

Exercise walk-through

E9.2

Interpreting statistical data

IGCSE Mathematics

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

The method

Method — Averages and spread

- **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** = UQ – LQ (ignores extreme values).

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

Exercises 2.1-2.3

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]

Exercises 2.1·2.3

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

[2]

2.1

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

2.2 Find the mode of 3, 5, 5, 5, 8, 9.

[1]

2.2

- mode **5**
-

2.3 Find the mean of 6, 8, 10, 12.

[2]

2.3

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

Exercise 3.1

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

[3]

Exercise 3.1

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

[3]

3.1

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

Exercise 3.2 (a)

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

(a) Find the median.

[2]

Exercise 3.2 (a)

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

(a) Find the median.

[2]

(a)

- middle pair 9 and 10

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

Exercise 3.2 (b)

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

(b) Find the interquartile range.

[3]

Exercise 3.2 (b)

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

(b) Find the interquartile range.

[3]

(b)

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