MATHS

NCERT - NCERT MATHEMATICS (Bengali)

STATISTICS

Examples

1. The marks obtained in mathematics by 30 students of Class X of a certain scholl are

given in table the below. Find the mean of the marks obtained by the students.

Marks obtained (x_i)	10	20	36	40	50	56	60	70	72	80	88	92	95
Number of student (f_i)	1	1	3	4	3	2	4	4	1	1	2	3	1

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2. The table below gives the percentage distribution of female teachers in the primary schools of rural areas of various states and union territories (U.T) of India. Find the mean percentage of female teachers using all the

three methods.

Percentage of female teachers	15-25	25-35	35–45	45-55	55-65	65-75	75–85
Number of States/U.T.	6	11	7	4	4	2	1

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3. The below distribution shows the numbers of wickets taken by bowkers in one-day cricket matches. Find the mean number of wickets by choosing a suitable method. What does the mean signify ?

Number of wickets	20 - 60	60 - 100	100 - 150	150 - 250	250 - 350	350 – 450
Number of bowlers	7	5	16	12	2	3

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4. The wickets taken by a bowler in 10 cricket matches are as follows: 2,6,4,5,0,2,1,3,2,3. Find the mode of the data.

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5. A survey conducted on 20 households in a locality by a group of students resulted in the following frequency table for the number of family members in a household.

Family size	1-3	3-5	5-7	7-9	9-11
Number of families	7	8	2	2	1

Find the mode of this data.

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6. The marks distribution of 30 students in a mathematics examination are given in the adjacent table. Find the mode of this data. Also compare and interpret the mode and the

mean .

Class interval	Number of students (f_i)	Class Marks (x_i)	$f_i x_i$
10-25	2	17.5	35.0
25-40	3	32.5	97.5
40-55	7	47.5	332.5
55-70	6	62.5	375.0
70-85	6	77.5	465.0
85-100	6	92.5	555.0
Total	$\sum f_i = 30$		$\sum f_i x_i = 1860.0$

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7. A survey regarding the heights (in cm) of 51 girls of Class X of a school was conducted and data was obtained as shown in table. Find

their median.

Height (in cm)	Number of girls
Less than 140	4
Less than 145	11
Less than 150	29
Less than 155	40
Less than 160	46
Less than 165	51

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8. The median of the following data is 525. Find the values of x and y , if the total frequency is 100. Here, CI stands for class

interval and Fr for frequency.

CI	0-100	100-200	200-300	300-400	400-500	500-600	600-700	700-800	800-900	900-1000
Fr	2	5	x	12	17	20	y	9	7	4

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9. Find True or False: 14 is the mode of the data 3,14,15,13,11,14,18.

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Exercise 14 1

1. A survey conducted by a group of students as a part of their environment awareness programme, in which they collected the following data regarding the number of plants in 20 houses in a locality. Find the mean number of plants per house.

Number of plants	0 - 2	2 - 4	4 – 6	6 - 8	8 - 10	10 - 12	12 – 14
Number of houses	1	2	1	5	6	2	3

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2. Consider the following distribution of daily wages of 50 workers of a factory.

Daily wages in Rupees	200 - 250	250 - 300	300 - 350	350 - 400	400– 450
Number of workers	12	14	8	6	10

Find the mean daily wages of the workers of the factory by using an appropriate method.

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3. The following distribution shows the daily pocket allowance of children of a locality. The mean pocket allowance is Rs 18. Find the missing frequency f.

Daily pocket allowance(in Rupees)	11 - 13	13 - 15	15 - 17	17 - 19	19 - 21	21 - 23	23 - 25
Number of children	7	6	9	13	f	5	4

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4. Find True or False: 15 is the mode of the data 16,15,17,16,15,19,17,14,15.

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5. In a retail market, fruit vendors were selling oranges kept in packing baskets. These contained varying number of oranges. The following was the distribution of oranges.

Number of oranges	10-14	15–19	20-24	25-29	30–34
Number of baskets	15	110	135	115	25

Find the mean number of oranges kept in each basket. Which method of finding the mean did you choose ?

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6. The table below the daily expenditure on food of 25 household in a locality.

Daily expenditure (in Rupees)	100-150	150-200	200-250	250-300	300-350
Number of house holds	4	5	12	2	2

Find the mean dialy expenditure on a food by a suitable method.

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7. To find out the concentration of SO_2 in the air (in parts per million, i.e, ppm), the data was collected for 30 localities in a certain city and is presented below :

Concentration of SO_2 in ppm	0.00-0.04	0.04-0.08	0.08-0.12	0.12-0.16	0.16-0.20	0.20-0.24
Frequency	4	9	9	2	4	2

Find the mean concentration of SO_2 in the air.

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8. Find True or False: 18 is the mode of the data 3,14,18,21,14,18.

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9. The following table gives the literacy rate (in percentage) of 35 cities. Find the mean literacy rate.

Literacy rate in %	45–55	55-65	65-75	75-85	85-95
Number of cities	3	10	11	8	3

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Exercise 14 2

1. The following table shows the ages of the patients admitted in a hospital on a particular day :

Age (in years)	5-15	15-25	25-35	35-45	45-55	55-65
Number of patients	6	11	21	23	14	5

Find the mode and the mean of the data given below. Compare and interpret the two measures of central tendency.

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2. The following data gives the information on the observed life times (in hours) of 225 electrical components:

Lifetimes (in hours)	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120
Frequency	10	35	52	61	38	29

Determine the modal lifetimes of the components.

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3. Find True or False: 9 is the mode of the data 2,4,6,9,5,9.

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4. The following distribution distribution given the state-wise, teacher-student ratio in higher secondary schools of India. Find the mean of this data.

Number of students	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55
Number of States	3	8	9	10	3	0	0	2

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5. The given distribution shows the number of runs scored by some top batsmen of the world

in one-day international cricket matches.

Runs	3000-4000	4000-5000	5000-6000	6000-7000	7000-8000	8000-9000	9000-10000	10000-11000
Number of batsmen	4	18	9	7	6	3	1	1

Find the mode of the data.

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6. A student noted the number of cars passing thorugh a spot on a road for 100 periods, each of 3 minutes, and summarised this in the table given below.

Number of cars	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80
Frequency	7	14	13	12	20	11	15	8

Find the mode of the data.

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Exercise 14 3

1. Find the mode of the given data 15,11,10,8,15,18,17,15

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2. If the median of 60 observations, given below is 28.5, find the values of x and y.

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	5	x	20	15	y	5

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3. A life insurance agent found the following data about distribution of ages of 100 policy holders. Calculate the median age. [Policies are given only to persons having age 18 years onwards but less than 60 years.]

Age (in years)	Below 20	Below 25	Below 30	Below 35	Below 40	Below 45	Below 50	Below 55	Below 60
Number of policy holders	2	6	24	45	78	89	92	98	100

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4. Find the mode of the given data

3,5,4,6,5,4,5,7,5

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5. The following table gives the distribution of the life-time of 400 neon lamps

Life time (in hours)	1500-2000	2000-2500	2500-3000	3000-3500	3500-4000	4000-4500	4500-5000
Number of lamps	14	56	60	86	74	62	48

Find the median life time of a lamp.

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6. Find the mode of the given data 8,5,4,6,7,4,4,3,5,4,5,4,4,4,3

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7. The distribution below gives the weights of 30 students of a class. Find the median weight of the students.

Weight (in kg)	40-45	45-50	50-55	55-60	60-65	65-70	70-75
Number of students	2	3	8	6	6	3	2

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Exercise 14 4

1. Find the mode of the given data

2,4,3,5,2,5,8,5,9

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2. Find the mode of the given data

4,5,5,4,7,2,3,4,2,4,5

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3. Find the mode of the given data

2,3,5,6,2,5,2,6,2

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Do This

1. Find the mode of the following data.

5,6,9,10,6,12,3,6,11,10,4,6,7

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2. Find the mode of the following data.

20,3,7,13,3,4,6,7,19,15,7,18,3

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3. Find the mode of the following data.

2,2,2,3,3,3,4,4,4,5,5,5,6,6,6.

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4. Is the mode always at the centre of the data ?

5. Does the mode change, if another observation is added to the data in example ? Comment .

6. If the maximum value of an observation in the data in Example 4 is changed to 8, would the mode of the data be affected ? Comment.

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Think And Discuss

1. The mean value can be calculated from both ungrouped and grouped data. Which one do you think is more accurate? Why?

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2. Find the median of the given data 4,6,5,7,8,4,3,2

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3. Find the median of the given data 10,12,13,15,16,2,10

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4. If x_1 and f_i are sufficiently small, then which method is an appropriate choice?

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5. If x_i and f_i are numerically large numbers, then which methods are appropriate to use?

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6. It depends upon the demand of the situation whether we are interested in finding

the average marks obtained by the students or the marks obtained by most of the students What do we find in the first situation?

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7. It depends upon the demand of the situation whether we are interested in finding the average marks obtained by the students or the marks obtained by most of the students What do we find in the second situation?

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8. Can mode be calculated for grouped data with unequal class sizes?

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