Surveys

- Knowing the different forms that data can take
- Testing a hypothesis
- Identifying inappropriate questions in a survey
- Sampling a population
- Using a two-way grouped frequency table to record data

Keywords

You should know

explanation 1 online

1 Decide which of the following types of data are qualitative and which are quantitative.

a The number of pupils in your class

b The hair colour of pupils in your class

c The amount of time spent doing homework

d The weight of pupils' school bags

e The temperature of your classroom

f Your friend's opinions on the TV they watched last night

g The taste of the food that you ate for dinner last night

h The price of a bus ticket

2 For each activity describe one variable that is

i a quantitative measure **ii** a qualitative measure

a Paul does a crossword each day.

b Maria chooses a pair of trainers.

c Ahmed plays a computer game.

d Zak cycles to school each day.

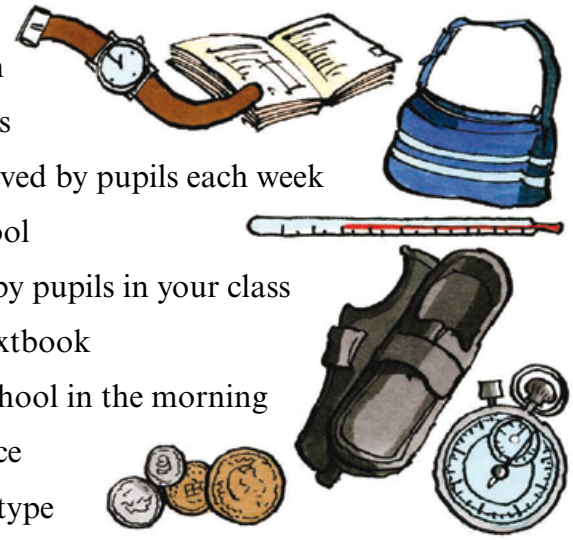
e Amy's dad went shopping on Saturday.

f Pedro's grandmother sent him a parcel for his birthday.

g Carla's class went on a school trip yesterday.

h Simon ate a cake for lunch.

3 Decide whether each variable is a discrete or a continuous measure.



a The temperature of your classroom

b The shoe size of pupils in your class

c The amount of pocket money received by pupils each week

d The height of teachers in your school

e The weight of school bags carried by pupils in your class

f The number of pages in a maths textbook

g The time it takes pupils to get to school in the morning

h The speed of runners in a 100 m race

i The speed at which secretaries can type

j A person's age

explanation 2a explanation 2b explanation 2c

4 Data needs to be collected to test these theories.

Write the following for each hypothesis.

i A description of data that could be collected to test the hypothesis.

ii A source for the data and whether it is a primary or secondary source.

a Boys are taller than girls at secondary school.

b Most people in the UK have internet access at home.

c People recycle half of their household waste.

d Sporty pupils have faster reaction times than non-sporty pupils.

e Girls spend longer on homework than boys at secondary school.

f Parents of pupils in your school believe that more homework should be set.

g Children don't like to eat vegetables.

h People prefer to go abroad for their summer holidays.

i A cup of tea cools down more quickly if it is in a smaller cup.

5 Children's eating habits are being surveyed.

i Identify what is wrong with each question.

ii Suggest a better way to ask each question.

a Are you fat? Yes ☐ No ☐ Not sure ☐

b What is your favourite food? Pizza ☐ Burger ☐ Other ☐

c How old are you? 1–5 ☐ 5–10 ☐ 10–15 ☐ 15–20 ☐

d Do you like fruit and vegetables? Yes ☐ No ☐

e What is your favourite TV programme?

f Fried food is bad for you. Do you like fried food? Yes ☐ No ☐ Some ☐

g On average how many calories do you eat a day?

h How much do you weigh? Less than 20 kg 20 kg–40 kg Over 8 stone

6 Sanjay and Katy want to know what music pupils in their school listen to. Sanjay decided to ask five of his friends and Katy decided to ask $\frac{3}{4}$ of the pupils in every class.

What is wrong with these samples and how could they be improved?

7 The school canteen wants to conduct a survey to decide what to sell at break and lunchtime. It is not possible to ask every pupil. Suggest a way pupils could be sampled.

> Remember to try to avoid bias in your sample.

8 A political party wants to know the voting intentions of adults in your area. Suggest a way in which the local population could be sampled.

9 For each of these surveys

i identify the population

ii suggest how you could select a sample

a Find out how pupils in your school travel to school.

b Find out how much people paid for their train tickets on a particular train.

c Find out how much people pay for their train tickets one day.

d Find out about local views on a housing development to be built in the area.

explanation 3a | explanation 3b | online

10 Carry out an experiment to see if a drawing pin is more likely to land point up or point down when dropped.

a Draw a suitable table for recording the results.

b Carry out 50 trials and record the results in your table.

c Based on your results, explain whether you think a drawing pin is more likely to land point up or point down.

d Give two factors which you think may affect the outcome of the results.

11 A survey is to be carried out in order to compare the heights of boys and girls in your class. These are three possible tables in which to record the results.

Height (cm)	Number of girls	Number of boys
135		
136		
137		
138		
139		
140		
141		
142		
143		
144		
145		
146		
147		
etc		

Height (cm)	Number of girls	Number of boys
120–130		
130–140		
140–150		
150–160		
160–170		
170–180		

Height (cm)	Number of girls	Number of boys
$120 < h \leq 130$		
$130 < h \leq 140$		
$140 < h \leq 150$		
$150 < h \leq 160$		
$160 < h \leq 170$		
$170 < h \leq 180$		

a Which table is the most appropriate? Give reasons for your answer and explain why the other tables are not appropriate.

b Collect the heights of the pupils in your class and record them in the table.

c Comment on the results of your data collection.

12 A survey is to be carried out to find out approximately how long it takes pupils to travel to school and also how they travel to school each morning. Here are three possible tables in which to record the results.

Time (min)	Walk	Bus	Car	Taxi	Bicycle	Other
$0 < T \leq 5$						
$5 < T \leq 15$						
$15 < T \leq 17$						
$17 < T \leq 25$						
$25 < T \leq 50$						

Time (min)	Walk	Bus	Car	Taxi	Bicycle	Other
$0 < T \leq 10$						
$10 < T \leq 20$						
$20 < T \leq 30$						
$30 < T \leq 40$						
$40 < T \leq 50$						

Time (min)	Walk	Bus	Car	Taxi	Bicycle	Other
0–10						
10–20						
20–30						
30–40						
40–50						

a Which of the three tables is the most appropriate to use? Give reasons for your answer.

b Carry out the survey with pupils in your class and record the results in the table.

c What conclusions can you draw from the data you have collected?