Pearson Edexcel International Advanced Level

Wednesday 14 January 2026

Morning (Time: 1 hour 30 minutes)

Paper reference **WST01/01A**

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Mathematics

International Advanced Subsidiary/Advanced Level
Statistics S1
Question Paper

You must have:
Answer book (sent separately)
Do not return this question paper with the answer book

Turn over ▶

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Pearson

1. The discrete random variable X has the probability distribution given in the table below.

x	–2	1	3	4	6
$P(X = x)$	$\frac{1}{4}$	$\frac{1}{6}$	$\frac{1}{3}$	$\frac{1}{12}$	$\frac{1}{6}$

(a) Write down the value of F(5)

(1)

(b) Find E(X)

(2)

(c) Find Var(X)

(3)

(Total for Question 1 is 6 marks)

2. A sports teacher recorded the number of press-ups done by his students in two minutes. He recorded this information for a Year 7 class and for a Year 11 class.

The back-to-back stem and leaf diagram shows this information.

Totals	Year 7 class		Year 11 class	Totals
(6)	8 7 6 5 5 4	1		
(10)	9 7 7 6 5 4 4 4 2 2	2	0 5 6 9	(4)
(7)	8 7 5 4 3 3 0	3	3 4 5 8 8	(5)
(5)	9 9 7 2 2	4	0 5 6 7 9	(5)
(3)	8 4 0	5	0 3 5 5 6 6 7 7 7 9 9	(11)
		6	0 3 3 3 3 4 8	(7)

Key: 2|4|0 means 42 press-ups for a Year 7 student and 40 press-ups for a Year 11 student

(a) Find the median number of press-ups for each class.

(2)

For the Year 11 class, the lower quartile is 38 and the upper quartile is 59

(b) Find the lower quartile and the upper quartile for the Year 7 class.

(2)

(c) Use the medians and quartiles to describe the skewness of each of the two distributions.

(3)

(d) Give two reasons why the normal distribution should not be used to model the number of press-ups done by the Year 11 class.

(2)

(Total for Question 2 is 9 marks)

3. A publisher collects information about the amount spent on advertising, £x, and the sales, y books, for some of her publications. She collects information for a random sample of 8 textbooks and codes the data using $v = \dfrac{x + 50}{200}$ and $s = \dfrac{y}{1000}$ to give

v	0.60	8.10	4.30	0.40	1.60	6.40	2.50	5.10
s	1.84	6.73	5.95	1.30	2.45	7.46	4.82	6.25

[You may use: $\sum v = 29$ $\sum s = 36.8$ $\sum s^2 = 209.72$ $\sum vs = 177.311$ $S_{vv} = 55.275$]

(a) Find S_{vs} and S_{ss}

(3)

(b) Calculate the product moment correlation coefficient for these data.

(2)

The publisher believes that a linear regression model may be appropriate to describe these data.

(c) State, giving a reason, whether or not your answer to part (b) supports the publisher's belief.

(1)

(d) Find the equation of the regression line of s on v, giving your answer in the form $s = a + bv$

(4)

(e) Hence find the equation of the regression line of y on x for the sample of textbooks, giving your answer in the form $y = c + dx$

(3)

The publisher calculated the regression line for a sample of novels and obtained the equation

$$y = 3100 + 1.2x$$

She wants to increase the sales of books by spending more money on advertising.

(f) State, giving your reasons, whether the publisher should spend more money on advertising textbooks or novels.

(2)

(Total for Question 3 is 15 marks)

4. Anju has a bag that contains 5 socks of which 2 are blue.

Anju randomly selects socks from the bag, one sock at a time. She does not replace any socks but continues to select socks at random until she has both blue socks.

The discrete random variable S represents the total number of socks that Anju has selected.

(a) Write down the value of $P(S = 1)$

(1)

(b) Find $P(S > 2)$

(3)

(c) Find $P(S = 3)$

(2)

(d) Given that the second sock selected is blue, find the probability that Anju selects exactly 3 socks.

(2)

(e) Find $P(S = 5)$

(3)

(Total for Question 4 is 11 marks)

5. The weights, in grams, of a random sample of 48 broad beans are summarised in the table.

Weight in grams (x)	Frequency (f)	Class midpoint (y)
$0.9 < x \leqslant 1.1$	9	1.0
$1.1 < x \leqslant 1.3$	12	1.2
$1.3 < x \leqslant 1.5$	11	1.4
$1.5 < x \leqslant 1.7$	8	1.6
$1.7 < x \leqslant 1.9$	3	1.8
$1.9 < x \leqslant 2.1$	3	2.0
$2.1 < x \leqslant 2.7$	2	2.4

(You may assume $\sum fy^2 = 101.56$)

A histogram was drawn to represent these data. The $2.1 < x \leqslant 2.7$ class was represented by a bar of width 1.5 cm and height 1 cm.

(a) Find the width and height of the $0.9 < x \leqslant 1.1$ class.

(3)

(b) Give a reason to justify the use of a histogram to represent these data.

(1)

(c) Estimate the mean and the standard deviation of the weights of these broad beans.

(4)

(d) Use linear interpolation to estimate the median of the weights of these broad beans.

(2)

One of these broad beans is selected at random.

(e) Estimate the probability that its weight lies between 1.1 grams and 1.6 grams.

(1)

One of these broad beans having a recorded weight of 0.95 grams was incorrectly weighed.
The correct weight is 1.4 grams.

(f) State, giving a reason, the effect this would have on your answers to part (c).
Do not carry out any further calculations.

(2)

(Total for Question 5 is 13 marks)

6. The label on a jar of Amy's jam states that the jar contains about 400 grams of jam. For each jar that contains less than 388 grams of jam, Amy will be fined £100. If a jar contains more than 410 grams of jam then Amy makes a loss of £0.30 on that jar.

The weight of jam, A grams, in a jar of Amy's jam has a normal distribution with mean μ grams and standard deviation σ grams. Amy chooses μ and σ so that
$P(A < 388) = 0.001$ and $P(A > 410) = 0.0197$

(a) Find, using standardisation, the value of μ and the value of σ.

(5)

Amy can sell jars of jam containing between 388 grams and 410 grams for a profit of £0.25

(b) Calculate the expected amount, in £s, that Amy receives for each jar of jam.

(4)

(Total for Question 6 is 9 marks)

7. Events A and B are such that

$$\mathrm{P}(A) = 0.5 \qquad \mathrm{P}(A \mid B) = \frac{2}{3} \qquad \mathrm{P}(A' \cup B') = 0.6$$

(a) Find $\mathrm{P}(B)$

(3)

(b) Find $\mathrm{P}(A' \mid B')$

(2)

The event C has $\mathrm{P}(C) = 0.15$

The events A and C are mutually exclusive.

The events B and C are independent.

(c) Find $\mathrm{P}(B \cap C)$

(2)

(d) Draw a Venn diagram to illustrate the events A, B and C and the probabilities for each region.

(5)

(Total for Question 7 is 12 marks)

TOTAL FOR PAPER IS 75 MARKS

Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

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Mathematics

International Advanced Subsidiary/Advanced Level
Statistics S1
Answer Book

You must have:
Question paper (sent separately)
Mathematical Formulae and Statistical Tables (Yellow), calculator

Total Marks

Candidates may use any calculator permitted by Pearson regulations. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulae stored in them.

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions and ensure that your answers to parts of questions are clearly labelled.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You should show sufficient working to make your methods clear. Answers without working may not gain full credit.
- Values from the statistical tables should be quoted in full. If a calculator is used instead of the tables, the value should be given to an equivalent degree of accuracy.
- Inexact answers should be given to three significant figures unless otherwise stated.

Information

- A booklet 'Mathematical Formulae and Statistical Tables' is provided.
- There are 7 questions in this question paper. The total mark for this paper is 75.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.
- If you change your mind about an answer, cross it out and put your new answer and any working underneath.

Turn over ▶

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Question 1

Write the answer to Question 1 on these 2 pages

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 1 continued

This is the end of Question 1 answer space. Please turn the page for Question 2 answer space.

(Total for Question 1 is 6 marks)

Question 2

Write the answer to Question 2 on these 2 pages

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 2 continued

This is the end of Question 2 answer space. Please turn the page for Question 3 answer space.

(Total for Question 2 is 9 marks)

Question 3

Write the answer to Question 3 on these 4 pages

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 3 continued

Question 3 continued

Question 3 continued

This is the end of Question 3 answer space. Please turn the page for Question 4 answer space.

(Total for Question 3 is 15 marks)

Question 4

Write the answer to Question 4 on these 4 pages

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 4 continued

Question 4 continued

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 4 continued

This is the end of Question 4 answer space. Please turn the page for Question 5 answer space.

(Total for Question 4 is 11 marks)

Question 5

Write the answer to Question 5 on these 4 pages

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 5 continued

Question 5 continued

Question 5 continued

This is the end of Question 5 answer space. Please turn the page for Question 6 answer space.

(Total for Question 5 is 13 marks)

Question 6

Write the answer to Question 6 on these 4 pages

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 6 continued

Question 6 continued

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 6 continued

This is the end of Question 6 answer space. Please turn the page for Question 7 answer space.

(Total for Question 6 is 9 marks)

Question 7

Write the answer to Question 7 on these 3 pages

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 7 continued

Question 7 continued

(Total for Question 7 is 12 marks)

TOTAL FOR PAPER IS 75 MARKS

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