A bivariate investigation and its limitations

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Write a focused bivariate question about students that uses two numerical variables. [2 marks]

Specify a population.

Choose two measurable numerical variables.

Answer: For example:'Among Year 10 students, is height associated with arm span?'

2. State a consistent recording plan for height and arm span. [2 marks]

Use common units and precision.

Keep pairs together.

Answer: Measure both in centimetres with the same procedures; record paired values for each participant.

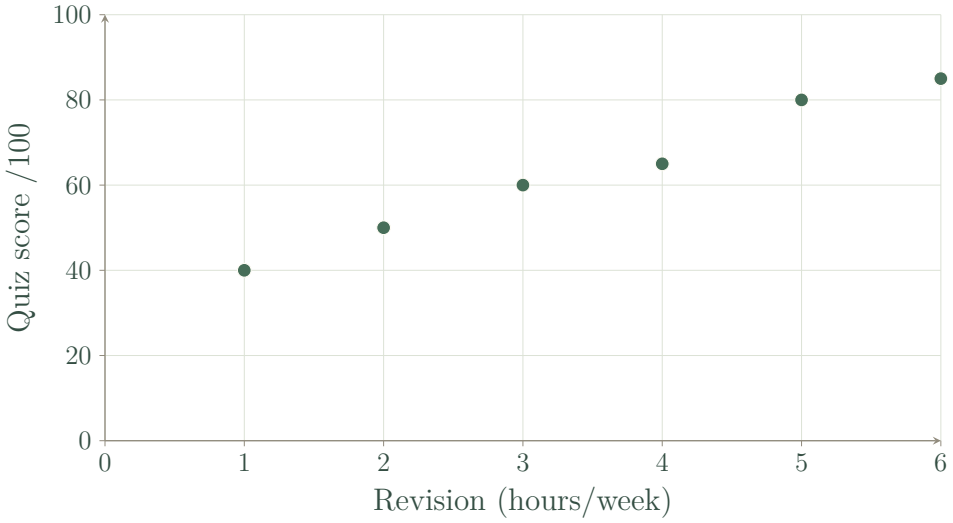
3. Why might choosing only the basketball team limit a height/arm-span investigation about all Year 10 students? [2 marks]

Team selection can relate to physical characteristics.

Use a wider sampling frame.

Answer: The selected group may not represent the full year.

4. Describe the supplied revision/score pattern and one limitation. [3 marks]



Scores tend to rise with reported revision hours.

Self-reporting and confounding also limit interpretation.

Answer: Positive roughly linear association; the small volunteer sample may be unrepresentative.

5. Give one reason not to predict the score for 20 revision hours from data covering 1-6 hours. [2 marks]

The relationship may not continue unchanged.

The sample does not support that range.

Answer: It is extrapolation far beyond the observed range.

6. A class finds no clear pattern. Write an honest conclusion and one improvement. [3 marks]

Do not change or hide data to support the prediction.

Improve a specific limitation rather than promise a different result.

Answer: No clear association was found in this sample; collect a larger, fairer sample with more consistent measurements.