

Edexcel GCE
Statistics S1
Gold Level G2
(Question Paper)

**All exam papers are issued free to students for education purpose only.
Mr.S.V.Swarnaraja (Marking Examiner, Team Leader & Author)
www.swanash.com, Mobile: +94777304755 , email: swa@swanash.com**

Paper Reference(s)

6683/01

Edexcel GCE

Statistics S1

Gold Level G2

Time: 1 hour 30 minutes

Materials required for examination papers

Mathematical Formulae (Green)

Items included with question

Nil

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 formulas stored in them.

Instructions to Candidates

Write the name of the examining body (Edexcel), your centre number, candidate number, the unit title (Statistics S1), the paper reference (6683), your surname, initials and signature.

Information for Candidates

A booklet 'Mathematical Formulae and Statistical Tables' is provided.

Full marks may be obtained for answers to ALL questions.

There are 7 questions in this question paper. The total mark for this paper is 75.

Advice to Candidates

You must ensure that your answers to parts of questions are clearly labelled.

You must show sufficient working to make your methods clear to the Examiner. Answers without working may gain no credit.

Suggested grade boundaries for this paper:

A*	A	B	C	D	E
59	52	45	38	32	26

1. On a particular day the height above sea level, x metres, and the mid-day temperature, y °C, were recorded in 8 north European towns. These data are summarised below

$$S_{xx} = 3\,535\,237.5 \quad \sum y = 181 \quad \sum y^2 = 4305 \quad S_{xy} = -23\,726.25$$

- (a) Find S_{yy} . (2)
- (b) Calculate, to 3 significant figures, the product moment correlation coefficient for these data. (2)
- (c) Give an interpretation of your coefficient. (1)

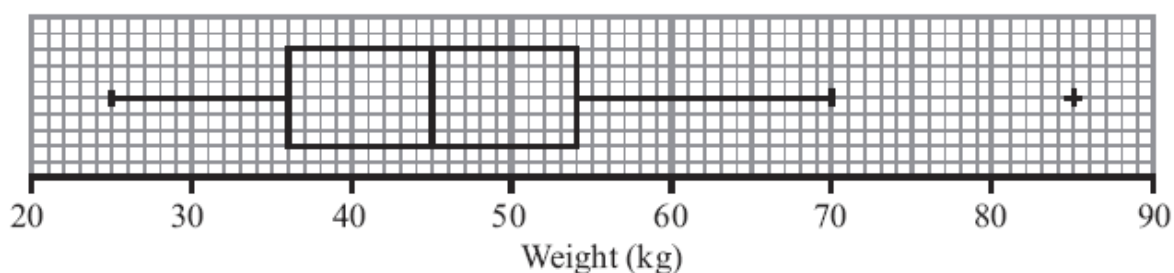
A student thought that the calculations would be simpler if the height above sea level, h , was measured in kilometres and used the variable $h = \frac{x}{1000}$ instead of x .

- (d) Write down the value of S_{hh} . (1)
- (e) Write down the value of the correlation coefficient between h and y . (1)

May 2011

2. The box plot in Figure 1 shows a summary of the weights of the luggage, in kg, for each musician in an orchestra on an overseas tour.

Figure 1



The airline's recommended weight limit for each musician's luggage was 45 kg.

Given that none of the musician's luggage weighed exactly 45 kg,

- (a) state the proportion of the musicians whose luggage was below the recommended weight limit.

(1)

A quarter of the musicians had to pay a charge for taking heavy luggage.

- (b) State the smallest weight for which the charge was made.

(1)

- (c) Explain what you understand by the + on the box plot in Figure 1, and suggest an instrument that the owner of this luggage might play.

(2)

- (d) Describe the skewness of this distribution. Give a reason for your answer.

(2)

One musician of the orchestra suggests that the weights of the luggage, in kg, can be modelled by a normal distribution with quartiles as given in Figure 1.

- (e) Find the standard deviation of this normal distribution.

(4)

June 2007

3. The histogram in Figure 1 shows the time taken, to the nearest minute, for 140 runners to complete a fun run.

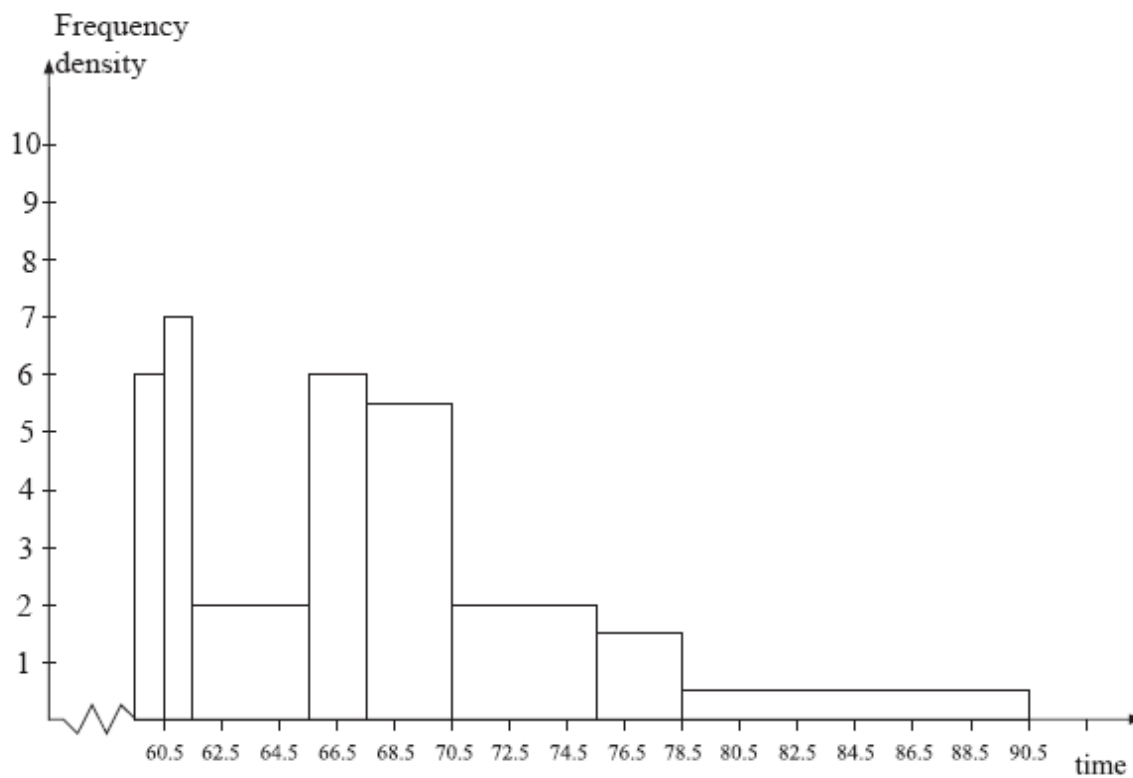


Figure 1

Use the histogram to calculate the number of runners who took between 78.5 and 90.5 minutes to complete the fun run.

(5)

January 2008

4. The following table summarises the times, t minutes to the nearest minute, recorded for a group of students to complete an exam.

Time (minutes) t	11 – 20	21 – 25	26 – 30	31 – 35	36 – 45	46 – 60
Number of students f	62	88	16	13	11	10

[You may use $\sum ft^2 = 134281.25$]

- (a) Estimate the mean and standard deviation of these data. (5)
- (b) Use linear interpolation to estimate the value of the median. (2)
- (c) Show that the estimated value of the lower quartile is 18.6 to 3 significant figures. (1)
- (d) Estimate the interquartile range of this distribution. (2)
- (e) Give a reason why the mean and standard deviation are not the most appropriate summary statistics to use with these data. (1)

The person timing the exam made an error and each student actually took 5 minutes less than the times recorded above. The table below summarises the actual times.

Time (minutes) t	6 – 15	16 – 20	21 – 25	26 – 30	31 – 40	41 – 55
Number of students f	62	88	16	13	11	10

- (f) Without further calculations, explain the effect this would have on each of the estimates found in parts (a), (b), (c) and (d). (3)

May 2013

5. A researcher measured the foot lengths of a random sample of 120 ten-year-old children. The lengths are summarised in the table below.

Foot length, l , (cm)	Number of children
$10 \leq l < 12$	5
$12 \leq l < 17$	53
$17 \leq l < 19$	29
$19 \leq l < 21$	15
$21 \leq l < 23$	11
$23 \leq l < 25$	7

- (a) Use interpolation to estimate the median of this distribution. (2)
- (b) Calculate estimates for the mean and the standard deviation of these data. (6)

One measure of skewness is given by

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

- (c) Evaluate this coefficient and comment on the skewness of these data. (3)

Greg suggests that a normal distribution is a suitable model for the foot lengths of ten-year-old children.

- (d) Using the value found in part (c), comment on Greg's suggestion, giving a reason for your answer. (2)

May 2009

6.

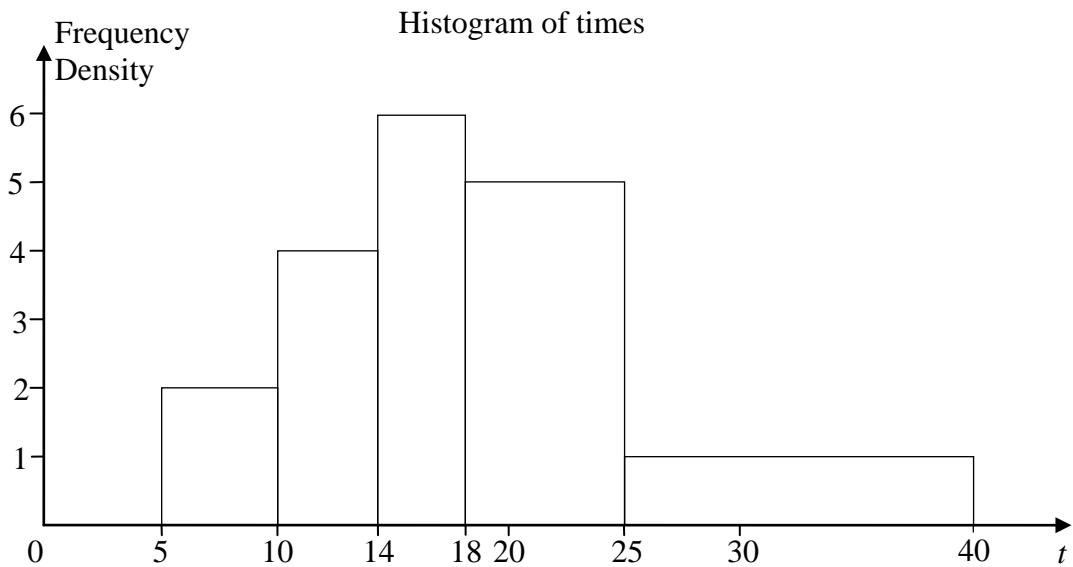


Figure 2

Figure 2 shows a histogram for the variable t which represents the time taken, in minutes, by a group of people to swim 500 m.

(a) Copy and complete the frequency table for t .

t	5 – 10	10 – 14	14 – 18	18 – 25	25 – 40
Frequency	10	16	24		

(2)

(b) Estimate the number of people who took longer than 20 minutes to swim 500 m.

(2)

(c) Find an estimate of the mean time taken.

(4)

(d) Find an estimate for the standard deviation of t .

(3)

(e) Find the median and quartiles for t .

(4)

One measure of skewness is found using $\frac{3(\text{mean} - \text{median})}{\text{standard deviation}}$.

(f) Evaluate this measure and describe the skewness of these data.

(2)

May 2007

7. The weights of bags of popcorn are normally distributed with mean of 200 g and 60% of all bags weighing between 190 g and 210 g.

(a) Write down the median weight of the bags of popcorn. (1)

(b) Find the standard deviation of the weights of the bags of popcorn. (5)

A shopkeeper finds that customers will complain if their bag of popcorn weighs less than 180 g.

(c) Find the probability that a customer will complain. (3)

January 2008

TOTAL FOR PAPER: 75 MARKS

END