.5 4.4 3.4 3.3 2.9 3.0 4.3 2.83.5 3.2 3.9 3.2 3.2 3.1 3.7 3.44.6 3.8 3.2 2.6 3.5 4.2 2.9 3.6 Construct a grouped frequency distribution table for this data, using class intervals of size 0.5 starting from the interval 2 - 2.5.

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Exercise 14 3

1. The runs scored by two teams A and B on the first 60 balls in a cricket match are given below:

Number of balls	Team A	Team B
1 - 6	2	5
7 - 12	1	6
13 - 18	8	2
19 - 24	9	10
25 - 30	4	5
31 - 36	5	6
37 - 42	6	3
43 - 48	10	4
49 - 54	6	8
55 - 60	2	10

Represent the data of both the teams on the same graph by frequency polygon.

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2. The following table gives the distribution of students of two sections according to the marks obtained by them. Represent the marks of the students of botht the sections on the same graph by two frequency polygon. From the two polygons compare the performance of the two sections.

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3. 100 surnames were randomly picked up from a local telephone directory and a frequency distribution of the number of letters in the English alphabet in the surnames was found as follows:

(i) Draw a histogram

(ii) write the class interval in which maximum number of surnames lie .

Number of letters	Number of surnames
1–4	6
4–6	30
6–8	44
8–12	16
12–20	4

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4. A random survey of the number of children of various age groups playing in a park was found as following Draw a histogram to represent

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5. A survey conducted by an organization for the cause of illness and death among the women between the ages 15 - 44 (in years) worldwide,

found the following figures (in %):

S.No.	Causes	Female fatality rate (%)
1.	Reproductive health conditions	31.8
2.	Neuropsychiatric conditions	25.4
3.	Injuries	12.4
4.	Cardiovascular conditions	4.3
5.	Respiratory conditions	4.1
6.	Other causes	22.0

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6. Given below are the seats won by different political parties in the polling outcome of a state assembly elections: (i) Draw a bar graph to represent the polling result

Political Party	A	B	C	D	E	F
Seats Won	75	55	37	29	10	37

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7. The following data on the number of girls (to the nearest ten) per thousand boys in different sections of Indian society is given below.

Section	Number of girls per thousand boys
Scheduled Caste (SC)	940
Scheduled Tribe (ST)	970
Non SC/ST	920
Backward districts	950
Non-backward districts	920
Rural	930
Urban	910

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8. The following table gives the life times of 400 neon lamps:(i) Represent the given information with the help of histogram.(ii) How many lamps have a life time of more than 700 hours?

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9. The length of 40 leaves of a plant are measured correct to one millimeter, and the obtained data is represented in the following table:

Length (in mm)	Number of leaves
118 - 126	3
127 - 135	5
136 - 144	9
145 - 153	12
154 - 162	5
163 - 171	4
172 - 180	2

(i) Draw a histogram to represent the given data.

(ii) Is there any other suitable graphical representation for the same data?

(iii) Is it correct to conclude that the maximum number of leaves are 153 mm long?Why?

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Exercise 14 1

1. Give five examples of data that you can collect from your day-to-day life.

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2. Classify the data in Q.1 Give five examples of data that you can collect from your day-to-day life above as primary or secondary data.

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