# Statistics topic test 2

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 council studies Sunday-opening preference among 2400 registered library users. [4 marks]

**(a)** Identify a population and an appropriate sample statistic. [2 marks]

**(b)** Why sample rather than census? [2 marks]

**2.** There are 900 users under 40, 1000 aged 40-64 and 500 aged 65 or above. [4 marks]

**(a)** Allocate a proportional stratified sample of 120. [2 marks]

**(b)** How should people be selected within each group? [2 marks]

**3.** Records include travel method, bus-route number, journey time and transfer count. [4 marks]

**(a)** Classify the first two. [2 marks]

**(b)** Classify the last two and give units where needed. [2 marks]

**4.** Waiting times are 1, 2, 2, 3, 17 minutes. [4 marks]

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

**(b)** Which centre is less affected by the long wait? [2 marks]

**5.** Values 1, 2, 3, 4 have frequencies 3, 5, 1, 1. [4 marks]

| Value | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Frequency | 3 | 5 | 1 | 1 |

**(a)** Find weighted mean. [2 marks]

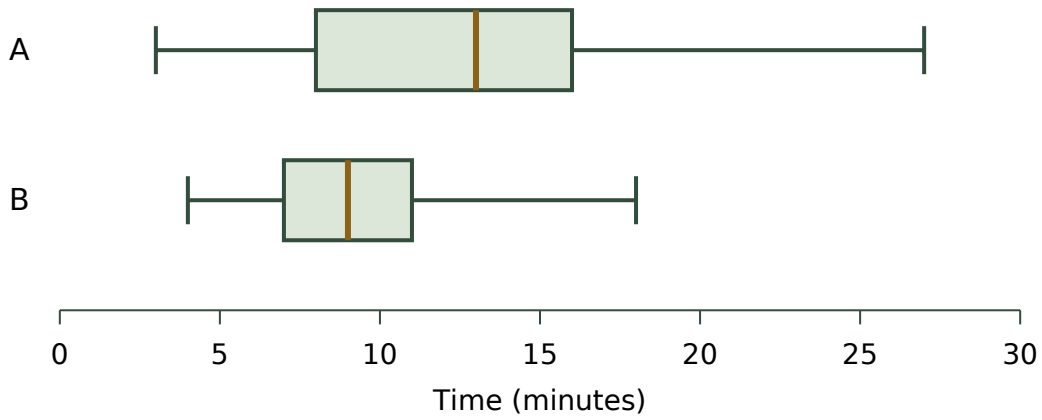
**(b)** What percentage has value at least 3? [2 marks]

**6.** Ordered values are 3, 5, 6, 8, 11, 13, 20. Exclude the median from each half. [4 marks]

**(a)** Find the five-number summary. [2 marks]

**(b)** Find IQR and upper fence. [2 marks]

**7.** Read the delivery-time box plots. [4 marks]




**(a)** Compare median and IQR. [2 marks]

**(b)** Name a feature not recoverable from these plots alone. [2 marks]

**8.** A 12-person group averages 60; an 18-person group averages 70. [4 marks]

**(a)** Find combined mean. [2 marks]

**(b)** Why is 65 incorrect? [2 marks]

**9.** A height of 250 cm appears among measurements near 170 cm. [4 marks]

**(a)** Describe two checks before changing it. [2 marks]

**(b)** The source form confirms 150 cm. What now? [2 marks]

**10.** Thirty-five café visits have median service 7 min and IQR 3 min, all from one quiet Tuesday. [4 marks]

**(a)** Write a conclusion supported by the data. [2 marks]

**(b)** Give a limitation for weekends and an improvement. [2 marks]