

# Stratified Sampling

Please write clearly in block capitals

Forename:
Surname:

## Materials

For this paper you must have:

- mathematical instruments



You **can** use a calculator.

## Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

## Information

- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

## Advice

- In all calculations, show clearly how you work out your answer.

- 1** At Stephen's school, some students have school lunches and some bring their own lunch. (Level 5)

Stephen wants to create a stratified random sample with 80 students to find out about their choice of food.

The table below gives some information about the groups.

Lunch choice	School lunch	Lunch from home
Number at school	210	
Number in sample		50

- 1(a)** Complete the table to show how many students will be in each sample group.

[2 marks]

- 1(b)** What percent of the school population were included in the survey?

Give your answer to 2 significant figures.

[2 marks]

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Answer \_\_\_\_\_ %

Turn over for next question

2

A shop keeps track of the numbers of customers over lunch times, for 5 days in a week.

*(Level 5)*

The results are below.

Day	Number of Customers
Monday	58
Tuesday	85
Wednesday	99
Thursday	94
Friday	64

The shop manager wants to find the spending habits of the people on the different days and decides to take a stratified random sample.

She chooses 40 as her sample size.

How many people should she select for each day?

**[3 marks]**

Day	Number in Sample
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

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Answer \_\_\_\_\_

**Turn over for next question**

- 3** The council wants to determine the different exercise habits of the people in a given community. (Level 5)

They organise the population by age in the table below.

Age Bands	Number of People
16 – 25	14,159
26 – 35	22,137
36 – 45	33,453
46 – 55	35,664
56 - 65	29,587

The lead statistician wants to take a stratified sample of 1,500 people.

How many will belong to each age band?

Complete the table below.

**[3 marks]**

Age Bands	Number of People
16 – 25	
26 – 35	
36 – 45	
46 – 55	
56 - 65	

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**Turn over for next question**

- 4 A school recorded all of the students who sat one or more GCSEs and took a survey using a stratified random sample so that they could find out more about the results. (Level 6)

Exam Subject	GCSE	Sample
Maths	96	6
English		5
Physics	75	
History	65	
Physical Education		4

- 4(a) Complete the table.

[3 marks]

- 4(b) What could cause the total number of actual students to be different from the number in your table?

Use an example to support your answer.

[2 marks]

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Answer \_\_\_\_\_



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5 A national charity has a team of volunteers that collect donations in a number of cities. (Level 6)

The volunteers recorded the names and details of anyone who wanted to be contacted at a later date.

The head office decided to carry out a stratified random sample made up of 2% of the people that want to be contacted.

City	Population	Sample
Belfast	220	
Cardiff	486	
Edinburgh	510	
Liverpool	830	
Manchester	420	
London	7500	

5(a) Complete the table.

[2 marks]

5(b) A representative from the national charity states that the overall number of people in the sample did not match their expected number.

Provide an explanation for this using calculations to support your answer.

[3 marks]

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Answer \_\_\_\_\_ %

Turn over for next question

- 6 The following table shows some of the medal results for the top five countries of the 2016 Summer Olympics. (Level 6)

A survey company sought to complete a stratified random sample of 50 medallists to find out how the countries' athletes are training now.

Countries	Medals by country	Sample
USA	121	
GBR		9
CHI	70	10
RUS		
GER	42	

Complete the table.

[4 marks]

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