Grouped Frequency

11 September 2019 12:01

Data is arranged in groups or classes

Eg) Ages

	Class 0-9	Class 10-19	Class 20-29
Frequency			

To work out the mean of a grouped frequency table, you have to find the MID INTERVAL VALUES.

Eg

Marks in a test	1-5 (3)	6-10 (8)	11-15 (13)	16-20 (18)
Frequency	11	12	13	9

Find the mid interval value $\frac{1+5}{2} = \frac{6}{2} = 3$ $\frac{16+20}{2} = \frac{36}{2}$ 18

$\frac{6+10}{2} = \frac{16}{2} = 8$

$\frac{11+15}{2} = \frac{26}{2} = 13$

Mean: $\frac{\text{Sum of (mid interval value} \times \text{frequency}}{\text{Sum of the frequency}}$

$$\frac{(3\times11)+(8\times12)+(13\times13)+(18\times9)}{11+12+13+9} = \frac{460}{45} = 10.2$$

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PROJECT MATHS

Text & Tests

Leaving 3 Certificate

chapter 8

Measures of Location and Spread

Section 8.5 Grouped frequency distributions

Exercise 8.5

1. People attending a course were asked to choose one of the whole numbers from 1 to 12. The results were recorded as follows:

Number	1–3	4–6	7–9	10–12
No. of people	3	17	2	8

(i) Write down the modal class of the distribution.
(ii) Use the mid-interval value of each class to estimate the mean of the distribution.
(iii) In which interval does the median lie?

Exercise 8.5

2. The ages of children in a youth-club are given in the following table:

Ages (in years)	10–12	12–14	14–16	16–18	18–20
No. of children	12	24	18	12	4

(i) What is the modal age group?
(ii) Use the mid-interval value of each class to estimate the mean of the distribution, giving your answer to the nearest half year.
(iii) In which interval does the median lie?

Exercise 8.5

3. Use the mid-interval values to estimate the mean of the following frequency distribution:

Class	14–16	16–18	18–20	20–22	22–24
Frequency	1	5	12	3	0

Give your answer correct to one decimal place.

Exercise 8.5

4. The time taken by 20 students to run a cross-country course were noted, to the nearest minute, and the results are given in the following table:

Time (in minutes)	12–14	15–17	18–20	21–23
No. of students	3	5	8	4

(i) Use the mid-interval value of each class to estimate the mean of the distribution, giving your answer correct to the nearest minute.
(ii) In which interval does the median lie?

Exercise 8.5

5. The ages of some people watching a film are given in this frequency table:

Age (in years)	10–20	20–30	30–40	40–50
No. of people	4	15	11	10

(i) Use the mid-interval value of each class to estimate the mean of the distribution, giving your answer correct to the nearest year.
(ii) In which interval does the median lie?

Exercise 8.5

6. One hundred people were asked to record the number of mobile phonecalls they received on a particular day. The results are shown in the table below.

No. of calls	0–4	5–9	10–14	15–19	20–24
Frequency	45	29	17	8	1

(i) In which interval does the median lie?
(ii) What is the modal group?
(iii) Use the mid-interval values to estimate the mean number of calls. Give your answer correct to the nearest whole number.

Answers 8.5

1. (i) (4 – 6) (ii) 6.5 (iii) (4 – 6)
2. (i) (12 – 14) (ii) 14 years (iii) (12 – 14)
3. 18.6
4. (i) 18 min (ii) (18 – 20)
5. (i) 32 years (ii) (30 – 40)
6. (i) (5 – 9) (ii) (0 – 4) (iii) 7