Comparing displays and choosing a useful average

6 questions | 12 marks

Equivalent correct methods earn the corresponding marks.

1. Group A has mean 15 and range 4. Group B has mean 15 and range 14. State one similarity and one difference. [2 marks]

Both centres measured by the mean are 15.

14 is a larger range than 4.

Answer: Same mean; Group B has the wider spread.

2. A dataset has several very high prices and many modest prices. Which of mean or median is usually more useful for a typical price? Explain. [2 marks]

The high extremes can pull the mean upwards; the median describes the middle position.

Answer: Median, with an explanation of the high prices.

3. Which summary would help a shop order its most popular T-shirt colour? [2 marks]

Colours are categories; the highest-frequency category is relevant.

Answer: The modal colour.

4. Two bar graphs show the same frequencies, but one scale runs 0-20 and the other 0-200. Can bar height in centimetres alone compare frequencies? [2 marks]

The scales differ. Read labelled values or redraw using a common scale.

Answer: No.

5. Scores are 6, 8, 8, 10, 13. Give the median and range, then explain why these do not describe everything. [2 marks]

The middle value is 8.

$\text{Range} = 13 - 6 = 7.$

Different datasets can share those summaries.

Answer: Median 8; range 7. A list or plot is still needed to show all frequencies and shape.

6. In Group A, 12 of 40 students catch a bus. In Group B, 8 of 20 do. Which has the greater proportion of bus travellers? [2 marks]

A: $\frac{12}{40} = 30\%.$

B: $\frac{8}{20} = 40\%.$

40% is greater than 30%, even though A has more bus travellers in total.

Answer: Group B.