



Rewarding Learning

ADVANCED SUBSIDIARY (AS)  
General Certificate of Education  
2018

Centre Number

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Candidate Number

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# Mathematics

Assessment Unit S1

*assessing*

Module S1: Statistics 1



[AMS11]

\*AMS11\*

THURSDAY 17 MAY, AFTERNOON

## 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  $\ln z \equiv \log_e z$

11260



\*24AMS1101\*

- (i) Find the probability that exactly 3 eggs are cracked. [3]

[illegible]

- (ii) Find the probability that at most 3 eggs are cracked. [3]

[illegible]

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.

[3]

[illegible]

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- 2** The number of years of service of all the employees at a large department store are summarised in **Table 1** below.

### Table 1

Number of years, $x$	$0 \leq x < 5$	$5 \leq x < 10$	$10 \leq x < 15$	$15 \leq x < 20$	$20 \leq x < 30$	$30 \leq x < 40$
Number of employees	16	28	22	13	9	5

- (i) Calculate estimates for the mean and standard deviation number of years of service.

[5]

[illegible]

[illegible][illegible][illegible]

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Rewarding Learning

- (i) Find the probability that there are exactly 3 misprints on page 17 [4]

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- (ii)** Find the probability that on the two centre pages, there are at least 6 misprints. [5]

[illegible]

**(iii)** State two assumptions you have made about the misprints. [2]

**[Turn over**

- 4 A biased die is being used for a board game.  
The probability distribution of the score on the die is given in **Table 2** below.

**Table 2**

$x$	1	2	3	4	5	6
$P(X=x)$	0.15	0.19	0.13	$b$	0.14	0.19

- (i) Find  $b$ . [2]

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- (ii) Find  $P(X = \text{prime number})$ . [2]

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(iii) Find  $E(X)$ .

[2]

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

[4]

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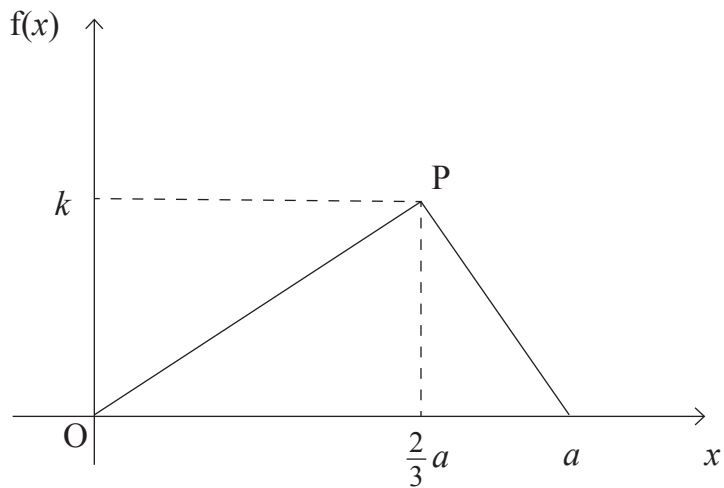
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[Turn over]



**5 Fig. 1** below shows the graph of a continuous random variable  $X$ .



**Fig. 1**

- (i) Find the value of  $a \times k$ . [2]

[illegible]

- (ii)** Given that the value of  $a$  is 6, find the equation of OP. [4]

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**\*24AMS1111\***

(iii) Find  $P(X < 4)$ .

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(iv) Find  $P(X > 1)$ .

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Handwriting practice lines consisting of 24 sets of three horizontal dotted lines.

[Turn over]

11260



\*24AMS1113\*

6 The masses of salmon bred in a fish farm are normally distributed with mean 1500 grams and standard deviation 100 grams.

- (i) Find the percentage of salmon whose mass is more than 1700 grams. [5]

[illegible]

[4]

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**\*24AMS1115\***

The lightest 5% of the salmon are kept for canning.

**(iii)** Find the maximum mass of salmon kept for canning.

[4]





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**(Questions continue overleaf)**

**[Turn over]**

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**\*24AMS1117\***

7 In a survey about preferences of beverages:

20% of tea drinkers also drank coffee,  
25% of coffee drinkers also drank tea,  
36% of those surveyed drank neither tea nor coffee.

The probability that someone drinks both tea and coffee is  $p$ .

**(i)** Find  $p$ .

[6]

[illegible]

One of those surveyed is chosen at random.

(ii) Find the probability that they drink coffee.

[1]

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(iii) Find the probability that they do not drink tea.

[2]

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[Turn over]



[4]



**\*24AMS1120\***

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\*24AMS1121\*

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\*24AMS1122\*

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\*24AMS1123\*

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

<b>Total Marks</b>	
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Examiner Number

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\*24AMS1124\*