



Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2019

Centre Number

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Candidate Number

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Mathematics

Assessment Unit S1

assessing

Module S1: Statistics 1



[AMS11]

AMS11

WEDNESDAY 15 MAY, MORNING

TIME

1 hour 30 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer **all seven** questions in the spaces provided.

Do not write outside the boxed area on each page or on blank pages.

Complete in black ink only. **Do not write with a gel pen.**

Questions which require drawing or sketching should be completed using an H.B. pencil.

All working should be clearly shown in the spaces provided. Marks may be awarded for partially correct solutions. **Answers without working may not gain full credit.**

Answers should be given to three significant figures unless otherwise stated.

You are permitted to use a graphic or scientific calculator in this paper.

INFORMATION FOR CANDIDATES

The total mark for this paper is 75

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

A copy of the **Mathematical Formulae and Tables booklet** is provided.

Throughout the paper the logarithmic notation used is $\ln z$ where it is noted that $\ln z \equiv \log_e z$

11751



20AMS1101

1 A discrete random variable X has probability distribution given in **Table 1** below.

Table 1

x	1	4	-3	a	-1
$P(X = x)$	0.26	0.16	0.16	0.2	0.22

(i) Given that $E(X) = -1$, find the value of a .

[2]

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(ii) Find $\text{Var}(X)$.

[4]

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The random variable $Y = 4 - 3X$.

(iii) Find $E(Y)$ and $\text{Var}(Y)$. [4]

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[Turn over



- 2 In a restaurant, the probability that a customer orders “soup of the day” is 0.4
A random sample of 10 customers was selected.

Find the probability that:

- (i) exactly five customers ordered “soup of the day” [3]

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- (ii) fewer than eight customers ordered “soup of the day” [3]

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(iii) If fewer than eight customers ordered “soup of the day”, find the probability that exactly five customers ordered “soup of the day”. [3]

[Turn over



(ii) the minimum time for the highest 10% of travel times

[3]

[Dotted lines for writing]

[Turn over



(iii) the upper quartile of T

[3]

A series of horizontal dotted lines provided for writing the answer to the question.



5 A continuous random variable X has the probability density function $f(x)$ defined by

$$f(x) = kx^2 \quad -1 \leq x \leq 1$$

(i) Show that $k = \frac{3}{2}$ [3]

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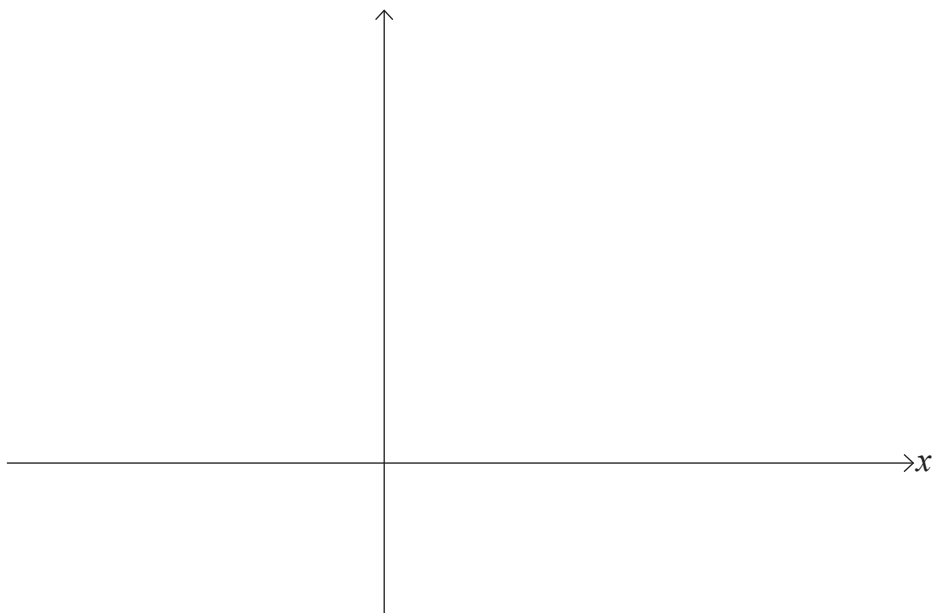
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(ii) On the axes below, sketch the graph of $f(x)$, indicating relevant values on the axes. [2]





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[Turn over

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For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	

Total Marks	
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Examiner Number

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