C35

Mean, median, mode and range

CHAPTER ASSIGNMENT · 13 MARKS

Name _____ Class _____ No. _____ Date _____

Answer every question in the space given. Show your working. Give answers to 3 significant figures unless a question says otherwise.

Practice questions from *Cambridge IGCSE Mathematics Core and Extended* (4th edition), Chapter 35 (Mean, median, mode and range), for classroom use. Where a question depends on a picture in the book, the picture's data is given in words or a table, and the question says so. The Check yourself and Chapter quiz questions are Guru Jazzy's own.

Exercise 35.1 · Mean, median, mode and range

35.1.1 In questions 1–5, find the mean, median, mode and range for each set of data. A hockey team plays 15 matches. Below is a list of the numbers of goals scored in these matches: 1, 0, 2, 4, 0, 1, 1, 1, 2, 5, 3, 0, 1, 2, 2

35.1.2 The total scores when two dice are thrown 20 times are: 7, 4, 5, 7, 3, 2, 8, 6, 8, 7, 6, 5, 11, 9, 7, 3, 8, 7, 6, 5 (find the mean, median, mode and range)

35.1.3 The ages of a group of girls are: 14 years 3 months, 14 years 5 months, 13 years 11 months, 14 years 3 months, 14 years 7 months, 14 years 3 months, 14 years 1 month (find the mean, median, mode and range)

35.1.4 The numbers of students present in a class over a three-week period are: 28, 24, 25, 28, 23, 28, 27, 26, 27, 25, 28, 28, 28, 26, 25 (find the mean, median, mode and range)

35.1.5 An athlete keeps a record in seconds of her training times for the 100 m race: 14.0, 14.3, 14.1, 14.3, 14.2, 14.0, 13.9, 13.8, 13.9, 13.8, 13.8, 13.7, 13.8, 13.8, 13.8 (find the mean, median, mode and range)

35.1.6 The mean mass of the 11 players in a football team is 80.3 kg. The mean mass of the team plus a substitute is 81.2 kg. Calculate the mass of the substitute.

35.1.7 After eight matches, a basketball player had scored a mean of 27 points. After three more matches his mean was 29. Calculate the total number of points he scored in the last three games.

Exercise 35.2 · Frequency tables

35.2.1 An ordinary dice was rolled 60 times. The results are shown in the table below. Calculate the mean, median, mode and range of the scores.

Score	1	2	3	4	5	6
Frequency	12	11	8	12	7	10

35.2.2 Two dice were thrown 100 times. Each time their combined score was recorded. Below is a table of the results. Calculate the mean score.

Score	2	3	4	5	6	7	8	9	10	11	12
Frequency	5	6	7	9	14	16	13	11	9	7	3

35.2.3 Sixty flowering bushes are planted. At their flowering peak, the number of flowers per bush is counted and recorded. The results are shown in the table below. (a) Calculate the mean, median, mode and range of the number of flowers per bush. (b) Which of the mean, median and mode would be most useful when advertising the bush to potential buyers?

Flowers per bush	0	1	2	3	4	5	6	7	8
Frequency	0	0	0	6	4	6	10	16	18

Exercise 35.3 · The mean for grouped data

35.3.1 The heights of 50 basketball players attending a tournament are recorded in the grouped frequency table. Note: 1.8– means $1.8 \le H < 1.9$. (a) Copy the table and complete it to include the necessary data with which to calculate the mean height of the players. (b) Estimate the mean height of the players. (c) What is the modal class height of the players?

Height (m)	1.8–	1.9–	2.0–	2.1–	2.2–	2.3–2.4
Frequency	2	5	10	22	7	4

35.3.2 The number of hours of overtime worked by employees at a factory over a period of a month is given in the table (below). (a) Calculate an estimate for the mean number of hours of overtime worked by the employees that month. (b) What is the modal class?

Hours of overtime	0–9	10–19	20–29	30–39	40–49	50–59
Frequency	12	18	22	64	32	20

35.3.3 The length of the index finger of 30 students in a class is measured. The results were recorded and are shown in the grouped frequency table. (a) Calculate an estimate for the mean index finger length of the students. (b) What is the modal class?

Length (cm)	5.0–	5.5–	6.0–	6.5–	7.0–7.5
Frequency	3	8	10	7	2

Student assessment 1

SA1.1 A javelin thrower keeps a record of her best throws over ten competitions. These are shown in the table below. Find the mean, median, mode and range of her throws.

Competition	1	2	3	4	5	6	7	8	9	10
Distance (m)	77	75	78	86	92	93	93	93	92	89

SA1.2 The bar chart shows the marks out of 10 for a Maths test taken by a class of students (the bar chart is in the book, page 509; its data is given in the table below). (a) Calculate the number of students who took the test. (b) Calculate for the class: (i) the mean test result, (ii) the median test result, (iii) the modal test result, (iv) the range of the test results. (c) The teacher is happy with these results as he says that the average result was 10/10. Another teacher says that the average is only 7.5/10. Which teacher is correct? Give a reason for your answer.

Test score	4	5	6	7	8	9	10
Frequency	1	3	4	5	2	3	8

SA1.3 A hundred sacks of coffee with a stated mass of 10 kg are unloaded from a train. The mass of each sack is checked and the results are presented in the table. (a) Calculate an estimate for the mean mass. (b) What is the modal class?

Mass (kg)	$9.8 \le M < 9.9$	$9.9 \le M < 10.0$	$10.0 \le M < 10.1$	$10.1 \le M < 10.2$	$10.2 \le M < 10.3$
Frequency	14	22	36	20	8

Check yourself

1. Find the mean, median, mode and range of 6, 9, 4, 9, 7, 5. [4]

2. The mean of seven numbers is 9. An eighth number, 17, is added. Find the new mean. [2]

3 The table shows the goals scored in 20 matches. Find the mean. Goals 0, 1, 2, 3 have frequencies 4, 6, 8, 2. [2]

4 The times (minutes) of 30 journeys are grouped: $0 \le t < 10$ (5 journeys), $10 \le t < 20$ (15 journeys), $20 \le t < 30$ (10 journeys). Estimate the mean and state the modal class. [4]

5 Explain why a mean worked out from grouped data is only an estimate. [1]

Chapter quiz

Q1 What is the mode of 3, 5, 5, 7, 9, 5, 2?

A	B	C	D
5	3	7	9

Q2 What is the median of 4, 9, 1, 7, 3?

A	B	C	D
4	7	1	5.4

Q3 What is the median of 2, 4, 6, 10?

A	B	C	D
5	6	4	5.5

Q4 What is the range of 12, 5, 19, 8?

A	B	C	D
14	19	12	7

Q5 What is the mean of 4, 6, 8, 10, 12?

A	B	C	D
8	10	6	40

Q6 The mean of 6 numbers is 7. What is their total?

A	B	C	D
42	13	1.2	36

Q7 The mean of 5 numbers is 10. A sixth number, 16, is added. What is the new mean?

A	B	C	D
11	13	10.5	16

Q8 Score 1, 2, 3 has frequencies 2, 5, 3. What is the mean score?

A	B	C	D
2.1	2	2.5	21

Q9 Score 0, 1, 2, 3 has frequencies 4, 9, 6, 5. What is the mode?

A	B	C	D
1	9	0	3

Q10 What is the mid-interval value of the class $10 \leq h < 20$?

A	B	C	D
15	10	20	30

Q11 Why is a mean worked out from grouped data only an estimate?

A	B	C	D
The exact values inside each class are not known	Grouped data always has mistakes	The frequencies are rounded	The mid-interval values are always wrong

Q12 One value in a data set is far bigger than all the rest. Which average is least affected?

A	B	C	D
The median	The mean	The range	The total

End of assignment · Check your answers against the chapter at gurujazzy.com/subjects/o-level-mathematics/chapter-35-mean-median-mode-and-range/