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CAMBRIDGE
International Education

Cambridge International AS & A Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

6215667729

MATHEMATICS **9709/52**

Paper 5 Probability & Statistics 1 **May/June 2026**

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. Do **not** use correction fluid or tape.
- 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.

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1 A club has 15 members made up of 6 men and 9 women. Every Friday a team of 5 members is selected at random to represent the club in a competition.

(a) Find the probability that next Friday the team will consist of more men than women. [4]

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Another club has 13 members.

(b) In how many ways can the group of 13 members be divided into a group of 6, a group of 4 and a group of 3? [2]

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2 Ling has three coins. Each coin is biased so that the probability of obtaining a head is $\frac{1}{3}$. Ling throws all three coins at the same time. The random variable X denotes the number of heads that Ling obtains.

(a) Draw up the probability distribution table for X. [3]

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Ling throws all three coins at the same time repeatedly.

(b) Find the probability that he obtains at least two heads for the first time on his 7th throw. [2]

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(c) Find the probability that he obtains at least two heads for the second time on his 6th or 7th throw. [3]

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3 **(a)** Find the number of different 3-digit numbers greater than 200 that can be made from the digits {1, 2, 3, 4, 5, 6, 7} if digits may be repeated and the number is divisible by 5. [1]

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(b) Find the number of different 3-digit numbers greater than 200 that can be made from the digits {1, 2, 3, 4, 5, 6, 7} if no digit is repeated and the number is even. [3]

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4 Every day Haz attempts to complete a particular type of puzzle in less than 10 minutes. On any attempt, the probability that she will succeed is 0.6.

(a) Find the probability that on 9 randomly chosen days, Haz completes the puzzle in less than 10 minutes on at least 7 of these 9 days. [3]

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120 days are chosen at random.

(b) Use an approximation to find the probability that Haz completes the puzzle in less than 10 minutes on fewer than 66 of these 120 days. [5]

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5 A box contains 3 red pens, 5 blue pens and 2 green pens. Lui chooses one pen at random from the box and keeps it.

A green pen is added to the box. Mira now chooses one pen at random from the box and keeps it.

(a) Find the probability that Lui and Mira both have a blue pen. [1]

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(b) Find the probability that Mira's pen is red. [3]

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(c) Find the probability that Lui's pen is red given that Mira's pen is blue or green. [3]

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6 The heights, in cm, of the 15 rugby players in each of two teams, the Hippos and the Zebras, are shown in the following table.

Hippos	165	168	172	172	176	178	181	184	185	188	188	190	191	192	195
Zebras	183	192	172	167	184	189	171	194	191	179	186	182	177	175	186

(a) Draw a back-to-back stem-and-leaf diagram to represent this information, with Hippos on the left-hand side. [4]

(b) Find the interquartile range of the heights of the players in the Hippos team. [2]

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The player in the Hippos with height 184 cm is injured. A new player replaces him, and this causes the mean height of the 15 players in the team to increase by 0.5 cm.

(c) Find the height of the new player. [2]

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7 The lengths of the leaves of a certain type of tree are normally distributed with mean μ cm and standard deviation σ cm. It is known that 20% of the leaves have a length less than 3.60 cm and 70% of the leaves have a length greater than 5.40 cm.

(a) Find the value of μ and the value of σ. [5]

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The lengths of 600 randomly chosen leaves of a different type of tree are normally distributed with mean 4.63 cm and standard deviation 0.55 cm.

(b) How many of these 600 leaves would you expect to have a length within 0.6 cm of the mean length? [4]

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Additional page

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