



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), Edexcel 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]

AQA AS 2018 Paper 2 Question 16:

- 16** Kevin is the Principal of a college.

He wishes to investigate types of transport used by students to travel to college.

There are 3200 students in the college and Kevin decides to survey 60 of them.

Describe how he could obtain a simple random sample of size 60 from the 3200 students.

[4 marks]

AQA Sample Paper 3 Question 8:

- 8** Edna wishes to investigate the energy intake from eating out at restaurants for the households in her village.

She wants a sample of 100 households.

She has a list of all 2065 households in the village.

Ralph suggests this selection method.

“Number the households 0000 to 2064. Obtain 100 different four-digit random numbers between 0000 and 2064 and select the corresponding households for inclusion in the investigation.”

- 8 (a)** What is the population for this investigation?

Circle your answer.

[1 mark]

Edna and Ralph	The 2065 households in the village	The energy intake for the village from eating out	The 100 households selected
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- 8 (b)** What is the sampling method suggested by Ralph?

Circle your answer.

[1 mark]

Opportunity	Random number	Continuous random variable	Simple random
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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]

AQA AS Sample Paper 2 Question 18:

- 18** Neesha wants to open an Indian restaurant in her town.

Her cousin, Ranji, has an Indian restaurant in a neighbouring town. To help Neesha plan her menu, she wants to investigate the dishes chosen by a sample of Ranji's customers.

Ranji has a list of the 750 customers who dined at his restaurant during the past month and the dish that each customer chose.

Describe how Neesha could obtain a simple random sample of size 50 from Ranji's customers.

[4 marks]