Worked answers | Statistics

Comparing data sets

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Find mean, median and range for 3, 5, 5, 7, 10. [3 marks]

Total is 30, so mean $= 30/5 = 6$.

The middle is 5; $10 - 3 = 7$.

Answer: Mean 6; median 5; range 7.

2. A: 6, 7, 8, 9, 10. B: 4, 8, 8, 8, 12. Compare means and ranges. [3 marks]

Both totals are 40.

$10 - 6 = 4$ and $12 - 4 = 8$, so A is less spread out.

Answer: Both means 8; A range 4, B range 8.

3. A: 11, 12, 13. B: 10, 14, 15. Does B's higher mean show every B score is higher? [2 marks]

A mean is 12 and B mean is 13.

A group mean does not imply a claim about all individuals.

Answer: No; B contains 10, below every A score.

4. Two waiting-time samples have medians 8 and 11 minutes. Interpret the difference. [2 marks]

$11 - 8 = 3$ minutes.

It does not mean each individual wait differs by 3 minutes.

Answer: The first sample's middle waiting time is 3 minutes shorter.

5. Why is comparing raw totals from a five-minute test with a ten-minute test unfair? [2 marks]

The longer test allows more events.

Use the same conditions or a suitable rate, explaining remaining differences.

Answer: The groups have different amounts of time or opportunity.

6. A sample of six has a higher median score than another sample of six. Write a cautious conclusion. [2 marks]

This evidence describes two small samples.

Sampling variation or other differences may explain the result.

Answer: The first sample has a higher median; larger fair samples are needed before generalising.