Surveys and experiments

- Planning and conducting a survey
- Conducting a mathematical experiment
- Using primary and secondary data

Keywords

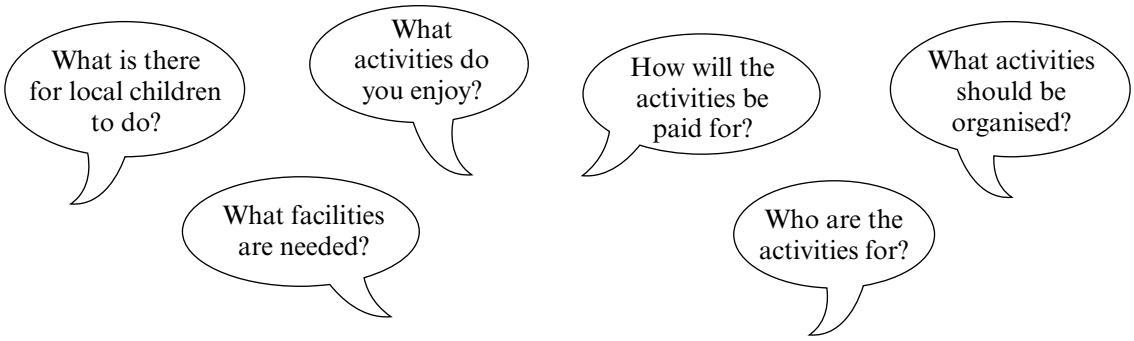
You should know

explanation 1

‘We’re bored!’

Local kids complain ‘There is nothing to do.’

The local council wants to meet with school children to discuss activities for young children. Here are some questions that they asked.



1 **a** Discuss this in a group and think about other questions that should be asked.

b Make a list of groups of people that should be consulted in a survey.

c Write down some more questions that you might ask each group.

2 Indira wants to find out about how pupils in her school spend their free time, and plans to do a survey.

She decides to ask all the girls in her form to complete the survey.

Give two reasons why this is not a good decision.

3 The head teacher wants to know what people think about the food on the new 'healthy eating' menu from the school canteen.

She chooses to ask 20 teachers and 20 pupils from one year.

a Give two reasons why this is not a good choice.

b How could she make her survey more fair?

explanation 2

4 Here are some reasons why questions are not suitable for a survey.

A | It is a leading question. It tries to pressure you into giving one particular answer.

B | The question says something that many people won't agree with and then can't give an answer.

C | The question is too personal and people may not want to answer it or may not give an honest answer.

D | The question is too open. There will be too many different answers to give you useful information.

Each of the questions below is not suitable for a survey.
Match each question to one of the reasons A, B, C or D to explain why.

a Most people want more car parking space available in town. Do you agree?

b How much do you earn?

c What do you think about young people?

d Are you in favour of making animals suffer for medical research?

e What do you think is the main reason that cats make better pets than dogs?

f What are your views on cricket?

g What qualifications do you have?

h Why do you think women make better drivers than men?

i How could recycling be made more effective?

j How old are you?

explanation 3 online

5 Philip wants to find out which sport his friends like best.

He asks them

'Do you think football is the best sport?'

a Why is this an unsuitable question?

b Write a better question that he could ask and include a choice of answers.

6 Gemma wants to do a survey into how much pocket money pupils in her year get each week.

She asks 'How much pocket money do you get each week?'.

☐ £0–£2 ☐ £2–£5 ☐ £5– £10 ☐ £10 or more

State a problem with her choice of answers.

7 The following question is politely phrased and offers choices, but there is still something wrong.

How many times do you eat meat each week?

☐ Once ☐ Twice ☐ Three times or more

What is the problem with the choice of answers?

8 Write some suitable choices for each of these questions.

a How much time do you spend each day watching television?

b How often do you go to the cinema?

c Do you think that calculators should be used in primary schools?

d Approximately how many times have you been to the doctor in the last year?

9 Explain why it wouldn't be easy to write suitable choices for the following question.

What is your favourite holiday resort?

explanation 4

10 Look at the questions you wrote for the youth activities survey in question **1**.

a Try to improve your questions and add some new ones.

b Design a data collection sheet for your questions.

c Test your data collection sheet with a small group of people.

Make any changes needed to improve it.

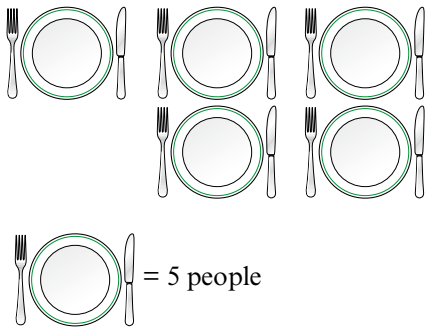
11 **a** Carry out a survey.

You can use your youth activities data collection sheet from question **10**, or design a new data collection sheet to investigate a different idea.

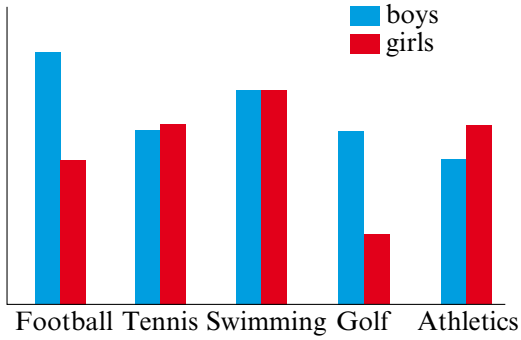
Make sure that you collect your data fairly by asking all the different groups of people who you are interested in finding out from.

b Use a variety of charts to present your data.

Number of pupils eating school dinners



Favourite sports

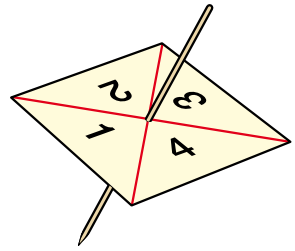


c Make some statements about what your survey shows.

d Try to draw some conclusions from your survey.

explanation 5a | explanation 5b | online

12 **a** Cut a piece of card in the shape of a square of side 4 cm. Draw the diagonals of the square and label its sides from 1 to 4. Push a cocktail stick through the centre to make a spinner.

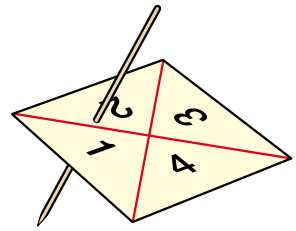


b In an experiment, the spinner is spun and the results are recorded. If you carry out 40 trials, how many times would you expect the spinner to land on each number?

c Copy this table.
Carry out 40 trials and record your results in the table.

Score	Tally	Frequency
1		
2		
3		
4		

Are your results what you expected?



d Move the cocktail stick about 1 cm from the centre as in the picture.
How do you think this might affect the results?

e Carry out 40 trials, spinning clockwise each time.
Record your results in a table. Comment on your results.

f Carry out another 40 trials, spinning anticlockwise each time.
Record your results in a table.
Does the direction of spin appear to make a difference?
Compare your results with others in the class.

13 Decide whether you would use primary data, secondary data or experimental data to investigate the following questions.

a Do more people visit the cinema regularly now than 10 years ago?

b Do people feel that traffic speed cameras make the roads safer?

c Is the population of the UK increasing or decreasing?

d Is a piece of toast more likely to land jam side down?