

Cambridge International Examinations

Cambridge International Advanced Level

Additional Mater		List of Formulae (MF	F9)				
Candidates answ	wer on th	e Question Paper.					
					1 hour 15	5 minutes	
Paper 7 Probab	ility & St	atistics 2 (S2)			February/March 201		
MATHEMATICS						9709/72	
CENTRE NUMBER				CANDIDATE NUMBER			
NAME							

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 in the space provided. If additional space is required, you should use the lined page at the end of this booklet. The question number(s) must be clearly shown.

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.

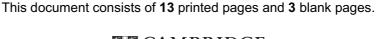
The use of an electronic calculator is expected, where appropriate.

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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is taken. Find the probability that the sample mean is greater than 5.0.	[3
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that more than 90 cal	ls arrive in a 4-hour	period.		[:
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				 ,

(i)	Find the mean and variance of H_A .	
		•••••
		•••••
(II <i>)</i>	Find the mean and variance of $H_A - 2H_B$.	
(11)	Find the mean and variance of $H_A - 2H_B$.	••••
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	Find the mean and variance of $H_A = 2H_B$.	

mod	fore sells two types of computer, laptops and tablets. The number of laptops sold per hour is lelled by a random variable with distribution $Po(0.9)$. The number of tablets sold per hour is lelled by an independent random variable with distribution $Po(1.5)$.
(i)	Find the probability that, during a randomly chosen hour, the total number of laptops and tablets sold in the store is less than 4. [3]

tl c	The manager claims that on sunny Saturdays fewer laptops than usual are sold. In order to this claim, an employee notes the number of laptops sold during a 4-hour period on a rando chosen sunny Saturday. In fact only 1 laptop is sold during this period. Test the manager's clat the 10% significance level.							
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Packets of Frugums contain 30 sweets. The manufacturer claims that, on average, 17% of the sweets

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ııı tıı	e packet, she will conclude that the claim is false.
(i)	State appropriate null and alternative hypotheses.
(ii)	Explain what is meant by a Type I error in this situation.
(iii)	Calculate the probability of a Type I error.

	ype II error.
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6	A random variable X has pro	bability density functi	on given by	
		$f(x) = \begin{cases} 6x(1-x) \\ 0 \end{cases}$	$0 \le x \le 1$, otherwise.	
	(i) Find the probability that	X does not lie between	en 0.3 and 0.7.	[4]
				•••••

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(ii)	Sketch the graph of the probability density function and hence state the value of $E(X)$.	[2]
(iii)	Find $Var(X)$.	[3]
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	11.9	11.7	11.8	11.9	11.6	12.1	11.7	11.9	11.8	11.9	
Assı	ume that th	e mass,	in grams,	of sugar	in bars o	of this typ	e has the	distributi	ion N(μ,	0.01).	
(i)	Calculate	a 99% (confidence	interval	for μ .					[4	4]
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(ii)	Explain w	hether i	it was nece	essary to	use the C	Central Li	mit theor	em in the	e calculat	ion in part (i)). 1]
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(III)	your answer to part (i) does not support this claim. [1]
(iv)	The manufacturer suggests that a 95% confidence interval would be more likely to support his claim than a 99% confidence interval. Without doing a calculation , explain whether this suggestion is correct.
(v)	It is thought that the value of 0.01 for the population variance may not be correct. Use the values in the sample to calculate an unbiased estimate of the population variance. [3]

Additional Page

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

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