

Statistics - Exercise 13.2

Exercise 13.2 with independently verified solutions.

CHAPTER

Statistics

RESOURCE

NCERT Exercises

SOURCE

NCERT Mathematics, Reprint 2026-27

PART 1

Verified NCERT questions and solutions

Verified NCERT questions and solutions

Solutions are checked independently and follow the supplied NCERT chapter edition.

QUESTION

Question 1

mode and mean · patient ages

The ages of patients admitted to a hospital during a year are grouped below. Find the mode and mean, then compare and interpret them.

Age (years)	Patients
5–15	6
15–25	11
25–35	21
35–45	23
45–55	14
55–65	5

Solution

Board-exam working:

Mean calculation:

Class	f_i	x_i	$f_i x_i$
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

$$\sum f_i = 80, \quad \sum f_i x_i = 2830$$

$$\bar{x} = \frac{2830}{80} = 35.375$$

The highest frequency is 23, so the modal class is 35–45.

$$l = 35, \quad h = 10, \quad f_1 = 23, \quad f_0 = 21, \quad f_2 = 14$$

$$\text{Mode} = 35 + \frac{23 - 21}{2(23) - 21 - 14} \times 10$$

$$= 35 + \frac{20}{11} = 36.818 \dots$$

The average admitted patient was about 35.38 years old, while the most typical age was about 36.82 years.

Final answer

Mode ≈ 36.82 years; $\bar{x} = 35.375$ years

QUESTION

Question 2

mode lifetime · electrical components

The observed lifetimes of 225 electrical components are given below. Determine the modal lifetime.

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

Solution

Board-exam working:

The highest frequency is 61, so the modal class is 60–80.

$$l = 60, \quad h = 20, \quad f_1 = 61, \quad f_0 = 52, \quad f_2 = 38$$

$$\text{Mode} = 60 + \frac{61 - 52}{2(61) - 52 - 38} \times 20$$

$$= 60 + \frac{9}{32} \times 20 = 65.625$$

Final answer

Modal lifetime = 65.625 hours

QUESTION

Question 3

mode and mean expenditure · households

The monthly household expenditure of 200 village families is distributed below.
Find the modal and mean monthly expenditure.

Expenditure (₹)	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

Board-exam working:

Mean calculation:

Class	f_i	x_i	$f_i x_i$
1000–1500	24	1250	30000
1500–2000	40	1750	70000
2000–2500	33	2250	74250
2500–3000	28	2750	77000
3000–3500	30	3250	97500
3500–4000	22	3750	82500
4000–4500	16	4250	68000
4500–5000	7	4750	33250

$$\sum f_i = 200, \quad \sum f_i x_i = 532500$$

$$\bar{x} = \frac{532500}{200} = 2662.5$$

The modal class is 1500–2000.

$$l = 1500, \quad h = 500, \quad f_1 = 40, \quad f_0 = 24, \quad f_2 = 33$$

$$\text{Mode} = 1500 + \frac{40 - 24}{2(40) - 24 - 33} \times 500$$

$$= 1500 + \frac{8000}{23} = 1847.826 \dots$$

Final answer

$$\text{Mode} \approx \text{Rs. } 1847.83; \quad \bar{x} = \text{Rs. } 2662.50$$

QUESTION

Question 4

mode and mean · teacher student ratio

The state-wise teacher-student ratio in higher secondary schools is distributed below. Find the mode and mean, then interpret them.

Students per teacher	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

Board-exam working:

Mean calculation:

Class	f_i	x_i	$f_i x_i$
15–20	3	17.5	52.5
20–25	8	22.5	180
25–30	9	27.5	247.5
30–35	10	32.5	325
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

$$\sum f_i = 35, \quad \sum f_i x_i = 1022.5$$

$$\bar{x} = \frac{1022.5}{35} = 29.214\dots$$

The modal class is 30–35.

$$l = 30, \quad h = 5, \quad f_1 = 10, \quad f_0 = 9, \quad f_2 = 3$$

$$\text{Mode} = 30 + \frac{10 - 9}{2(10) - 9 - 3} \times 5 = 30.625$$

Across the states and U.T.s, the average is about 29.21 students per teacher; the most typical ratio is about 30.63 students per teacher.

Final answer

$$\text{Mode} = 30.625; \quad \bar{x} \approx 29.21 \text{ students per teacher}$$

QUESTION

Question 5

mode runs · cricket

The runs scored by some leading one-day international batsmen are distributed below. Find the mode.

Runs	Batsmen
3000–4000	4
4000–5000	18
5000–6000	9
6000–7000	7
7000–8000	6
8000–9000	3
9000–10000	1
10000–11000	1

Solution

Board-exam working:

The modal class is 4000–5000.

$$l = 4000, \quad h = 1000, \quad f_1 = 18, \quad f_0 = 4, \quad f_2 = 9$$

$$\text{Mode} = 4000 + \frac{18 - 4}{2(18) - 4 - 9} \times 1000$$

$$= 4000 + \frac{14000}{23} = 4608.695 \dots$$

Final answer

Mode ≈ 4608.70 runs

QUESTION

Question 6

mode cars · traffic count

The number of cars passing a road spot was recorded for 100 periods of three minutes. Find the mode.

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

Board-exam working:

The modal class is 40–50.

$$l = 40, \quad h = 10, \quad f_1 = 20, \quad f_0 = 12, \quad f_2 = 11$$

$$\text{Mode} = 40 + \frac{20 - 12}{2(20) - 12 - 11} \times 10$$

$$= 40 + \frac{80}{17} = 44.7058 \dots$$

Final answer

Mode $\approx$ 44.71 cars per three-minute period
