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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

Wednesday 13 June 2018 – Morning

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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Pearson



Question 1 continued

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Question 1 continued



Question 1 continued

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Q1

(Total 13 marks)



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2. Two youth clubs, *Eastyou* and *Westyou*, decided to raise money for charity by running a 5 km race. All the members of the youth clubs took part and the time, in minutes, taken for each member to run the 5 km was recorded.

The times for the *Westyou* members are summarised in Figure 1.

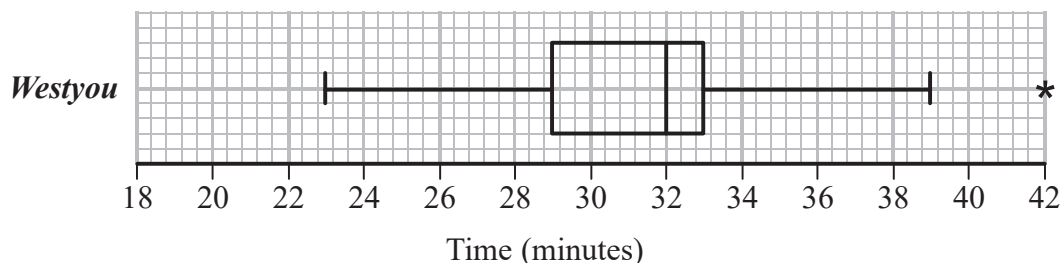


Figure 1

- (a) Write down the time that is exceeded by 75% of *Westyou* members.

(1)

The times for the *Eastyou* members are summarised by the stem and leaf diagram below.

Stem	Leaf	
2	0 2 3 4	(4)
2	5 6 8 8 8 9 9	(7)
3	0 0 0 0 0 1 1 1 2 2 2 2 3 4	(14)
3	5 5 5 7 9	(5)

Key: 2|0 means 20 minutes

- (b) Find the value of the median and interquartile range for the *Eastyou* members.

(3)

An outlier is a value that falls either

more than $1.5 \times (Q_3 - Q_1)$ above Q_3

or more than $1.5 \times (Q_3 - Q_1)$ below Q_1

- (c) On the grid on page 7, draw a box plot to represent the times of the *Eastyou* members.

(4)

- (d) State the skewness of each distribution. Give reasons for your answers.

(3)

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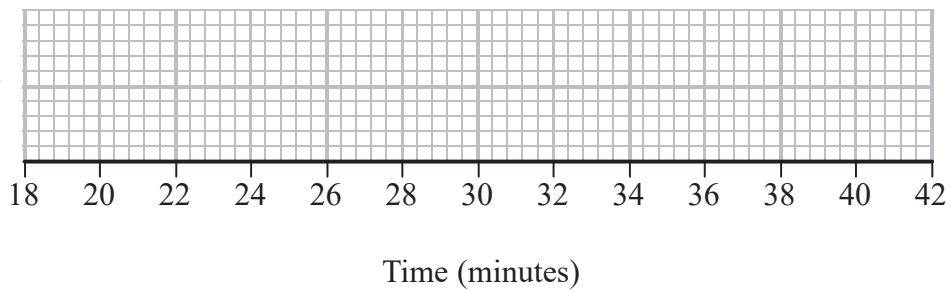
Question 2 continued

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Eastyou



Turn over for a spare grid if you need to redraw your box plot.



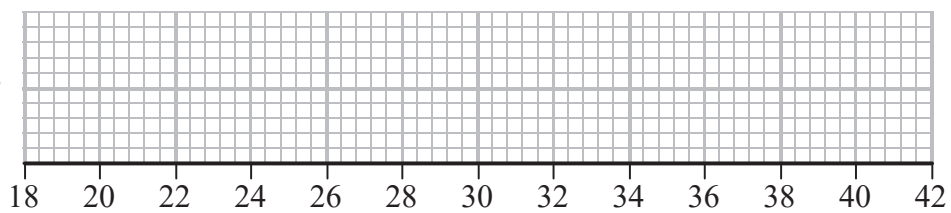
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Eastyou



(Total 11 marks)

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- (d) find the probability that the engine did **not** come from company S . (2)

Question 3 continued

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Question 3 continued

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Question 3 continued

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(Total 7 marks)

Q3



- $$P(X = x) = \begin{cases} k(2 - x) & x = 0, 1 \\ k(3 - x) & x = 2, 3 \\ k(x + 1) & x = 4 \\ 0 & \text{otherwise} \end{cases}$$

(a) Show that $k = \frac{1}{9}$ (2)

$$(b) \quad P(1 \leq X < 4) \tag{1}$$
$$(c) \quad E(X) \tag{2}$$
$$(d) \quad E(X^2) \tag{2}$$
$$(e) \text{ Var}(3X + 1) \tag{3}$$

Question 4 continued

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Question 4 continued

Lined area for writing the answer to Question 4.



Question 4 continued

Handwriting practice area with 30 horizontal lines.

(Total 10 marks)

Q4



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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)
$0.9 < x \leq 1.1$	9	1.0
$1.1 < x \leq 1.3$	12	1.2
$1.3 < x \leq 1.5$	11	1.4
$1.5 < x \leq 1.7$	8	1.6
$1.7 < x \leq 1.9$	3	1.8
$1.9 < x \leq 2.1$	3	2.0
$2.1 < x \leq 2.7$	2	2.4

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

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

- (a) Find the width and height of the $0.9 < x \leq 1.1$ 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)



Question 5 continued

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Question 5 continued

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(Total 13 marks)

Q5



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- (3)

Question 6 continued

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Question 6 continued

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Question 6 continued

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(Total 9 marks)

Q6



(3)

(2)

- (5)

Question 7 continued

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Q7

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Q7

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