Worked answers | Statistics

Designing and reporting an investigation

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Write a precise question about Year 9 homework time, naming a population and measurement. [2 marks]

Name the target group.

Define minutes and a usual school night for comparability.

Answer: For Year 9 students at this school, how many minutes of homework are completed on a usual school night?

2. Suggest a fair sample for comparing homework time in two Year 9 classes. [2 marks]

Include both groups in the frame.

Report non-response rather than silently replacing inconvenient answers.

Answer: Randomly select from both rolls, using the same question and measurement period.

3. For walking times 8, 10, 10, 12, 15, 17, calculate mean, median and range. [3 marks]

Total 72, mean $\frac{72}{6} = 12$.

Median $\frac{10+12}{2} = 11$; range $17 - 8 = 9$.

Answer: Mean 12 min; median 11 min; range 9 min.

4. A student records 600 minutes for a short school journey. What should happen before analysis? [2 marks]

An unusual value may be a mistake or a real event.

Document the decision instead of silently deleting it.

Answer: Check the source and units; correct only a confirmed error.

5. Choose a display to compare the supplied walking and bus times. [2 marks]

Six observations per group. Rows are not matched students.

Walk (min)	Bus (min)
8	5
10	8
10	12
12	12
15	15
17	20

Both groups measure the same numerical variable.

A common scale reveals centre, spread and overlap.

Answer: Two dot plots on the same minute scale, or a back-to-back stem-and-leaf plot.

6. Give two limitations of an investigation using six volunteers from each travel group. [3 marks]

Voluntary selection can introduce bias.

Small unmatched samples limit generalisation and causal claims.

Answer: Small samples may vary; volunteers may not represent everyone; journey distances may differ. Any two explained.