Worked answers | Statistics

Centre, spread, shape and outliers

6 questions | 17 marks

Equivalent correct methods earn the corresponding marks.

1. Find mean, median, mode and range of 2, 4, 4, 6, 9. [4 marks]

Total $= 25$, giving mean 5.

Middle and most frequent are 4; $9 - 2 = 7$.

Answer: Mean 5; median 4; mode 4; range 7.

2. Compare mean and median for 1, 2, 2, 3, 17. [3 marks]

Total $= 25$, mean $= 5$.

17 pulls the mean above the main cluster; the middle remains 2.

Answer: Mean 5; median 2.

3. Is an inconvenient but valid long wait a reason to delete a value? [2 marks]

The value may reveal a real problem.

Deleting valid data merely to improve results would misrepresent the experience.

Answer: No. Investigate and explain it.

4. Find the mean: values 0, 1, 2, 3 with frequencies 1, 3, 4, 2. [3 marks]

Total frequency $= 10$.

Total value $= 0 + 3 + 8 + 6 = 17$; $17/10 = 1.7$.

Answer: 1.7.

5. Most values lie near 10, with a few near 40. Describe the likely tail direction. [2 marks]

Most observations cluster low.

The few large values extend the upper end.

Answer: Right-skewed: a tail toward larger values.

6. Must two sets with mean 12 and range 4 be identical? Give a counterexample. [3 marks]

Both totals are 60 for five values, giving mean 12.

Both run from 10 to 14, but frequencies differ.

Answer: No: 10, 11, 12, 13, 14 and 10, 10, 12, 14, 14.