

E9.2 Interpreting statistical data

Name: _____ Class: _____ Date: _____ **Total: 13 marks**

KEY WORDS frequency table 频数表 • interquartile range 四分位距 • data 数据
• quartiles and interquartile range 四分位数和四分位距 • interpreting statistical data 解读统计数据

Objective

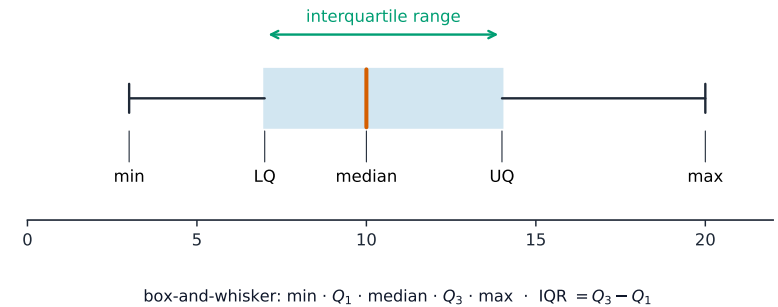
Build the skills to answer Extended exam questions on **interpreting statistical data** 解读统计数据 — the **mean, median, mode and range** 平均数、中位数、众数、极差, the mean from a **frequency table** 频数表, and the **quartiles and interquartile range** 四分位数和四分位距.

You must be able to:

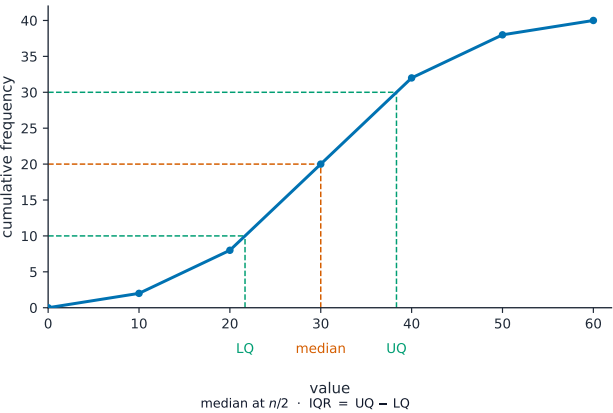
- find the mean, median, mode and range of a data set
- find the mean from a frequency table
- find the median, quartiles and interquartile range

1 Worked examples

■ Averages and spread



The box length is the interquartile range



A cumulative frequency curve gives the median and quartiles

- **Mean** = $\frac{\text{sum}}{\text{count}}$; **median** = middle (in order); **mode** = most common; **range** = max – min.
- **Mean from a frequency table:** $\frac{\sum(\text{value} \times \text{frequency})}{\sum \text{frequency}}$.
- **Interquartile range** 四分位距 = $UQ - LQ$ (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.

2.1 ordered: 2, 4, 5, 7, 7 $\rightarrow$ median = 5; range = $7 - 2 = 5$.

2.2 mode = 5.

2.3 $\frac{6+8+10+12}{4} = \frac{36}{4} = 9$.

3.1 $\frac{1(4)+2(5)+3(1)}{4+5+1} = \frac{4+10+3}{10} = \frac{17}{10} = 1.7$.

3.2 (a) median = $\frac{9+10}{2} = 9.5$. (b) lower quartile = $\frac{6+7}{2} = 6.5$; upper quartile = $\frac{12+13}{2} = 12.5$; IQR = $12.5 - 6.5 = 6$.