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.

$\frac{180}{300} \times 50 = 30$ and $\frac{120}{300} \times 50 = 20$.

**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 $\frac{100}{10} = 10$.

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 $\frac{18}{40} = 45\%$ replied.

Random selection does not guarantee representative completed responses.

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