Your notes

GCSE Statistics: revision notes

Collecting data

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Questionnaires

- **Open questions** let people answer in any way. They give detail but are hard to analyse.
- **Closed questions** have a fixed set of answers, such as tick boxes. They are easy to analyse but limit answers.
- Good response boxes don't overlap, cover every possible answer, and include a time frame where needed (such as "per week").
- Avoid **leading questions** ("Don't you agree that...?"), vague words ("often"), and unnecessary personal questions.
- Questionnaires can be posted, handed out or put online. Response rates may be low, and people who respond may not be typical.

Sensitive questions

- For sensitive questions (such as "Have you ever cheated in a test?"), use the **random response technique**. Each person flips a coin: heads, they answer "yes"; tails, they answer truthfully. Nobody knows which, so people answer honestly.
- Example: 100 people, 60 say yes. About 50 got heads and said yes, so 10 of the 50 answering truthfully said yes. The estimate is $10 \div 50 = 20\%$.

Interviews, observation and experiments

- Interviews allow follow-up questions and a high response rate, but take time, and the interviewer may influence answers (**interviewer bias**).
- Observation records what people actually do, and data logging uses machines to record automatically.
- Laboratory experiments are carried out in controlled conditions. **Field experiments** happen in a natural setting with some control. Natural experiments look at changes that happen without the researcher controlling them.

- A **control group** doesn't receive the treatment, so results can be compared.

Cleaning data

- Before analysing, clean the data: remove errors and impossible values, make units consistent, and deal with missing answers.

Key terms

Open question	A question that lets people answer in any way.
Closed question	A question with a fixed set of answers.
Leading question	A question that pushes people towards a particular answer.
Random response technique	A method using chance to get honest answers to sensitive questions.
Control group	A group that doesn't receive the treatment, for comparison.
Interviewer bias	When an interviewer influences the answers given.
Data cleaning	Removing errors and making data consistent before analysis.
Field experiment	An experiment in a natural setting with some control.

Quick questions

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

1. What is a closed question?
2. What is a leading question?
3. What is wrong with the boxes 0–5, 5–10, 10–15?
4. What is a control group?
5. Why use the random response technique?
6. What is an advantage of interviews over postal questionnaires?
7. What is interviewer bias?
8. What is data cleaning?

Answers

1. A question with a fixed set of answers
2. A question that pushes people towards an answer
3. They overlap
4. A group that doesn't receive the treatment, for comparison
5. To get honest answers to sensitive questions
6. A higher response rate and follow-up questions
7. When an interviewer influences the answers
8. Removing errors and making data consistent

Your notes

What to do next

Practise 10 questions on this topic

Try 3 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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