Surveys and experiments

- Planning and conducting a survey
- Conducting a mathematical experiment
- Using an appropriate type of data for a given purpose

Keywords

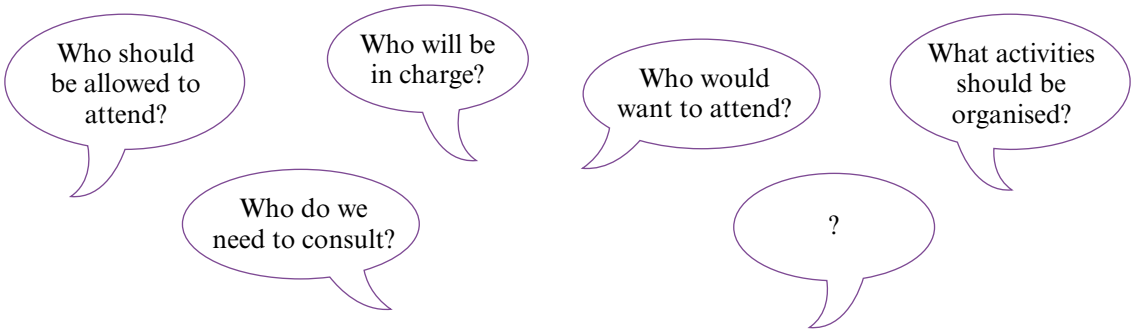
You should know

explanation 1

Youth crime figures soar in village

Parents blame lack of resources
Nothing to do

One suggestion put forward in response to the newspaper article was to start a new youth club in the area. A group of villagers held a meeting to discuss the idea and this raised some questions.



1 Discuss these questions in a group. Write down some more questions that should be considered.

2 Make a list of groups of people that should be consulted in a survey. Write down some questions that you might ask each group.

explanation 2

3 Take a look at these questions. Say why each one would not be suitable for a survey in its present form.

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

b How much do you earn?

c How old are you?

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

e What are your views on the state of the economy?

f What do you think about young people?

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?

4 The question is often clearer if you offer choices.

Instead of simply asking for a person's age, for example, you could ask them to select an age-range:

Less than 18 ☐

18 to 25 ☐

Over 25 ☐

Offering choices may also make the question easier to answer, while providing you with enough information.

Write some suitable choices for each of these questions.

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

b Approximately how many times have you visited a cinema in the last year?

c Do you think computers have helped to raise standards in education?

d How many miles do you travel by car in a typical year?

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

5 The following question is politely phrased and offers choices, but there is still something wrong. What is the problem?

How many times per week do you eat meat?
Once Twice Three times or more

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

What is your favourite holiday resort?

explanation 3 online

7 Look back at the questions that you wrote for the youth club survey in question **1**.

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

b Design a data collection sheet for your questions.

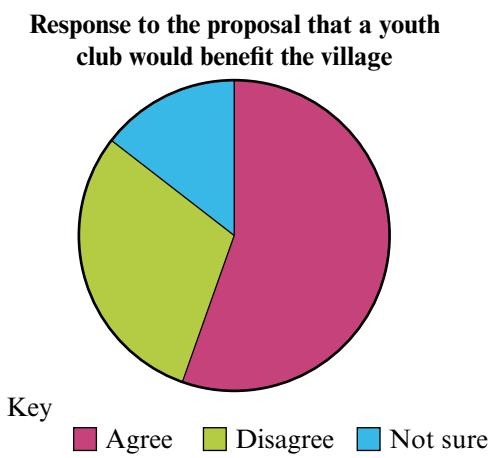
c Test your data collection sheet with a small group of people.
Make any changes needed to improve it.

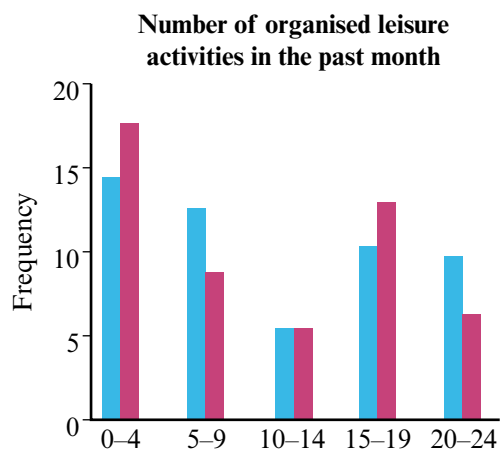
8 Carry out a survey using either your youth club data collection sheet or a new data collection sheet based on a different enquiry.

Make sure that the data collected represents the situation fairly.

Remember that the day, time and location all affect who is available to answer your questions.

Use a variety of charts to present your data.





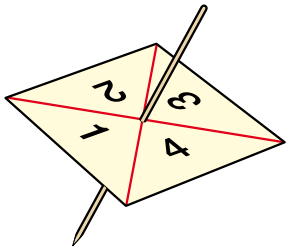
Make some statements about what your survey shows.

Treat all of the information fairly – even if you disagree with it!

Try to draw some conclusions that will help to develop your project.

explanation 4 online

9 **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.

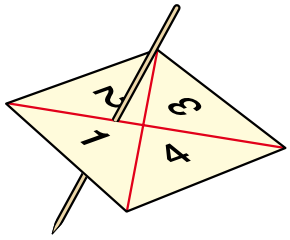


b In an experiment, the spinner is spun and the results are recorded.
If you carry out lots of trials, what would you expect to happen to the frequency of each possible score?

c Copy this table.
Carry out 40 trials and record your results in the table.
Comment on your results. Are they what you expected?

Score	Tally	Frequency
1		
2		
3		
4		

d Move the cocktail stick about 0.8 cm from the centre along the diagonal between 1 and 2.
Describe how you think this might affect the results.
Do you think the direction of spin will make a difference?



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.

10 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 country increasing or decreasing?

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