



Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

I declare this is my own work.

Level 3 Certificate MATHEMATICAL STUDIES

Paper 1

Wednesday 15 May 2024

Morning

Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:

- a clean copy of the Preliminary Material and Formulae Sheet (enclosed)
- a scientific calculator or a graphics calculator
- a ruler.

Instructions

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer each question in the space provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Show all necessary working; otherwise marks for method may be lost.
- Do all rough work in this book. Cross through any work you do not want to be marked.
- The **final** answer to questions should be given to an appropriate degree of accuracy.
- You may **not** refer to the copy of the Preliminary Material that was available prior to this examination. A clean copy is enclosed for your use.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60.
- You may ask for more answer paper or graph paper, which must be tagged securely to this answer booklet.

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
TOTAL	



J U N 2 4 1 3 5 0 1 0 1

G/LM/Jun24/G4001/E5

1350/1

Answer **all** questions in the spaces provided.

1 Complete the bank statement.

[3 marks]

Date	Description	Credit (£)	Debit (£)	Balance (£)
03/05/2024	Starting balance			237.58
04/05/2024	Insurance		65.42
05/05/2024	Gas bill		67.17
07/05/2024	Wages	456.00	

3

2 Helen is collecting data about school subjects.

One question she will ask students is

“What is your favourite subject at school?”

2 (a) Which two words describe the type of data Helen will collect for this question?

Tick (✓) **one** box.

[1 mark]

Primary and qualitative

Secondary and qualitative

Primary and quantitative

Secondary and quantitative



Helen will ask students in Years 7, 8 and 9 in her school.
The table shows the number of students in each year group.

Year 7	Year 8	Year 9
304	270	246

Helen wants to take a stratified sample of 60 students, stratified by year group.

- 2 (b)** Helen chooses 20 students from each year group for her sample.

Explain why this is **not** a stratified sample.

[1 mark]

- 2 (c)** Work out the number of students from each year group that should be in a stratified sample of 60

[3 marks]

Year 7 _____

Year 8 _____

Year 9 _____

5

Turn over ►



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ANSWER IN THE SPACES PROVIDED**



- 3** Ruth is going on holiday to South Korea.
She needs some South Korean currency, which is the South Korean Won (~~₩~~).

Exchange rate £1 = ~~₩~~1510

- 3 (a)** Work out how many South Korean Won she can buy with £840

[1 mark]

Answer ~~₩~~ _____

- 3 (b)** When she returns, she must pay the bank a 3% commission to exchange her money back into UK pounds (£).

The exchange rate her bank uses is £1 = ~~₩~~1680

She returns with ~~₩~~359 520

How much in UK pounds will she receive after commission?

[4 marks]

Answer £ _____

5

Turn over ►

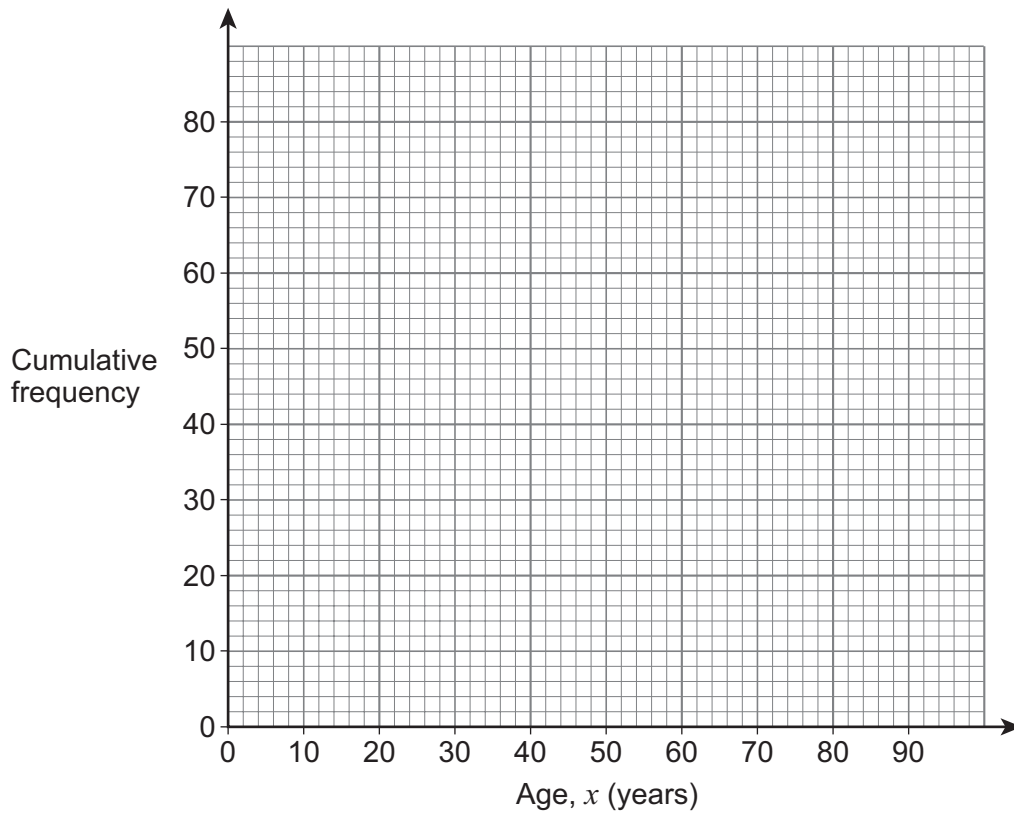


- 4 The table shows information about the ages of 80 guests staying at a hotel in the UK

Age, x (years)	Frequency	
$10 < x \leq 30$	8	
$30 < x \leq 50$	34	
$50 < x \leq 70$	32	
$70 < x \leq 90$	6	

- 4 (a) On the grid, draw a cumulative frequency graph to show this information.

[3 marks]



4 (b) Use your graph to estimate the median age of the guests at the hotel.

[1 mark]

Answer _____

4 (c) Estimate the **percentage** of guests at the hotel who are **more** than 55 years old.

[3 marks]

Answer _____ %

7

Turn over for the next question

Turn over ►



5 A person's heart rate is the number of times their heart beats per minute.

Estimate the number of times an average person's heart beats in their lifetime.

State any assumptions you make.

[4 marks]

Answer _____

4



6 Chris took out new life insurance at the start of 2021
 The cost of the life insurance in 2021 was £35 per month.
 Each year the cost of the life insurance increases by the rate of inflation in December of the previous year.

6 (a) In 2022 the cost increased by the December 2021 rate of inflation of 5.4%

Circle the monthly cost for 2022

[1 mark]

£33.21 £36.89 £40.40 £53.90

6 (b) Chris wants to estimate how much the monthly cost will be in **2024**

In December 2022 the rate of inflation was 10.5%

It is estimated that the rate of inflation in December 2023 will be about half the rate of inflation in December 2022

Estimate the monthly cost of the insurance in 2024

Give your answer to the **nearest pound**.

[3 marks]

Answer £ _____

4

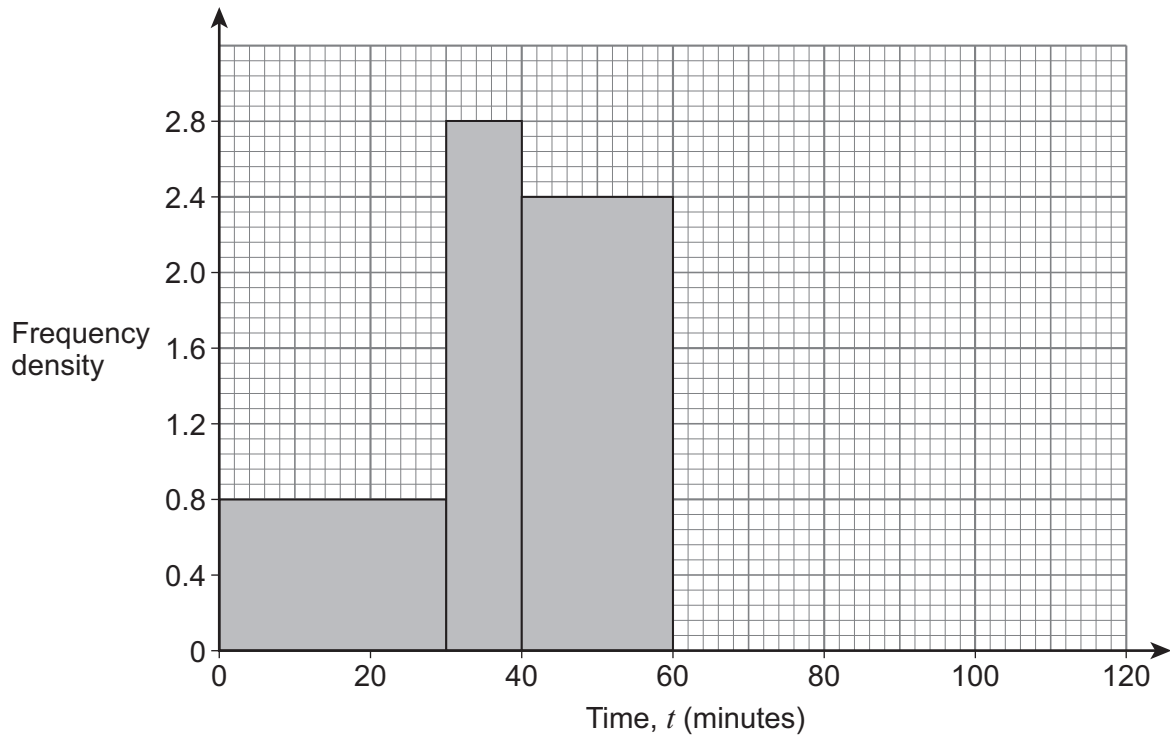
Turn over ►



8 The time in minutes that 140 patients waited at a NHS walk-in clinic was recorded.

8 (a) Complete the histogram and frequency table to represent the data.

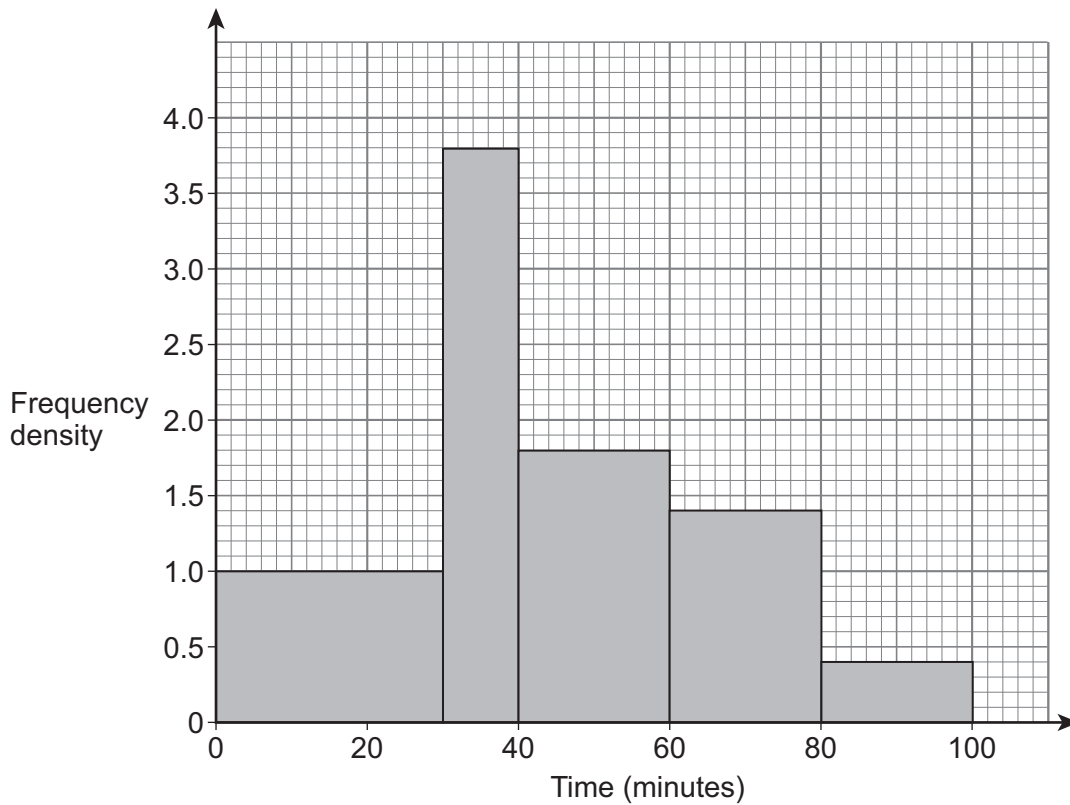
[3 marks]



Time, t (minutes)	Frequency
$0 < t \leq 30$	
$30 < t \leq 40$	28
$40 < t \leq 60$	
$60 < t \leq 80$	24
$80 < t \leq 120$	16



8 (b) This histogram shows the waiting times for 140 patients at the clinic after two additional members of staff were employed.



The clinic has a target of a maximum waiting time of 75 minutes.

What impact has the additional staff had on the number of patients whose waiting time **exceeded** the target?

You should use this histogram and the data from Question **8(a)**.

Show working to support your answer.

[5 marks]

8

Turn over ►



- 10** 30 students from School **A** and 30 students from School **B** took part in a Maths challenge. Each student completed as many maths puzzles as possible in an hour. The table shows the results for School **A**.

Number of puzzles	Frequency
4	1
5	7
6	12
7	8
8	2
Total = 30	

Here is some information about the results for School **B**.

Mean number of puzzles	5.3
Standard deviation	0.87

Compare the performance of the two schools.
Show working to support your comparisons.

[5 marks]



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