

Cambridge

International

Cambridge International Examinations

Cambridge International Advanced Level

CANDIDATE NAME						
CENTRE NUMBER				CANDIDATE NUMBER		
MATHEMATICS						9709/07
Paper 7 Probab	ility & Statis	stics 2 (S2)		For	Examinatio	n from 2017
SPECIMEN PAR	PER				1 hour	15 minutes
Candidates answ	wer on the	Question Pap	oer.			
Additional Mater	ials: Li	st of Formula	ae (MF9)			

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces at the top of this page.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams or graphs.

Do not use staples, paper clips, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer all the questions.

Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place in the case of angles in degrees, unless a different level of accuracy is specified in the question.

The use of an electronic calculator is expected, where appropriate.

You are reminded of the need for clear presentation in your answers.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question or part question.

The total number of marks for this paper is 50.



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nutes respectively. Find the probability that the mean time spent in the library by a random sample of 120 people is
more than 30 minutes. [4]
Explain whether it was necessary to assume that the time spent by people in the library is normally distributed in the solution to part (i). [2]

Jagdeesh measured the lengths, x minutes, of 60 randomly chosen lectures. His results are summarised

elow.				
	n = 60	$\Sigma x = 3420$	$\Sigma x^2 = 195200$	
(i) Calculat	e unbiased estimates	of the population	mean and variance.	
••••••				
••••••				••••••
•••••				
(ii) Calculat	e a 98% confidence in	nterval for the po	pulation mean.	
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		$f(x) = \begin{cases} k(3-x) \\ 0 \end{cases}$	$1 \le x \le 2$, otherwise,	
where k	is a constant.			
(i) Sho	by that $k = \frac{2}{3}$.			
••••				
••••				
••••				
(ii) Fin	d the median of X .			
(ii) Fin	d the median of X .			
(ii) Fin	d the median of X .			
(ii) Fin	d the median of X .			
(ii) Fin	d the median of <i>X</i> .			

	Use a suitable approximation to find the probability that, in a random sample of 4000 peopmore than 3 have this condition.
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less than 0.05. Find the smallest possible value of n .	[4

The weights, in kilograms, of men and women have the distributions $N(78, 7^2)$ and $N(66, 5^2)$

The maximum load that a certain cable car can carry safely is 1200 kg. If 9 randomly comen and 7 randomly chosen women enter the cable car, find the probability that the cal can operate safely.

•	oability that a r	,		-	-	[4
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At a certain hospital it was found that the probability that a patient did not arrive for an appointment

(1)	It is suggested that the first 30 appointments on a Monday should be used for the test. G	live a
	reason why this is not an appropriate sample.	[1]
	itable sample of 30 appointments is selected and the number of patients that do not arrive is n figure is used to carry out a test at the 5% significance level.	oted
(ii)	Explain why the test is one-tail and state suitable null and alternative hypotheses.	[2]
		•••••
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		•••••
		•••••
iii)	State what is meant by a Type I error in this context.	[1]
		•••••
		•••••
		•••••
		•••••

(iv)	Use the binomial distribution to find the critical region, and find the probability of a Type I error [5]
(v)	In fact 3 patients out of the 30 do not arrive. State the conclusion of the test, explaining you answer.

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