



Cambridge International AS & A Level

CANDIDATE NAME



CENTRE NUMBER

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CANDIDATE NUMBER

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MATHEMATICS

9709/53

Paper 5 Probability & Statistics 1

May/June 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.

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1 For a set of 40 values of x , it is found that

$$\sum(x - k) = 836.0, \quad \sum(x - k)^2 = 25410.8,$$

where k is a constant.

(a) Given that the mean of these 40 values is 124.0, find the value of k . [2]

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(b) Find the standard deviation of these 40 values of x . [2]

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2 At a large college, all students who study Science also study exactly one of Art or Drama or Music. 20% of these students study Art, 45% study Drama and 35% study Music.

(a) 3 students are selected at random from the students who study Science.

Find the probability that at least 1 of these students studies Drama. [2]

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(b) 10 students are selected at random from the students who study Science.

Find the probability that more than 7 study Art or Music. [3]

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5 Bag A contains 6 red marbles, 5 blue marbles and 1 green marble.

Bag B contains 5 red marbles and 3 blue marbles.

A marble is chosen at random from bag A and placed in bag B .

A marble is now chosen at random from bag B .

(a) Draw a tree diagram to represent this information, giving the probability on each branch. [3]

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