Statistics topic test

15 questions | 43 marks | 45 minutes

A progressively demanding Year 7 paper covering variables, displays, averages, comparisons and fair conclusions.

Equivalent correct methods earn the corresponding marks.

1. Classify each variable as discrete numerical, continuous numerical or categorical. [3 marks]

(a) Number of students in each club. [1 mark]

It counts separate students.

Answer: Discrete numerical.

(b) Time taken to run 100 m, recorded to a whole second. [1 mark]

Time is measured, even when rounded.

Answer: Continuous numerical.

(c) School house name. [1 mark]

It identifies a group.

Answer: Categorical.

2. Write a statistical question about the number of siblings of students in your Year 7 class. [2 marks]

The group is defined and answers are expected to vary.

Answer: For example, how many siblings does each student in this Year 7 class have?

3. Create a frequency table for 0, 1, 1, 1, 2, 2, 3, 5. Include every observed value. [3 marks]

Frequency table

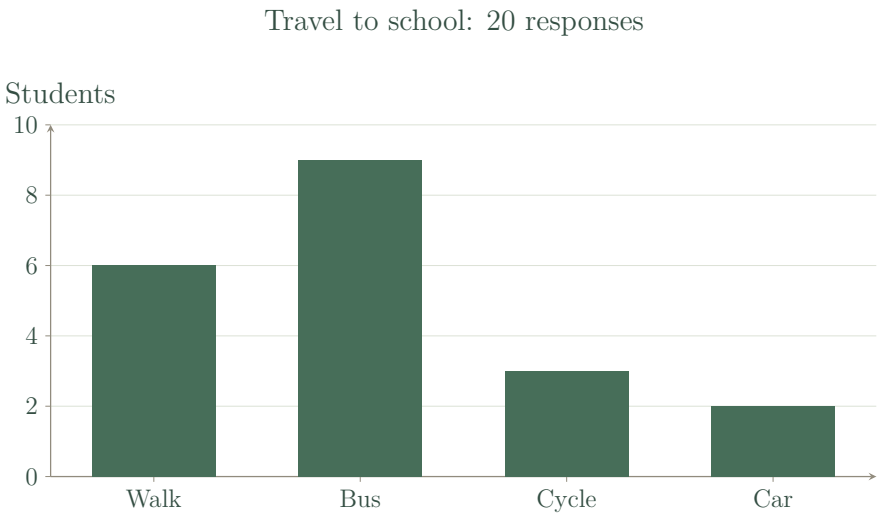
Value	Frequency
0	1
1	3
2	2
3	1
5	1

Count each observation once.

$1+3+2+1+1=8$ observations.

Answer: 0:1, 1:3, 2:2, 3:1, 5:1.

4. Read the travel bar graph. [3 marks]



Teaching data; frequency axis starts at zero.

(a) How many students travel by bus? [1 mark]

Read the bus bar against the frequency axis.

Answer: 9 students.

(b) What fraction of students walk? [2 marks]

6 of 20 walk.

$\frac{6}{20} = \frac{3}{10}$.

Answer: $\frac{3}{10}$.

5. Read the stem-and-leaf plot. [3 marks]

Key $2 \mid 4 = 24$ minutes

Stem	Leaves
1	8 9
2	0 2 2 4
3	1

(a) How many observations are shown? [1 mark]

Count all seven leaves.

Answer: 7.

(b) State the longest time. [1 mark]

Stem 3 and leaf 1 give 31 minutes.

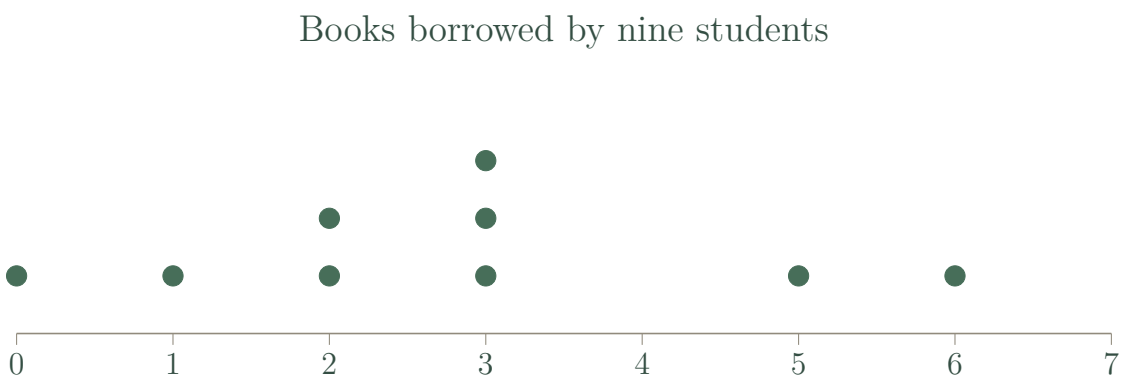
Answer: 31 minutes.

(c) How many times are 22 minutes recorded? [1 mark]

Stem 2 contains two leaves of 2.

Answer: 2.

6. How many students in this dot plot borrowed at most two books? [2 marks]



Books borrowed; one dot represents one student.

The values at or below 2 are 0, 1, 2, 2.

Answer: 4 students.

7. The scores are 5, 7, 7, 9, 12. [2 marks]

(a) Find the mode. [1 mark]

7 is the most frequent score.

Answer: 7.

(b) Find the range. [1 mark]

$12 - 5 = 7$.

Answer: 7.

8. Find the median of 14, 6, 8, 10, 4, 12. Show your ordering. [3 marks]

Ordered:4,6,8,10,12,14.

$\text{Median} = (8 + 10) \div 2 = 9$.

Answer: 9.

9. The distances walked in four days are 3, 5, 4 and 8 km. Find the mean daily distance. [2 marks]

$\text{Total} = 3 + 5 + 4 + 8 = 20$ km.

$\text{Mean} = 20 \div 4 = 5$ km.

Answer: 5 km.

10. Five numbers have a mean of 8. Four are 4, 6, 9 and 11. Find the fifth. [3 marks]

$\text{Required total} = 5 \times 8 = 40$.

$\text{Known total} = 4 + 6 + 9 + 11 = 30$.

$\text{Missing number} = 40 - 30 = 10$.

Answer: 10.

11. The waiting times are 2, 3, 3, 4 and 28 minutes. All records are correct. [5 marks]

(a) Find the mean and median. [3 marks]

$\text{Sum} = 40$, so $\text{mean} = 40 \div 5 = 8$.

The middle ordered value is 3.

Answer: Mean 8 minutes; median 3 minutes.

(b) Choose one of those averages to describe a typical wait and explain. [2 marks]

Four of five waits are 2-4 minutes; the long wait pulls the mean upwards.

Retain the genuine 28-minute record and explain its influence.

Answer: The median of 3 minutes.

12. Two groups have these scores: $A = 10, 11, 12, 13, 14$; $B = 6, 9, 12, 15, 18$. [4 marks]

(a) Find each group's mean. [2 marks]

Each group totals 60 and contains five scores.

Answer: Both means are 12.

(b) Find each range and compare. [2 marks]

$14 - 10 = 4; 18 - 6 = 12$.

Answer: A has range 4; B has range 12. B varies more despite the same mean.

13. Most values in a distribution are between 3 and 8, with a few extending to 30. Describe the direction of skew and explain. [2 marks]

The long tail extends towards larger values on the right.

Answer: Right-skewed.

14. A graph of category frequencies starts its vertical axis at 18, making values 20 and 22 look very different. Give a fairer display and explain. [2 marks]

The difference is 2; truncating bar lengths can exaggerate it.

A common zero baseline allows fair height comparison.

Answer: Use bars with a clearly labelled frequency axis starting at zero.

15. A student asks only friends how many minutes they spent reading yesterday. Some leave the answer blank. The student enters blanks as zero and concludes that every student in the year reads for the group mean. [4 marks]

(a) Give one improvement to how participants are chosen. [1 mark]

Friends may not represent the wider group.

Answer: Choose a suitable group across the year rather than only friends.

(b) Explain how blank answers should be recorded. [1 mark]

No response does not establish zero minutes.

Answer: As missing, not zero.

(c) Why is the conclusion about every student unsupported? [2 marks]

Different observations can share one mean.

Keep conclusions within the group and method actually used.

Answer: A mean is not every individual value, and this group does not establish the whole year's pattern.