



# Cambridge International AS & A Level

CANDIDATE  
NAME

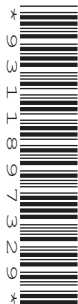
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## FURTHER MATHEMATICS

9231/41

Paper 4 Further Probability & Statistics

October/November 2021

1 hour 30 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.



- 1 The times taken for students at a college to run 200 m have a normal distribution with mean  $\mu$  s. The times,  $x$  s, are recorded for a random sample of 10 students from the college. The results are summarised as follows, where  $\bar{x}$  is the sample mean.

$$\bar{x} = 25.6 \quad \Sigma(x - \bar{x})^2 = 78.5$$

- (a) Find a 90% confidence interval for  $\mu$ . [4]

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A test of the null hypothesis  $\mu = k$  is carried out on this sample, using a 10% significance level. The test does not support the alternative hypothesis  $\mu < k$ .

- (b) Find the greatest possible value of  $k$ . [3]

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