Worked answers | Statistics

Sampling and survey quality

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. A principal surveys 60 of the school's 900 students. Name the population and sample. [2 marks]

The target is the whole school.

Only 60 students supply responses.

Answer: Population: all 900 students. Sample: the 60 surveyed.

2. A gardening-club poll estimates how many town residents grow vegetables. Explain one likely bias. [2 marks]

The frame is club users, not all residents.

Interest in gardening is linked to the question.

Answer: Gardeners are more likely to see and answer it, so the estimate may be high.

3. A year group has 180 students in A and 120 in B. Allocate a proportional sample of 50. [3 marks]

Total is 300.

$180/300 \times 50 = 30$ and $120/300 \times 50 = 20$.

Answer: 30 from A; 20 from B.

4. Explain how to choose a systematic sample of 10 from a list of 100, using a random start. [2 marks]

The interval is $100/10 = 10$.

The random start avoids always choosing the same initial position.

Answer: Randomly select a position from 1 to 10, then take every tenth name.

5. Rewrite neutrally: Do you agree that our excellent new canteen is much better? [2 marks]

Remove praise and the suggested answer.

Offer better, about the same, worse and unsure as balanced choices.

Answer: How would you rate the new canteen compared with the previous canteen?

6. Forty names are chosen randomly, but only 18 students reply. Why should a report mention this? [2 marks]

Only $18/40 = 45\%$ replied.

Random selection does not guarantee representative completed responses.

Answer: Non-response may bias the results if respondents differ from non-respondents.