



Cambridge International AS & A Level

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NAME
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FURTHER MATHEMATICS

9231/42

Paper 4 Further Probability & 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.

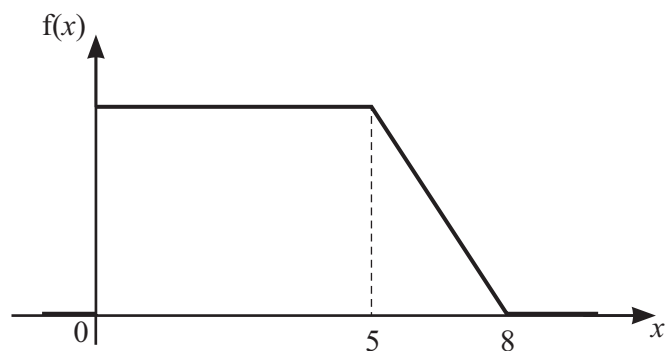




- $$\Sigma x = 10\,470 \qquad \Sigma (x - \bar{x})^2 = 12\,283 \qquad \Sigma y = 6560 \qquad \Sigma (y - \bar{y})^2 = 13\,520$$

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]

[illegible]


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

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

[3]

[illegible]



[3]

[illegible]

[2]

.....

.....

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.....

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[4]

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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]



- [illegible]

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(b) Use the confidence interval you found in part (a) to explain why there is insufficient evidence at a 5% significance level to suggest that the English scores of students from school X and students from school Y are different. [1]

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(b) Show that using a paired-sample sign test at the 5% significance level would result in the opposite conclusion to that found in part **(a)**. [3]

[illegible]

It was later discovered that the experiment had been conducted such that each child completed the seaside puzzle first followed by the cartoon puzzle.

(c) Comment on the validity of using this experiment to test the researcher's belief. [1]

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- [1]

[illegible]

- [3]

[illegible]



[2]

[illegible]

[illegible]





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