



AS Mathematics Exam Questions by Topic
Chapter 14: Data Collection

These questions are taken from the Specimen Exam materials and the real 2018 papers for the new syllabus AS and A-level mathematics courses and arranged by chapter of the textbooks by Goldie et al (available here: <https://amzn.to/39umfr5> and <https://amzn.to/3hE8kBL>). There are a mixture of questions from OCR A, OCR B (MEI) and AQA. Although the style of questions varies a little across the exam boards the content of the syllabus is almost identical so these are suitable for students preparing for any exam board.

Free problem sets for all other chapters, as well as video solutions, full past papers and other content for GCSE and A-level maths can be found at:

<https://mathsaurus.com/>

OCR B MEI Sample Paper 2 Question 10:

- 10** A researcher wants to find out how many adults in a large town use the internet at least once a week. The researcher has formulated a suitable question to ask. For each of the following methods of taking a sample of the adults in the town, give a reason why it may be biased.

Method A: Ask people walking along a particular street between 9 am and 5 pm on one Monday.

Method B: Put the question through every letter box in the town and ask people to send back answers.

Method C: Put the question on the local council website for people to answer online.

[3]

OCR A AS 2018 Paper 1 Question 9:

- 9** Jo is investigating the popularity of a certain band amongst students at her school. She decides to survey a sample of 100 students.

(i) State an advantage of using a stratified sample rather than a simple random sample. **[1]**

(ii) Explain whether it would be reasonable for Jo to use her results to draw conclusions about all students in the UK. **[1]**

OCR A AS Sample Paper 1 Question 8:

- 8** A club secretary wishes to survey a sample of members of his club. He uses all members present at a particular meeting as his sample.

(i) Explain why this sample is likely to be biased. **[1]**

Later the secretary decides to choose a random sample of members. The club has 253 members and the secretary numbers the members from 1 to 253. He then generates random 3-digit numbers on his calculator. The first six random numbers generated are 156, 965, 248, 156, 073 and 181. The secretary uses each number, where possible, as the number of a member in the sample.

(ii) Find possible numbers for the first four members in the sample. **[2]**
