



Statistical investigations

- Planning a statistical investigation to answer a question

Keywords

You should know

explanation 1a

explanation 1b

explanation 1c

explanation 1d

- 1** Some pupils are each going to carry out a statistical investigation.

Write down whether the pupils should use primary or secondary data for their investigations.

- a** Jenny wants to compare the heights of boys and the heights of girls.
- b** Anil wants to investigate whether teachers or pupils are better at mental arithmetic.
- c** Pat wants to investigate the relationship between the size of a country's population and the area of the country.
- d** Sam wants to compare the weather in New York with the weather in London.
- e** Morgan wants to investigate what happens to the value of cars as they get older.
- f** Ahmed wants to investigate the relationship between the amount of television watched and pupils' GCSE results.
- g** Geoff wants to investigate whether boys or girls are better at maths.
- h** James wants to investigate the amount of time boys and girls spend playing sport outside school.

2 Data is going to be collected to answer these questions.

For each question write this information.

- i** A description of the data that could be collected.
- ii** Where the data will come from.
- iii** Whether the data will be primary or secondary.
- a** Are taller people heavier than shorter people?
- b** Is it hotter in Egypt than in Crete?
- c** If you are taller is your reaction time quicker?
- d** What is the average length of a television programme?
- e** Is there a relationship between the amount of time pupils spend watching television and the amount of time they spend on the internet?
- f** Do pupils who live closer to school do more homework than those living further away?

3 Write the following for each of these questions.

- i** A description of the data that will be needed.
- ii** The source of the data and how it will be collected.
- iii** How the data could be processed.
- a** Are more expensive newspapers less popular?
- b** Does it rain more in Newcastle or Penzance?
- c** Does a football team with more foreign players win more matches?
- d** Do taller children have longer arms?

explanation 2a

explanation 2b

explanation 2c

4 Design data collection sheets for the following surveys or experiments.

- a** The total scored when two dice are rolled together.
- b** The number of words in the sentences of a book.
- c** The heights of pupils in your maths class.
- d** The shoe sizes of pupils in your maths class.
- e** The number of vehicles in the school car park at different times of the day.

5 Sam designs a questionnaire.

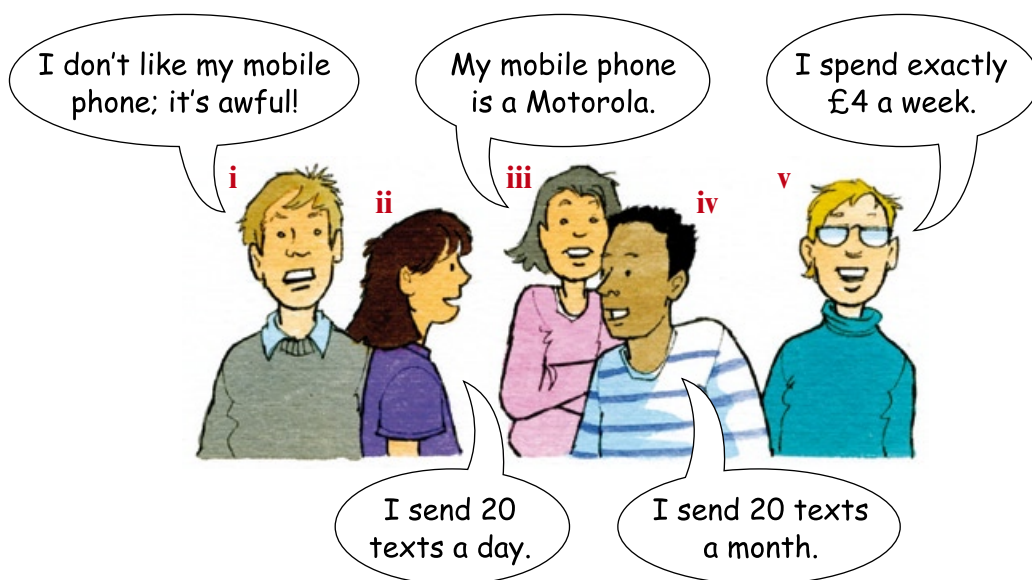
He gives it to his friends to fill in.

Sam's questionnaire

- 1 What type of mobile phone do you own?
Nokia ☐ Samsung ☐
- 2 How would you rate your mobile phone?
Average ☐ Good ☐ Excellent ☐
- 3 How much do you spend each week using your mobile phone?
0–£2 ☐ £2–£4 ☐ £4–£6 ☐ £6 or more ☐
- 4 How many text messages do you send?
0–10 ☐ 11–20 ☐ 21–30 ☐ 31–40 ☐

Some of his friends cannot fill in the questionnaire.

- a What problem does each of Sam's friends have with the questionnaire?
- b Rewrite the questionnaire so that everyone can fill it in.



- 6** Design a questionnaire for each of these investigations. Each question should have some response boxes.
- a** Harry wants to find how people use the local library. He wants this information.
 - i** How often people use the local library.
 - ii** How many books they borrow.
 - b** Jemilla wants to find out what her friends think about school dinner. She needs this information.
 - i** How often her friends use the school canteen.
 - ii** How much money they spend.
 - iii** What their favourite meal is.
 - c** Meg wants to find out how people use the local sports centre. She wants this information.
 - i** What sports people play.
 - ii** What they think of the local sports centre.
 - iii** How often they use the local sports centre.
 - iv** How far they live from the local sports centre.
- 7** Choose one of the following questions and plan your own investigation. Explain how you will collect your data and how much data you will collect. Design a questionnaire or data collection sheet.
- a** Do children who watch more television do less homework?
 - b** Do people who run faster have longer legs?
 - c** Are children quicker at writing text messages than adults?
 - d** Do 15-year-olds get more homework than 11-year-olds?