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Candidate surname

Other names

Pearson
Edexcel GCE

Centre Number

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Candidate Number

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Wednesday 12 June 2019

Morning (Time: 1 hour 30 minutes)

Paper Reference **6683/01**

Statistics S1

Advanced/Advanced Subsidiary

You must have:

Mathematical Formulae and Statistical Tables (Pink)

Total Marks

Candidates may use any calculator allowed 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). 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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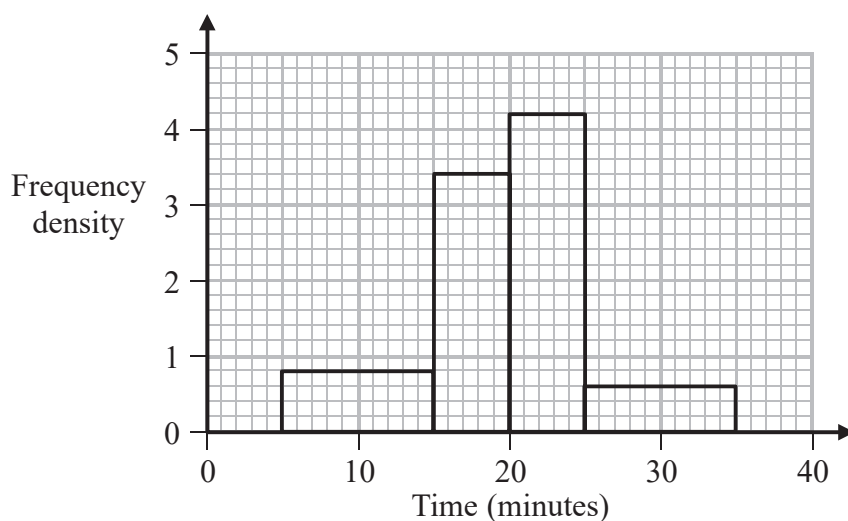
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2. Peta recorded the times, t minutes, a group of children took to swim 300 metres. She summarised these times in the following histogram.



- (a) Calculate the number of children who took part in the swim. (2)

Adam used the histogram to estimate the mean and standard deviation of the times taken by the children to complete the swim.

- (b) Find Adam's estimate of
- (i) the mean, (2)
 - (ii) the standard deviation. (3)

Adam used linear interpolation to estimate the median time taken by the children to complete the swim.

- (c) Find Adam's estimate of the median. (2)

Peta also calculated the mean, standard deviation and median of the times taken by the children but she used each child's actual time taken to complete the swim. She obtained a mean time of 20.8 minutes, a standard deviation of 5.51 minutes and a median time of 20.5 minutes.

- (d) Explain an assumption Adam made about these data that has led him to get different answers to Peta. (1)

Adam and Peta each calculate a coefficient of skewness by using their statistics in the formula

$$\text{skewness} = \frac{3(\text{mean} - \text{median})}{\text{standard deviation}}$$

- (e) (i) Calculate the coefficients of skewness found by Adam and Peta.
- (ii) Suggest how Peta could improve her histogram to describe the data more accurately. (2)



5. The random variable X , with the following probability distribution, represents the score when a 4-sided die is rolled.

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

- (a) Write down the name of this probability distribution. (1)

The die is rolled 3 times.

- (b) Find the probability that
- (i) the score is no more than 2 on each of the 3 rolls of the die, (2)
 - (ii) the score on each of the 3 rolls is different. (3)

The die is now rolled twice. The random variable X_1 represents the score on the first roll and the random variable X_2 represents the score on the second roll. The random variable M is the maximum of X_1 and X_2

- (c) Complete the table below to show the values of M

Values of M

$X_1 \backslash X_2$	1	2	3	4
1		2		
2	2	2	3	
3				
4				

- (d) Hence find the probability distribution for M (2)
- (e) Find the exact value of
- (i) $E(M)$ (2)
 - (ii) $\text{Var}(M)$ (3)
- (f) Find $P(X_1 \leq 2 | M = 4)$ (2)



Question 6 continued

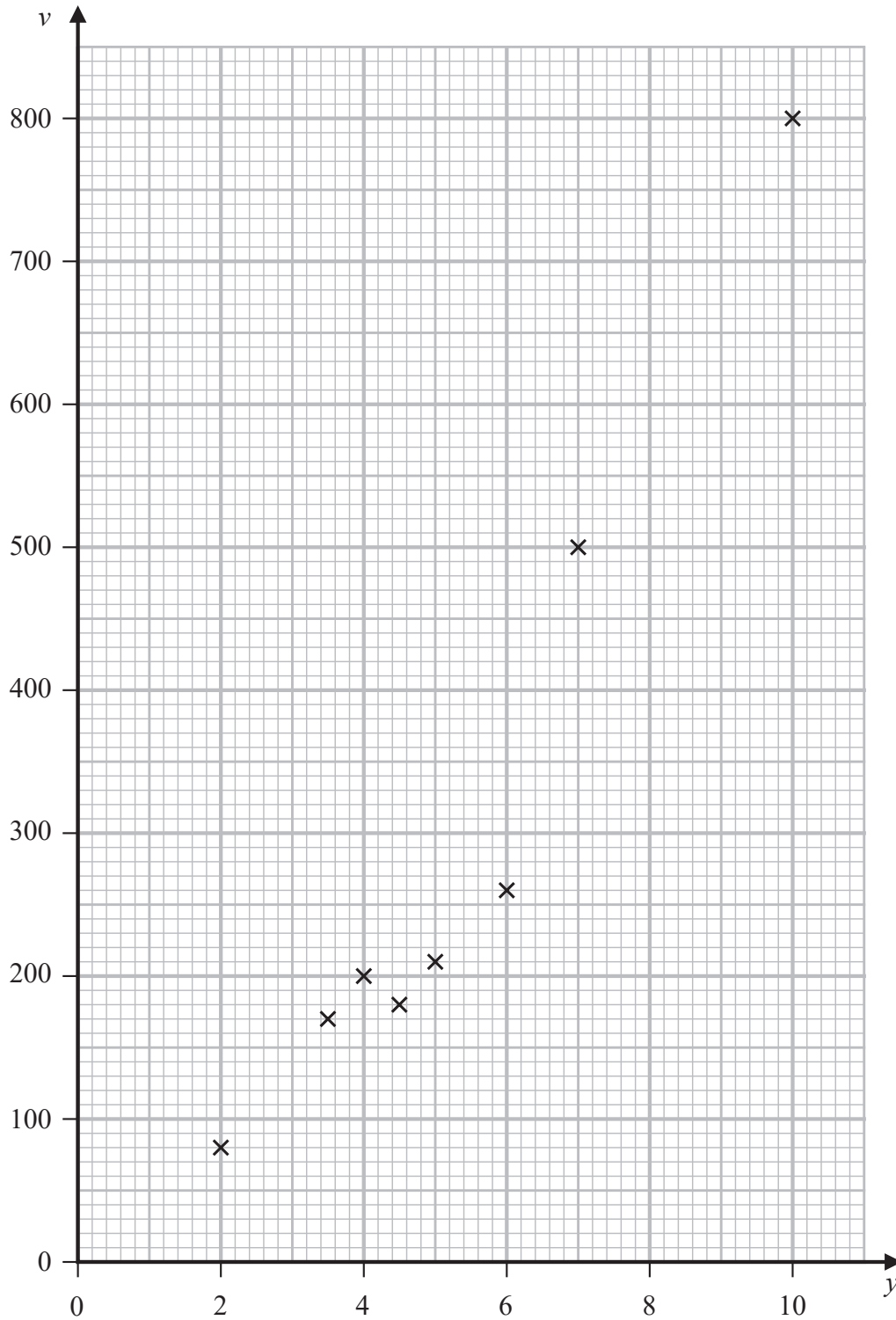


Figure 1

(Question 6 continues on page 22)

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