



# MATHS

## NCERT - NCERT

### MATHEMATICS(HINGLISH)

#### STATISTICS

#### Exercise 14.3

1. The following table gives the distribution of the life time of 400 neon lamps Find the

median life of a lamp.



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2. The lengths of 40 leaves of a plant are measured correct to the nearest millimetre, and the data obtained is represented in the following table :

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

Find the median length of the leaves.(Hint: The data needs to be converted to continuous

classes for finding the median, since the formula assumes continuous classes. The classes then change to 117.5- 126.5, 126.5 - 135.5, ..171.5 -180.5.)



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3. 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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4. 100 surnames were randomly picked up from a local telephone directory and the frequency distribution of the number of letters in the English alphabets in the surnames was obtained as follows: Determine the median number of letters in the surnames. Find the mean number of letters in the surnames? Also, find the modal size of the surnames.

Number of letters	1 - 4	4 - 7	7 - 10	10 - 13	13 - 16	16 - 19
Number of surnames	6	30	40	16	4	4



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5. The following frequency distribution gives the monthly consumption of electricity of 68 consumers of a locality. Find the median, mean and mode of the data and compare them.

Monthly consumption (in units)	Number of consumers
65–85	4
85–105	5
105–125	13
125–145	20
145–165	14
165–185	8
185–205	4



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6. A life insurance agent found the following data for distribution of ages of 100 policy holders. Calculate the median age, if policies are given only to persons having age 18 years onwards but less than 60 year.

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



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7. If the median of the distribution given below is 28.5, find the values of  $x$  and  $y$ .

Class interval	Frequency
0 - 10	5
10 - 20	$x$
20 - 30	20
30 - 40	15
40 - 50	$y$
50 - 60	5
<b>Total</b>	60



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Solved Examples

1. The median of the following data is 525. Find the values of  $x$  and  $y$ , if the total frequency is 100.



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2. The annual profits earned by 30 shops of a shopping complex in a locality give rise to the following distribution: Draw both ogives for the data above. Hence obtain the median profit.







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3. The marks obtained by 30 students of Class X of a certain school in a Mathematics paper consisting of 100 marks are presented in table below. Find the mean of the marks obtained by the students.



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4. 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 by all the three methods discussed in this section.

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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5. The distribution below shows the number of wickets taken by bowlers in one-day cricket matches. Find the mean number of wickets by

choosing a suitable method. What does the mean signify?



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6. 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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7. 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: Find the mode of this data.

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

A. 4

B. 3.8

C. 3.286

D. None

**Answer: C**



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**8.** The marks distribution of 30 students in a mathematics examination are given in Table of Example 1. Find the mode of this data. Also compare and interpret the mode and the mean.



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9. A survey regarding the heights (in cm) of 51 girls of Class X of a school was conducted and the following data was obtained:

Height in cm	Number of Girls
Less than 140	4
Less than 145	11
Less than 150	29
Less than 155	40
Less than 155	46
Less than 165	51

Find the median height.



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## Exercise 14 4

1. The following distribution gives the daily income of 50 workers of a factory.

Daily income (in Rs)	100 - 120	120 - 140	140 - 160	160 - 180	180 - 200
Number of workers	12	14	8	6	10

Convert the distribution above to a less than type cumulative frequency distribution, and draw its ogive.



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2. During the medical check-up of 35 students of a class, their weights were recorded as follows: Draw a less than type ogive for the given data. Hence obtain the median weight from the graph and verify the result by using the formula.



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3. The following table gives production yield per hectare of wheat of 100 farms of a



village. Change the distribution to a more than type distribution, and draw its ogive.



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## Exercise 14 2

1. The following data gives the information on the observed lifetimes (in hours) of 225 electrical components: Determine the modal lifetimes of the components.

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

A. 65.625

B. 65

C. 34.52

D. None

**Answer: A**



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2. The following data gives the distribution of total monthly household expenditure of 200 families of a village. Find the modal monthly

expenditure of the families. Also, find the mean monthly expenditure:



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**3.** The following table shows the ages of the patients admitted in a hospital during a year: Find the mode and the mean of the data given above. Compare and interpret the two measures of central tendency.



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4. A student noted the number of cars passing through a spot on a road for 100 periods each of 3 minutes and summarised it in the table given below. Find the mode of the data :

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



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5. The following distribution gives the state-wise teacher-student ratio in higher secondary

schools of India. Find the mode and mean of this data. Interpret the two measures.



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6. The given distribution shows the number of runs scored by some top batsmen of the world in one-day international cricket matches. Find the mode of the data.



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## Exercise 14 1

1. 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: Find the mean concentration of  $SO_2$  in the air.

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



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2. The table below shows the daily expenditure on food of 25 households in a locality. Find the mean daily expenditure on food by a suitable method.



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3. In a retail market, fruit vendors were selling mangoes kept in packing boxes. These boxes contained varying number of mangoes. The following was the distribution of mangoes

according to the number of boxes. Find the mean number of mangoes kept in a packing box. Which method of finding the mean did you choose?



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4. Thirty women were examined in a hospital by a doctor and the number of heart beats per minute were recorded and summarised as follows. Find the mean heart beats per minute for these women, choosing a suitable method.





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



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6. Consider the following distribution of daily wages of 50 workers of a factory. Find the mean daily wages of the workers of the

factor}- by using an appropriate method.

Daily wages (in ₹)	500 - 520	520 - 540	540 - 560	560 - 580	580 - 600
Number of workers	12	14	8	6	10



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7. A survey was 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. Which method did you use for finding the mean, and why?



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



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**9.** A class teacher has the following absentee record of 40 students of a class for the whole

term. Find the mean number of days a student was absent.



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