

E9.2 Interpreting statistical data

Name: _____ Class: _____ Date: _____

Total: 13 marks

KEY WORDS frequency table
• quartiles and interquartile range

• interquartile range
• data
• interpreting statistical data

Objective

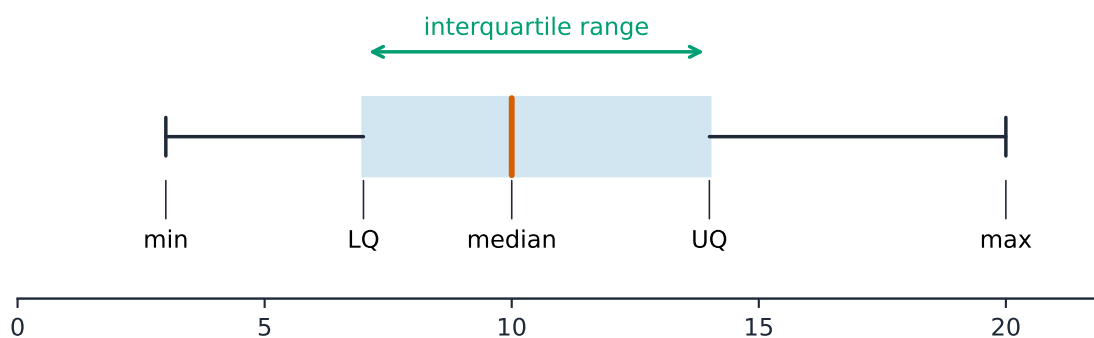
Build the skills to answer Extended exam questions on **interpreting statistical data**
– the **mean, median, mode and range**, the mean from a **frequency table**, and the **quartiles and interquartile range**.

You must be able to:

- find the mean, median, mode and range of a data set
- find the mean from a frequency table
- find the median, quartiles and interquartile range

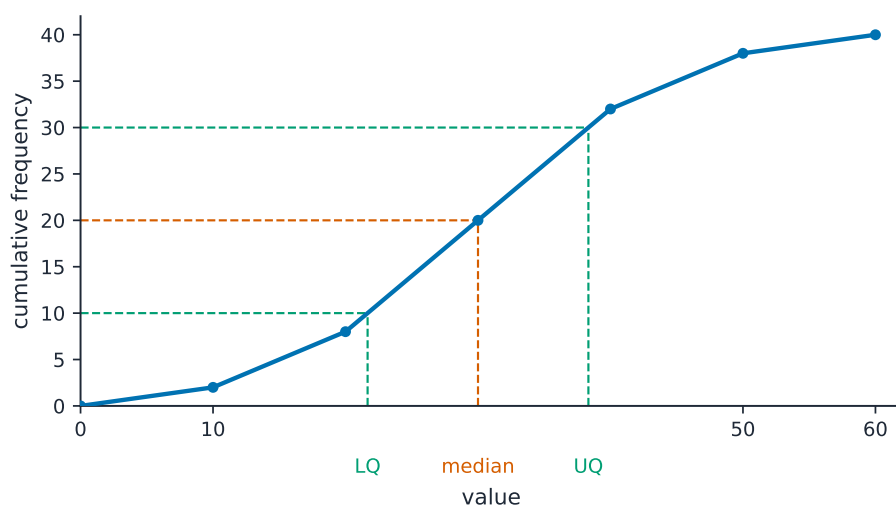
1 Key knowledge and worked examples

■ Averages and spread



min, Q_1 , median, Q_3 , max. $IQR = Q_3 - Q_1$

The box length is the interquartile range



median at $n/2$ · $IQR = UQ - LQ$

A cumulative frequency curve gives the median and quartiles

- **Mean** = $\frac{\text{sum}}{\text{count}}$; **median** = middle (in order); **mode** = most common; **range** = $\text{max} - \text{min}$.
- **Mean from a frequency table:** $\frac{\sum(\text{value} \times \text{frequency})}{\sum \text{frequency}}$.
- **Interquartile range** = $UQ - LQ$ (ignores extreme values).

Answer shapes: M1 a correct method, A1 the correct answer.

2 Practice

2.1 Find the median and range of 4, 7, 7, 2, 5. [2]

2.2 Find the mode of 3, 5, 5, 5, 8, 9. [1]

2.3 Find the mean of 6, 8, 10, 12. [2]

3 Exam-style questions

3.1 The values 1, 2, 3 occur with frequencies 4, 5, 1. Calculate the mean. [3]

3.2 Here is a data set in order: 4, 6, 7, 9, 10, 12, 13, 15.

(a) Find the median. [2]

(b) Find the interquartile range. [3]

Solutions

Marking: **M1** a correct method, **A1** the correct answer.

Each answer shows the steps, then the **result**.

2.1

- ordered: 2, 4, 5, 7, 7
- median **5**; range $7 - 2 = \mathbf{5}$

2.2

- mode **5**

2.3

$$\frac{6 + 8 + 10 + 12}{4} = \frac{36}{4} = \mathbf{9}$$

3.1

$$\frac{1(4) + 2(5) + 3(1)}{4 + 5 + 1} = \frac{17}{10} = \mathbf{1.7}$$

3.2

(a)

- middle pair 9 and 10

$$\frac{9 + 10}{2} = \mathbf{9.5}$$

(b)

- $LQ = \frac{6 + 7}{2} = 6.5$
- $UQ = \frac{12 + 13}{2} = 12.5$
- $IQR = 12.5 - 6.5 = \mathbf{6}$