

Statistics

Cambridge IGCSE Maths (0580) · Knowledge organiser

KEY DEFINITIONS

Mean

The total of the values divided by how many there are.

Median

The middle value when the data are in order.

Interquartile range

$Q_3 - Q_1$: the spread of the middle half of the data.

Frequency density

Frequency $\div$ class width; the heights of a histogram's bars.

KEY FORMULAS

Mean from a frequency table $\bar{x} = \frac{\sum fx}{\sum f}$

Estimated mean, grouped data (class midpoints m) $\bar{x} \approx \frac{\sum fm}{\sum f}$

Median position (n values in order) $\frac{n+1}{2}$ th value

Range largest – smallest

Interquartile range $Q_3 - Q_1$

Histogram frequency density = $\frac{\text{frequency}}{\text{class width}}$

YOU SHOULD BE ABLE TO...

- Classify data as discrete or continuous and qualitative or quantitative, and organise it in frequency tables and grouped tables.
- Draw and interpret ordered stem-and-leaf diagrams with a key and frequency distributions, and use them to find averages.
- Draw lines of best fit through the mean point of a scatter diagram and use them to estimate values, discussing reliability.
- Draw and interpret histograms with equal class widths for grouped continuous data, and compare them with bar charts.
- Draw and interpret histograms with unequal class widths using frequency density.
- Compare two distributions in words, using a measure of average and a measure of spread and referring to the context of the data.

WORKED EXAMPLE

Find the mean of this frequency table: score 1, 2, 3, 4 with frequencies 3, 5, 8, 4.

1. $\sum f = 3 + 5 + 8 + 4 = 20$

2. $\sum fx = 3 + 10 + 24 + 16 = 53$

3. Mean = $53 \div 20$

Answer: Mean = 2.65

COMMON MISTAKES

- ✗ Using class widths instead of midpoints for an estimated mean
- ✗ Drawing histogram bars with heights equal to the frequency instead of the frequency density