NCERT Solutions for Class 10 Maths Chapter 13 Exercise 13.2: NCERT Solutions for Class 10 Maths Chapter 13 Exercise 13.2 focus on advanced concepts of Statistics, including calculation and interpretation of measures like the mean, median, and mode of grouped data.

The exercise helps students understand and solve problems related to cumulative frequency distribution and graphical representation through ogives (cumulative frequency curves). Detailed solutions provide step-by-step methods, making it easier for students to grasp concepts and improve problem-solving skills. These solutions are aligned with the latest NCERT curriculum and are essential for building a strong foundation in Statistics, a crucial topic for board exams and practical applications in real-life scenarios.

NCERT Solutions for Class 10 Maths Chapter 13 Exercise 13.2 Overview

NCERT Solutions for Class 10 Maths Chapter 13 Exercise 13.2 provide a comprehensive understanding of Statistics, focusing on key concepts like the mean, median, and mode of grouped data, cumulative frequency, and ogives. These solutions are crucial for mastering data interpretation, a vital skill for academics and real-life applications.

By offering step-by-step explanations, they simplify complex calculations, enhancing problem-solving abilities. Statistics has broad applications in various fields like economics, social sciences, and research, making this exercise essential. Preparing with these solutions ensures a solid foundation for board exams and develops analytical skills important for higher studies and future careers.

NCERT Solutions for Class 10 Maths Chapter 13 Exercise 13.2 Statistics

Below is the NCERT Solutions for Class 10 Maths Chapter 13 Exercise 13.2 Statistics -

1. The following table shows the ages of the patients admitted to a hospital during a year:

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 above. Compare and interpret the two measures of central tendency.

Solution:

To find out the modal class, let us the consider the class interval with high frequency.

Here, the greatest frequency = 23, so the modal class = 35 – 45,

Lower limit of modal class = l = 35,

class width (h) = 10,

f_m = 23,

f_1 = 21 and f_2 = 14

The formula to find the mode is

Mode = $l + [(f_m – f_1)/ (2f_m – f_1 – f_2)] \times h$

Substitute the values in the formula, we get

Mode = 35+[(23-21)/(46-21-14)]×10

= 35 + (20/11)

= 35 + 1.8

= 36.8 years

So the mode of the given data = 36.8 years

Calculation of Mean:

First find the midpoint using the formula, x_i = (upper limit +lower limit)/2

Class Interval	Frequency (f_i)	Mid-point (x_i)	f_ix_i
5-15	6	10	60
15-25	11	20	220
25-35	21	30	630
35-45	23	40	920
45-55	14	50	700
55-65	5	60	300

Sum $f_i = 80$ Sum $f_ix_i = 2830$

The mean formula is

Mean = $\bar{x} = \sum f_ix_i / \sum f_i$

= 2830/80

= 35.375 years

Therefore, the mean of the given data = 35.375 years

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

Lifetime (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.

Solution:

From the given data the modal class is 60–80.

Lower limit of modal class = l = 60,

The frequencies are:

$f_m = 61$, $f_1 = 52$, $f_2 = 38$ and h = 20

The formula to find the mode is

Mode = $l + [(f_m – f_1)/(2f_m – f_1 – f_2)] \times h$

Substitute the values in the formula, we get

Mode = 60 + [(61 – 52)/ (122 – 52 – 38)] × 20

Mode = 60 + [(9 × 20)/32]

Mode = 60 + (45/8) = 60 + 5.625

Therefore, modal lifetime of the components = 65.625 hours.

3. 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:

Expenditure (in Rs.)	**Number of families**
1000-1500	**24**
1500-2000	**40**
2000-2500	**33**
2500-3000	**28**
3000-3500	**30**
3500-4000	**22**
4000-4500	**16**
4500-5000	**7**

Solution:

Given data:

Modal class = 1500-2000,

l = 1500,

Frequencies:

f_m = 40 f_1 = 24, f_2 = 33 and

h = 500

Mode formula:

Mode = $l + [(f_m – f_1)/ (2f_m – f_1 – f_2)] \times h$

Substitute the values in the formula, we get

Mode = 1500 + [(40 – 24)/ (80 – 24 – 33)] × 500

Mode = 1500 + [(16 × 500)/23]

Mode = 1500 + (8000/23) = 1500 + 347.83

Therefore, modal monthly expenditure of the families = Rupees 1847.83

Calculation for mean:

First find the midpoint using the formula, x_i =(upper limit +lower limit)/2

Let us assume a mean, (a) be 2750.

Class Interval	f_i	x_i	$d_i = x_i - a$	$u_i = d_i/h$	f_iu_i
1000-1500	24	1250	-1500	-3	-72
1500-2000	40	1750	-1000	-2	-80
2000-2500	33	2250	-500	-1	-33
2500-3000	28	2750 = a	0	0	0
3000-3500	30	3250	500	1	30
3500-4000	22	3750	1000	2	44
4000-4500	16	4250	1500	3	48
4500-5000	7	4750	2000	4	28
	$f_i = 200$				$f_iu_i = -35$

The formula to calculate the mean,

Mean = $\bar{x} = a + (\sum f_iu_i / \sum f_i) \times h$

Substitute the values in the given formula

= 2750 + (-35/200) × 500

= 2750 – 87.50

= 2662.50

So, the mean monthly expenditure of the families = Rs. 2662.50

4. 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

No of students per teacher	Number of states / U.T
15-20	**3**
20-25	**8**
25-30	**9**
30-35	**10**
35-40	**3**
40-45	**0**
45-50	**0**
50-55	**2**

Solution:

Given data:

Modal class = 30 – 35,

l = 30,

Class width (h) = 5,

f_m = 10, f_1 = 9 and f_2 = 3

Mode Formula:

Mode = $l + [(f_m – f_1)/ (2f_m – f_1 – f_2)] \times h$

Substitute the values in the given formula

Mode = 30 + [(10 – 9)/ (20 – 9 – 3)] × 5

= 30 + (5/8)

= 30 + 0.625

= 30.625

Therefore, the mode of the given data = 30.625

Calculation of mean:

Find the midpoint using the formula, x_i =(upper limit +lower limit)/2

Class Interval	Frequency (f_i)	Mid-point (x_i)	f_ix_i
15-20	3	17.5	52.5
20-25	8	22.5	180.0
25-30	9	27.5	247.5
30-35	10	32.5	325.0
35-40	3	37.5	112.5
40-45	0	42.5	0
45-50	0	47.5	0
50-55	2	52.5	105.0
	Sum f_i = 35		Sum f_ix_i = 1022.5

Mean = $\bar{x} = \sum f_ix_i / \sum f_i$

= 1022.5/35

= 29.2 (approx)

Therefore, mean = 29.2

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

Run Scored	**Number of Batsman**
3000-4000	**4**
4000-5000	**18**
5000-6000	**9**
6000-7000	**7**
7000-8000	**6**
8000-9000	**3**

9000-10000	**1**
10000-11000	**1**

Find the mode of the data.

Solution:

Given data:

Modal class = 4000 – 5000,

l = 4000,

class width (h) = 1000,

f_m = 18, f_1 = 4 and f_2 = 9

Mode Formula:

Mode = $l + [(f_m – f_1)/ (2f_m – f_1 – f_2)] \times h$

Substitute the values

Mode = 4000 + [(18 – 4)/ (36 – 4 – 9)] × 1000

= 4000 + (14000/23)

= 4000 + 608.695

= 4608.695

= 4608.7 (approximately)

Thus, the mode of the given data is 4608.7 runs.

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

Number of cars	**Frequency**
0-10	**7**
10-20	**14**
20-30	**13**

30-40	**12**
40-50	**20**
50-60	**11**
60-70	**15**
70-80	**8**

Solution:

Given Data:

Modal class = 40 – 50, l = 40,

Class width (h) = 10, f_m = 20, f_1 = 12 and f_2 = 11

Mode = $l + [(f_m – f_1)/(2f_m – f_1 – f_2)] \times h$

Substitute the values

Mode = 40 + [(20 – 12)/ (40 – 12 – 11)] × 10

= 40 + (80/17)

= 40 + 4.7

= 44.7

Thus, the mode of the given data is 44.7 cars.

Benefits of Using NCERT Solutions for Class 10 Maths Chapter 13 Exercise 13.2

Concept Clarity: Step-by-step explanations simplify complex topics like mean, median, mode, and cumulative frequency, making them easier to understand.

Exam Preparation: Solutions align with the NCERT syllabus, ensuring students are well-prepared for board exams.

Time Management: Solved examples teach efficient problem-solving techniques, helping students solve questions faster during exams.

Strong Foundation: Builds a solid understanding of Statistics, a topic with applications in higher studies and real-life scenarios.

Self-Learning: The solutions provide clear guidance, enabling students to learn independently.

Error-Free Answers: Ensures accurate and reliable solutions for better learning outcomes.