

Types of Data, Sampling and Bias

For Pearson Edexcel GCSE Mathematics (1MA1) • Foundation tier

Name _____

Total marks: **20**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

- 1** Here are some types of data.
For each one, tick the correct box.

	Categorical	Discrete	Continuous
Shoe size	☐	☐	☐
Temperature at noon	☐	☐	☐
Colour of a car	☐	☐	☐
Number of goals scored	☐	☐	☐
Length of a leaf	☐	☐	☐

(3)

(Total for Question 1 is 3 marks)

- 2** Here are four types of data.
A the mass of a parcel
B the time taken to walk to school
C the number of people in a car
D the height of a tree

Which one is discrete data?
Write down the letter.

.....
(1)

(Total for Question 2 is 1 mark)

3 Leo wants to know the favourite subject of students at his school.
He asks 40 students in Year 7.

- (a) Is Leo's sample likely to be representative of the whole school?
Give a reason for your answer.

(1)

- (b) Give one way Leo could improve his sample.

(1)

(Total for Question 3 is 2 marks)

4 The council wants to know how people in a town travel to work.
It asks 30 people at the train station.

- (a) Give one reason why this may not be a good sample.

(1)

- (b) A councillor says,
 'If we ask 300 people at the station, the sample will not be biased.'
Is the councillor correct?
You must give a reason for your answer.

(1)

(Total for Question 4 is 2 marks)

- 5** Tom and Lisa each want to find out how many people in their town own a bike.
Tom asks 10 people chosen at random.
Lisa asks 80 people chosen at random.

Whose results are more likely to represent all the people in the town, Tom's or Lisa's?
You must give a reason for your answer.

(1)

(Total for Question 5 is 1 mark)

- 6** A factory made 1600 phone cases one day.
A manager checked a sample of 40 of these phone cases.
3 of the phone cases in the sample were faulty.

Work out an estimate for the number of faulty phone cases made that day.

.....
(2)

(Total for Question 6 is 2 marks)

- 7** Orla runs a café with 600 regular customers.
 She is going to sell one new smoothie flavour.
 She asks 40 of her regular customers to choose their favourite of four flavours.
 Here are the results.

Flavour	Number of customers
Mango	14
Berry	11
Banana	9
Kiwi	6

- (a) Work out an estimate for how many more of the 600 customers would choose mango than kiwi.

.....
 (2)

- (b) State any assumption you made and explain how this may affect your answer.

.....

 (1)

(Total for Question 7 is 3 marks)

8 There are 3000 households in a town.
Hamid and Tess want to find out how many of these households have a pet.
Hamid asks 50 households chosen at random. 21 of them have a pet.
Tess asks 150 households chosen at random. 57 of them have a pet.

- (a) Use all of these results to work out an estimate for the number of households in the town that have a pet.

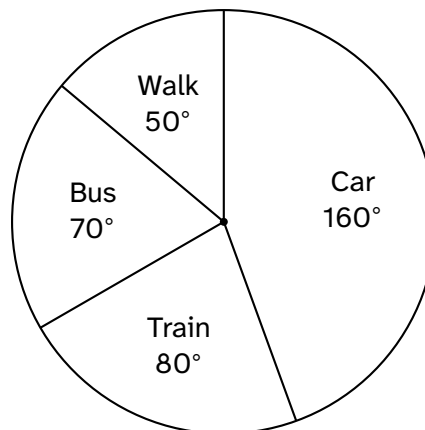
.....
(2)

- (b) Tess says,
‘My results show that exactly 38% of the households in the town have a pet.’
Is Tess correct?
You must give a reason for your answer.

.....
.....
(1)

(Total for Question 8 is 3 marks)

- 9 A sample of the visitors to a museum one month were asked how they travelled to the museum.
The pie chart shows information about their answers.



- (a) There were 4500 visitors to the museum that month.
Work out an estimate for the number of these visitors who came by train.

.....
(2)

- (b) All the visitors in the sample were asked on the same Saturday morning.
Explain how this might affect the accuracy of your estimate.

.....
.....
(1)

(Total for Question 9 is 3 marks)