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CAMBRIDGE
International Education

Cambridge International AS & A Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

2697058765

MATHEMATICS **9709/52**

Paper 5 Probability & Statistics 1 **February/March 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 12 members of which 7 are men and 5 are women. A committee of 4 members is to be chosen from these 12 members.

Find the probability that a randomly chosen committee includes at least 2 men. [4]

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2 **(a)** Find the number of different arrangements of the 9 letters in the word ATTENTIVE in which the two Es are together but the three Ts are **not** all together. [3]

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(b) Find the number of different arrangements of the 9 letters in the word ATTENTIVE in which there are at least four letters between the two Es. [4]

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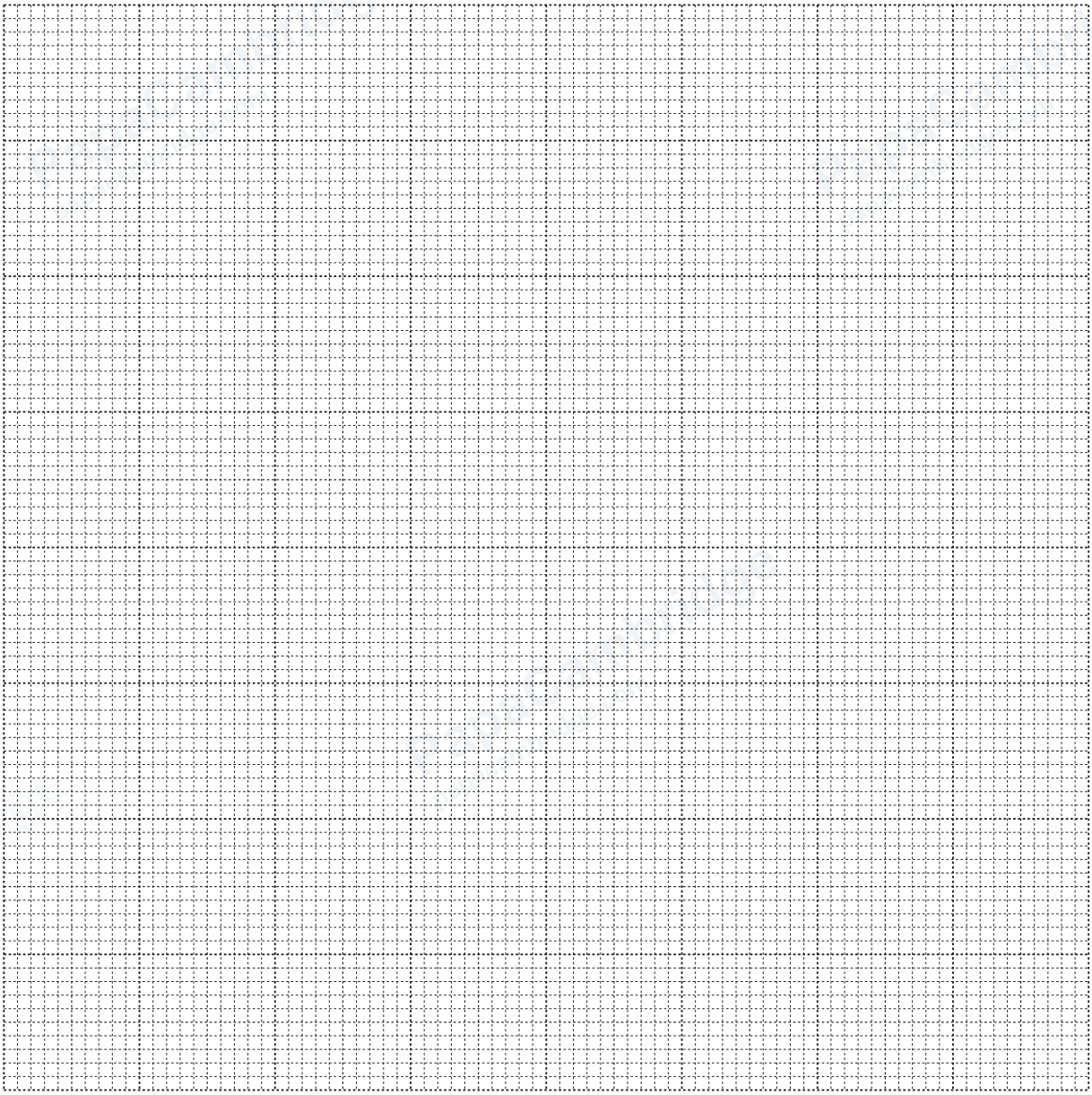
3 On a particular day, the times taken to travel to Meriday college by 150 students are recorded, correct to the nearest minute. These times are summarised in the table.

time, in minutes	5 – 9	10 – 14	15 – 19	20 – 29	30 – 39	40 – 49	50 – 59	60 – 79
frequency	4	11	14	26	48	28	15	4

(a) Draw a cumulative frequency graph to illustrate the data. [4]



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(b) Use your graph to estimate the 60th percentile of the times taken to travel to college by these 150 students. [2]

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(c) Calculate an estimate for the mean of the times taken to travel to college by these 150 students. [3]

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4 Suri has a bag containing 4 blue discs and 3 yellow discs. She selects one disc from the bag at random, notes its colour and returns it to the bag. She repeats this process until she obtains a yellow disc.

(a) Find the probability that Suri obtains a yellow disc for the first time on her 4th selection. [1]

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(b) Find the probability that Suri obtains a yellow disc for the second time on her 5th selection. [2]

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Tan has a bag containing 4 red discs and 3 green discs. He selects one disc from the bag at random and without replacement. He repeats this process until he obtains a green disc. The random variable X is the number of discs that Tan needs to select in order to obtain a green disc.

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

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(d) Find Var(X). [3]

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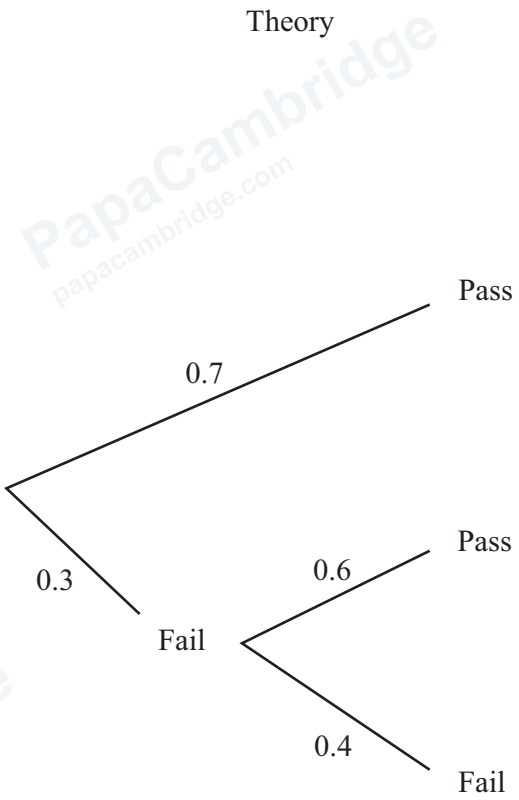
5 Drivers who wish to obtain an advanced driving qualification must pass two tests: a theory test and a skills test.

Drivers must pass the theory test first and they are allowed up to a maximum of two attempts to pass the theory test. The probability that any driver passes the theory test on their first attempt is 0.7 and the probability that any driver passes on their second attempt is 0.6.

Drivers who are successful in the theory test are then allowed up to a maximum of three attempts to pass the skills test. The probability that a driver passes the skills test on any attempt is 0.2.

(a) Complete the tree diagram to illustrate this information, showing all the probabilities. [2]



(b) Show that the probability that a randomly chosen driver passes the theory test at the first attempt and the skills test at the second attempt is 0.112. [1]

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(c) Find the probability that a randomly chosen driver obtains the advanced driving qualification. [3]

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(d) Find the probability that a randomly chosen driver passes the theory test at the first attempt given that the driver obtained the advanced driving qualification. [3]

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6 A company sells bags of pasta. The masses of large bags of pasta are normally distributed with mean 2.40 kg and standard deviation 0.18 kg.

(a) In a random sample of 400 large bags, how many would you expect to have a mass less than 2.32 kg? [4]

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The masses of small bags of pasta are normally distributed with mean μ kg and standard deviation σ kg. 80% of these bags have a mass less than 1.26 kg and 40% of these bags have a mass less than 1.08 kg.

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

Eight small bags of pasta are chosen at random.

(c) Find the probability that more than 5 of the 8 small bags have a mass less than 1.26 kg. [3]

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Additional page

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