

Types of Data, Sampling and Bias

For AQA GCSE Mathematics (8300) • Foundation tier

Name _____

Total marks: **21**

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

- 1** Which one of the following is continuous data?
Circle your answer.

[1 mark]

number of doors	number of goals	time to boil a kettle	number of coins
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- 2** Tick one box for each type of data.

[3 marks]

	Categorical	Discrete	Continuous
Eye colour	☐	☐	☐
Number of brothers and sisters	☐	☐	☐
Time taken to run 100 metres	☐	☐	☐
Favourite sport	☐	☐	☐
Mass of an apple	☐	☐	☐

- 3 Kwame records the number of emails he gets each day for 40 days. The table shows his results.

Number of emails	Frequency
0 to 9	6
10 to 19	17
20 to 29	12
30 to 39	5

Kwame says,

‘This data is continuous because it has been put into groups.’

Is Kwame correct? Tick a box.

Give a reason for your answer.

[1 mark]

☐ Yes

☐ No

- 4 Tick one box for each source of data.

[2 marks]

	Primary	Secondary
Ali measures the heights of students in his class	☐	☐
Beth uses rainfall figures from a website	☐	☐
Cara counts cars passing her house	☐	☐

- 5** Sam wants to find out how often people in his town use a gym.
He asks 20 people at his local gym.

(a) Give one reason why this sample is biased.

[1 mark]

(b) Sam says,

‘If I ask 200 people at the gym, my sample will not be biased.’

Is Sam correct? Tick a box.

Give a reason for your answer.

[1 mark]

☐

Yes

☐

No

- 6** Ella wants to estimate how much time students at her school spend on homework each week.
She asks 6 students in her maths class.

Give **two** reasons why Ella’s sample may not represent all the students in her school.

[2 marks]

- 7** Maya claims most houses on her road have a garden.
Her road has 60 houses, numbered 1 to 60
She looks at houses 1 to 10 only.

(a) Give a reason why this sample may not be useful in testing Maya's claim.

[1 mark]

- (b) Maya then looks at 30 houses on the road chosen at random.
21 of them have a garden.
Does this support Maya's claim? Tick a box.
Give a reason for your answer.

[1 mark]

☐

Yes

☐

No

- 8** A school has 1200 students.
Jo wants to find out what the students think about school lunches.
She is going to ask a sample of 80 students.

(a) Circle the population for this survey.

[1 mark]

the 80 students	all 1200 students	Year 11 students	the teachers
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- (b) In the sample, 52 of the 80 students say they like school lunches.
Estimate how many of the 1200 students like school lunches.

[2 marks]

Answer _____

- (c) Jo says,

“If I asked 200 students instead of 80, my estimate would probably be more reliable.”

Is Jo correct? Tick a box.
Give a reason for your answer.

[1 mark]

☐ Yes ☐ No

- 9 A town has 18 000 adults.
The council wants to know if they support a new cycle lane.
It asks a sample of 200 adults.
The table shows the results.

Answer	Number of adults
Support	136
Against	52
Don't know	12

- (a) Work out an estimate for the number of adults in the town who support the new cycle lane.

[2 marks]

Answer _____

- (b) The sample was taken outside a bike shop.
Explain why your estimate in part (a) is likely to be too high.

[1 mark]

- (c) Give one reason why the council used a sample instead of asking all 18 000 adults.

[1 mark]
