

Write your name here

Surname

Other names

Pearson Edexcel
International
Advanced Level

Centre Number

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Candidate Number

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Statistics S1

Advanced/Advanced Subsidiary

Thursday 15 January 2015 – Afternoon

Time: 1 hour 30 minutes

Paper Reference

WST01/01

You must have:

Mathematical Formulae and Statistical Tables (Blue)

Total Marks

Candidates may use any calculator allowed by the regulations of the Joint Council for Qualifications. 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). Coloured pencils and highlighter pens must not be used.
- **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. When a calculator is used, the answer should be given to an appropriate degree of accuracy.

Information

- 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.

Turn over ►

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- (e) find the probability that the sum of X_1 and X_2 is 6
Give your answer to 3 significant figures.

Question 1 continued

(Total 10 marks)



Turn over

Question 2 continued

This image shows a full page of blank, lined paper. It features approximately 20 horizontal blue or grey lines spaced evenly apart, typical of notebook paper. The lines extend across the entire width of the page, leaving small margins at the top and bottom. There are no vertical lines, text, or other markings present.

(Total 9 marks)

Q2



m	29	29	35	39	41	43	44	46
b	75	83	91	121	120	126	119	126

(You may use $S_{hh} = 3083.875$ and $S_{mm} = 305.5$)

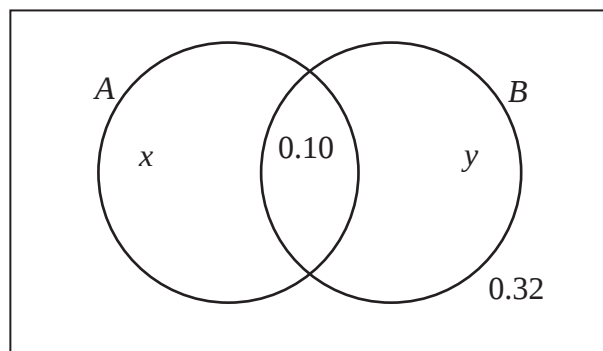
- (a) Find the exact value of $\sum bm$ (1)
- (b) Find S_{bm} (3)
- (c) Calculate the product moment correlation coefficient between b and m (2)
- (d) Interpret the value of the correlation coefficient. (1)

A ninth year is added to the data set. In this year the price of the bottle of milk is 46 pence and the price of a loaf of bread is 175 pence.

- (e) Without further calculation, state whether the value of the product moment correlation coefficient will increase, decrease or stay the same when all nine years are used. Give a reason for your answer. (2)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

where $x, y, 0.10$ and 0.32 are probabilities.



- (a) Find an expression in terms of x for

(i) $P(A)$

(ii) $P(B | A)$

(3)

- (b) Find an expression in terms of x and y for $P(A \cup B)$

(1)

Given that $P(A) = 2P(B)$

- (c) find the value of x and the value of y

(5)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Q4

(Total 9 marks)



5. The resting heart rate, h beats per minute (bpm), and average length of daily exercise, t minutes, of a random sample of 8 teachers are shown in the table below.

t	20	35	40	25	45	70	75	90
h	88	85	77	75	71	66	60	54

- (a) State, with a reason, which variable is the response variable. (2)

The equation of the least squares regression line of h on t is

$$h = 93.5 - 0.43t$$

- (b) Give an interpretation of the gradient of this regression line. (1)

- (c) Find the value of $\bar{t}$ and the value of $\bar{h}$ (2)

- (d) Show that the point $(\bar{t}, \bar{h})$ lies on the regression line. (1)

- (e) Estimate the resting heart rate of a teacher with an average length of daily exercise of 1 hour. (1)

- (f) Comment, giving a reason, on the reliability of the estimate in part (e). (2)

The resting heart rate of teachers is assumed to be normally distributed with mean 73 bpm and standard deviation 8 bpm.

The middle 95% of resting heart rates of teachers lies between a and b

- (g) Find the value of a and the value of b . (4)



[illegible]

(Total 13 marks)

Q5





Question 6 continued

Handwriting practice lines for Question 6 continued.

(Total 14 marks)

Q6



(3)

(4)

(1)

(3)

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Question 7 continued

Handwriting practice lines for Question 7 continued.

(Total 11 marks)

Q7

TOTAL FOR PAPER: 75 MARKS

END

