



Cambridge International AS & A Level

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MATHEMATICS**9709/62**

Paper 6 Probability & Statistics 2

February/March 2025**1 hour 15 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.





- [5]

This image shows a full page of a document template. It consists of approximately 28 evenly spaced horizontal dotted lines across the entire width of the page, providing a guide for handwriting or typing. There are no margins, text, or other markings present.

- The results for a random sample of 60 adults who completed the questionnaire this year are summarised as follows.

$$n = 60 \qquad \Sigma t = 3678 \qquad \Sigma t^2 = 226\,313.36$$

- (a) Find an unbiased estimate of $E(T)$, and show that an unbiased estimate of $\text{Var}(T)$ is 14.44. [3]

[illegible]



(b) Test at the 2% significance level whether the population mean time for this year is less than 62.4 seconds. [5]

[illegible]

- (c) State, with a reason, whether it was necessary to use the Central Limit Theorem in your answer to part (b). [1]

[illegible]



3 The random variable X has the distribution $\text{Po}(1.5)$.

(a) Find $P(X \geq 3)$.

[2]

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(b) Find the probability that the sum of three independent values of X is between 3 and 5 inclusive. [3]

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- Find the value of n .

[5]

[illegible]

A graph of a linear function $f(x)$ on the interval $[0, 2]$. The horizontal axis is labeled x and has tick marks at 0 and 2 . The vertical axis is labeled $f(x)$ and has tick marks at a and b . The function is represented by a solid line segment starting at the point $(0, a)$ and ending at the point $(2, b)$. Dashed lines connect the point $(2, b)$ to the x -axis at 2 and to the $f(x)$ -axis at b .

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[illegible]


$$g(t) = \begin{cases} \frac{1}{2} \cos t & -\frac{1}{2}\pi \leq t \leq \frac{1}{2}\pi, \\ 0 & \text{otherwise.} \end{cases}$$
[illegible]

- He decides to choose 35 students at random. If 3 or fewer of these students are left-handed, Amir will reject his belief.

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- This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

- [illegible]



[3]

[illegible]

- Nikki's friend says, "This survey is about sports facilities, so you should choose a sample of students from the school sports teams."

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(b) Calculate an approximate 95% confidence interval for the proportion of students who think that the sports facilities are good. [3]

[illegible]



The width of the 99% confidence interval is double the width of the $x\%$ confidence interval.

[4]

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