



# Cambridge International AS & A Level

CANDIDATE NAME



CENTRE NUMBER

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CANDIDATE NUMBER

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## MATHEMATICS

9709/51

Paper 5 Probability & Statistics 1

October/November 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 **12** pages. Any blank pages are indicated.





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3 The back-to-back stem-and-leaf diagram shows the annual salaries, in dollars, of 27 employees at each of two companies, Browns and Greens.

	Browns								Greens								
(3)					9	8	4	30	6	8						(2)	
(7)	8	8	5	3	3	1	0	31	2	4	5	8				(4)	
(7)	9	7	6	4	2	2	0	32	3	6	6	7	9			(5)	
(6)		8	7	5	5	3	1	33	1	1	3	7	8	8	9	9	(8)
(3)					4	2	2	34	0	2	3	5	6	9			(6)
(1)							7	35	3	7							(2)

Key: 6|32|7 means \$32 600 for Browns and \$32 700 for Greens.

(a) Find the median and interquartile range for the annual salaries of employees at Browns. [3]

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The annual salary of an employee at Browns is denoted by  $x$  thousand dollars and the annual salary of an employee at Greens is denoted by  $y$  thousand dollars. It is given that, for the 27 employees at each of the companies,

$\Sigma x = 878.3, \Sigma x^2 = 28\,616.09, \Sigma y = 896.5, \Sigma y^2 = 29\,815.63.$

(b) Find the mean and standard deviation of the annual salaries of these 54 employees. [5]

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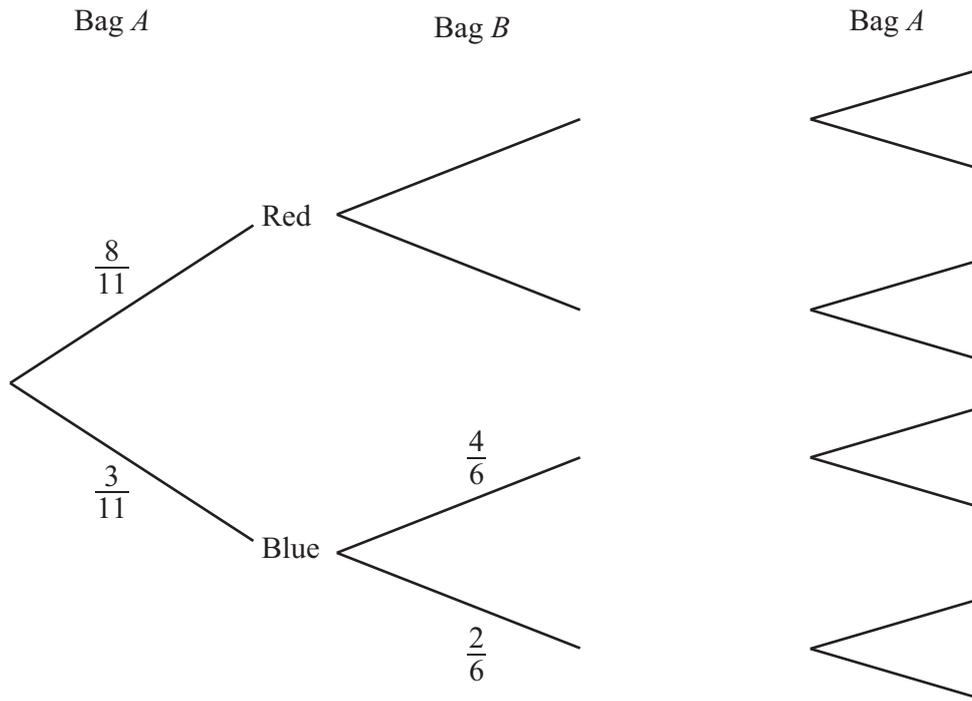
4 Bag A contains 8 red marbles and 3 blue marbles. Bag B contains 4 red marbles and 1 blue marble.

A marble is chosen at random from bag A. If the marble chosen is red, it is discarded. If the marble chosen is blue, it is placed in bag B.

A marble is then chosen at random from bag B. If the marble chosen is red, it is discarded. If the marble chosen is blue, it is placed in bag A.

A marble is now chosen at random from bag A.

(a) Complete the tree diagram below by entering all the remaining outcomes and probabilities. [3]



(b) Find the probability that all three marbles chosen are the same colour. [2]

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Additional page

If you use the following page to complete the answer to any question, the question number must be clearly shown.

Area with horizontal dotted lines for writing answers.

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