Your notes

GCSE Statistics: revision notes

Planning a statistical investigation

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The statistical enquiry cycle

- Every investigation follows the same cycle: plan, collect data, process and represent, analyse and interpret, then evaluate. The evaluation often leads to a new, better question, so the cycle starts again.
- Planning means choosing a question or **hypothesis**, deciding what data you need, where it will come from and how much you will collect.

Hypotheses

- A **hypothesis** is a statement that can be tested with data, such as "Year 11 students spend more time on homework than Year 9 students."
- A good **hypothesis** is specific and measurable. "Boys are better at sport" is too vague; "Boys run 100 m faster than girls in our school" can be tested.
- The results either support the **hypothesis** or don't. Statistics never prove it for certain.

Primary and secondary data

- **Primary data** is collected by you, for your purpose (surveys, experiments, observation). It is exactly what you need and you know how it was collected, but it takes time and money.
- **Secondary data** was collected by someone else (such as the Office for National Statistics, websites or newspapers). It is quick and cheap, but it may be out of date, biased or not quite what you need.

Problems to plan for

- **Constraints**: time, cost, ethical issues (such as upsetting people), confidentiality (keeping personal data safe) and getting access to people or data.
- A **pilot study** is a small trial run. It tests whether questions are clear and the method works, before the main investigation.

- **Extraneous variables** are other factors that could affect the results. Control them by keeping them the same, so the test is fair.

Your notes

Key terms

Hypothesis	A statement that can be tested using data.
Statistical enquiry cycle	Plan, collect, process and represent, analyse and interpret, evaluate.
Primary data	Data you collect yourself for your own purpose.
Secondary data	Data collected by someone else.
Pilot study	A small trial run to test the method before the main investigation.
Extraneous variable	A factor other than the one being tested that could affect results.
Constraint	A limit on an investigation, such as time, cost or ethics.

Quick questions

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

1. What is a hypothesis?
2. What is the first stage of the statistical enquiry cycle?
3. What is primary data?
4. Which is a disadvantage of secondary data?
5. What is a pilot study?
6. Which hypothesis can be tested most easily?
7. What is an extraneous variable?
8. Which is an ethical constraint?

Answers

1. A statement that can be tested using data
2. Planning
3. Data you collect yourself for your own purpose
4. It may be out of date or not quite what you need
5. A small trial run to test the method
6. Year 11 students sleep fewer hours than Year 7 students
7. A factor that could affect results but isn't being tested
8. Questions that could upset people

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

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