Your notes

GCSE Maths: revision notes

Sampling

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Populations and samples

- The **population** is the whole group you want to find out about. A **sample** is a smaller part of the **population** that you collect data from.
- A **sample** is quicker and cheaper than asking everyone, but it only gives an estimate.

Random samples and bias

- In a **random sample**, every member of the **population** has an equal chance of being chosen, for example by using random numbers or picking names from a hat.
- A biased **sample** doesn't fairly represent the **population**. Asking people at a gym how often they exercise would give biased results.
- A larger **sample** usually gives more reliable results.

Collecting data

- **Primary data** is collected by you. **Secondary data** was collected by someone else, such as **census** results or data from the internet.
- Good survey questions are clear and not leading. Response boxes should not overlap, and should cover every possible answer.

Capture-recapture (Higher)

- To estimate a **population** of animals, catch and mark some, release them, then catch a second **sample**. Assume the fraction marked in the second **sample** matches the fraction marked in the whole population.
- 50 fish are marked. Later, 40 fish are caught and 8 are marked. 8/40 = 1/5, so the **population** is about 50 × 5 = 250 fish.

Key terms

Population	The whole group being studied.
Sample	A smaller group chosen from the population.
Random sample	A sample where every member of the population has an equal chance of being chosen.
Bias	When results are unfair because some groups are more or less likely to be included.
Primary data	Data you collect yourself.
Secondary data	Data collected by someone else.
Census	Data collected from every member of the population.
Capture-recapture	A method of estimating a population by marking a sample, then checking a second sample.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What is a population in statistics?
2. What is a sample?
3. What makes a sample random?
4. Asking people at a gym how often they exercise gives what kind of sample?
5. How can you make results from a sample more reliable?
6. What is primary data?
7. What is secondary data?
8. What is wrong with the question 'Don't you agree that school uniform is great?'?

Answers

1. The whole group being studied
2. A smaller group chosen from the population
3. Every member has an equal chance of being chosen
4. A biased sample
5. Use a larger random sample
6. Data you collect yourself
7. Data collected by someone else
8. It is a leading question

What to do next

Practise 12 questions on this topic

Try 6 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

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