



# Cambridge International AS & A Level

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## FURTHER MATHEMATICS

9231/41

Paper 4 Further Probability &amp; Statistics

May/June 2025

1 hour 30 minutes

You must answer on the question paper.

You will need: List of formulae (MF19)

### INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- If additional space is needed, you should use the lined page at the end of this booklet; the question number or numbers must be clearly shown.
- You should use a calculator where appropriate.
- You must show all necessary working clearly; no marks will be given for unsupported answers from a calculator.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.

### INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **16** pages. Any blank pages are indicated.

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2

**BLANK PAGE**

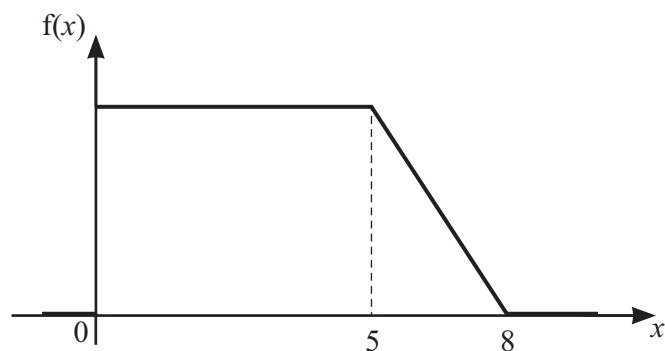




- $$\Sigma x = 10\,470 \qquad \Sigma (x - \bar{x})^2 = 12\,283 \qquad \Sigma y = 6560 \qquad \Sigma (y - \bar{y})^2 = 13\,520$$

Test at the 1% significance level whether there is a difference in the mean amount spent per customer on weekdays compared to weekends. You should not assume that the population variances of the amounts spent on weekdays and weekends are equal. [7]

This image shows a full page of a document template designed for handwriting practice or general writing. It consists of approximately 20 evenly spaced horizontal dotted lines running across the width of the page. The background is plain white, and there are no margins, headers, footers, or other markings present.


$$f(x) = \begin{cases} a & 0 \leq x \leq 5, \\ b - cx & 5 \leq x \leq 8, \\ 0 & \text{otherwise,} \end{cases}$$

(a) Show that  $a = \frac{2}{13}$  and find the values of  $b$  and  $c$ .

[3]

This image shows a full page of a handwriting practice worksheet. It consists of multiple sets of three horizontal dashed lines, providing a guide for letter height and placement. The lines are evenly spaced across the entire page, which is otherwise blank.



[3]

[illegible]

[2]

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[4]

[illegible]

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The observed frequencies and the expected frequencies are given in the following table.

**(b)** Show that  $a = 162.6$  correct to 1 decimal place. [1]

[illegible]



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- This image shows a full page of a handwriting practice worksheet. It consists of multiple sets of three horizontal dotted lines spaced evenly down the page, providing a guide for letter height and placement. The background is plain white, and there are no other markings or text present.

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This image shows a full page of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page, typical of notebook or legal stationery. There are no margins, text, or other markings on the page.

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This image shows a full page of a handwriting practice worksheet. It consists of multiple sets of three horizontal dashed lines, providing a guide for letter height and placement. The lines are evenly spaced across the entire page, leaving ample room for writing practice. There is no text or other markings on the page.

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- [illegible]

- [illegible]



[2]

This image shows a full page of white paper with horizontal dashed lines, typical of primary school handwriting practice paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.





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