

KS3 – Collecting Data – Answers

Section A – Sampling

Q1

- a) The entire group being investigated.
- b) A smaller group selected from the population.
- c) For example: it is quicker, cheaper or more practical.
- d) All 900 students in the school.

Q2

- a) Population
- b) Sample
- c) Population for that stated Monday investigation
- d) Sample

Q3

- a) No — maths-club students may have different subject preferences from the whole school.
- b) Yes — random selection across every year group is more likely to represent the school.
- c) No — people already using the sports centre may be more positive about sports facilities.
- d) Yes — it includes students from a range of year groups and areas.

Q4

- a) The sample of 100.
- b) Three students are too few and their opinions may not represent the school.
- c) No. A large sample can still be biased if it is selected unfairly.

Q5

- a) Randomly select students from each of Years 7, 8 and 9.
- b) Sample customers across several different days and times.
- c) Randomly select residents from different neighbourhoods.
- d) Randomly sample both junior and adult members.

Q6

It includes every year group rather than only one part of the school.

The same number is chosen from each year group and selection within each group is random.

This should give broader representation than choosing all 50 from one year group.

Section B – Questionnaires

Q7

- a) A question with a fixed set of possible responses.
- b) A question that allows the respondent to give their own answer.
- c) Closed responses are quick/easy to answer, compare or analyse.
- d) Open questions can collect more detailed opinions or reasons.

Q8

- a) Closed
- b) Open
- c) Closed
- d) Open

Q9

- a) The groups overlap at 2 and 4 hours.
- b) There is no option for 5 or more books.
- c) It is leading/biased because 'excellent' encourages a positive answer.
- d) The response options do not cover all respondents.

Q10

- a) Ask separately, e.g. 'Which of these do you play? Football / Basketball / Both / Neither.'
- b) Use non-overlapping groups, e.g. $0 < 2$, $2 < 4$, $4 < 6$, $6 +$ hours (or equivalent clear whole-hour categories).
- c) Use neutral wording, e.g. 'What do you think about the length of the school day?' with balanced responses.
- d) Include all reasonable choices, e.g. walk, cycle, bus, train, car, other.

Q11

Answers will vary. Accept sensible, neutral questions relevant to each investigation with suitable response options where needed.

Q12

Example: 'How many hours do you usually sleep on a school night?' Less than 6 / 6 to under 7 / 7 to under 8 / 8 to under 9 / 9 or more hours. Accept equivalent non-overlapping categories.

Section C – Bias

Q13

- a) Not biased — the response scale is reasonably balanced.
- b) Biased — 'Don't you agree' encourages agreement.
- c) Not biased.
- d) Biased — 'fantastic' encourages a positive response.

Q14

- a) Football-team members are more likely to support spending on football.
- b) People choosing a midnight horror film are unlikely to represent all cinema-goers/town residents.
- c) Car drivers may have different views about cycle lanes from cyclists and other residents.
- d) Year 11 may have different views from younger year groups.

Q15

- a) Ask customers at different times across the day.
- b) Randomly sample students from different maths sets/classes.
- c) Sample a range of leisure-centre users, not only swimmers.
- d) Survey people in several locations or use a random sample of residents.

Q16

- a) Both — the chess-club sample is unrepresentative and the question is leading.
- b) Neither — the sample is random and the question is neutral.
- c) Sample — concert-goers may be more interested in music than other students.
- d) Question — the sample is random but 'ugly old park' is leading.

Q17

Bias 1: asking 20 friends gives an unrepresentative/convenience sample. Improve by randomly selecting students from across the school.

Bias 2: 'Wouldn't...much better?' is a leading question. Improve by using neutral wording, e.g. 'Would you prefer the lunch break to be shorter, stay the same, or be longer?'