Statistics topic test 3

Name: _____ Date: _____

10 questions | 40 marks | 65 minutes

A progressive original paper on investigation design, numerical summaries and evidence-based interpretation.

A scientific calculator may be used.

1. A researcher asks “Do students prefer online learning?” [4 marks]

(a) Improve the question. [2 marks]

(b) Why is it statistical? [2 marks]

2. Five classes are randomly selected, then every member is surveyed. [4 marks]

(a) Name the method. [2 marks]

(b) State a limitation. [2 marks]

3. An exercise-time column labelled minutes contains 45, 60, 75, blank, 0, 1.5. [4 marks]

(a) Which entries need clarification? [2 marks]

(b) Why distinguish missing from zero? [2 marks]

4. Data are 2, 3, 4, 4, 7, 10. [4 marks]

(a) Find mean, median, range. [2 marks]

(b) Find Q1, Q3, IQR using halves. [2 marks]

5. Category counts are A 8, B 12, C4, D6. [4 marks]

Category	A	B	C	D
Frequency	8	12	4	6

(a) Find relative frequency of B. [2 marks]

(b) Choose a display and explain why not a histogram. [2 marks]

6. The full population is 3, 3, 7, 7. [4 marks]

(a) Find mean and population SD. [2 marks]

(b) Add 5 to every value. Give new mean and SD. [2 marks]

7. Q1=9, Q3=15, and 25 is recorded. [4 marks]

(a) Find fences and decide whether 25 is flagged. [2 marks]

(b) Give a legitimate action if 25 is genuine and relevant. [2 marks]

8. Scores: A median 40, IQR 12, range 30; B median 43, IQR 6, range 35. [4 marks]

(a) Compare centre and central spread. [2 marks]

(b) How can B have smaller IQR but larger range? [2 marks]

9. Sales rise from 98 to 102 units; a bar-chart axis starts at 97. [4 marks]

(a) Find the percentage increase. [2 marks]

(b) Explain the graphical concern. [2 marks]

10. Calculator owners have higher average marks in a survey. [4 marks]

(a) Why is ownership not established as the cause? [2 marks]

(b) Give a cautious statement and next step. [2 marks]