

Statistics S1 Advanced Subsidiary

For Edexcel

Paper B

Time: 1 hour 30 minutes

Instructions and Information

Candidates may use any calculator EXCEPT those with the facility for symbolic algebra, differentiation and/or integration.

Full marks may be obtained for answers to ALL questions.

The booklet ‘Mathematical Formulae and Statistical Tables’, available from Edexcel, may be used.

When a calculator is used, the answer should be given to an appropriate degree of accuracy.

Advice to Candidates

You must show sufficient working to make your methods clear to an examiner.

Answers without working may gain no credit.

Published by Elmwood Press
80 Attimore Road
Welwyn Garden City
Herts. AL8 6LP
Tel. 01707 333232

These sheets may be copied for use solely by the purchaser's institute.

© Elmwood Press

1. (a) Explain briefly what you understand by a statistical model. (2)
- (b) Give the name of the distribution that could be used to model each of the following situations.
- (i) The number obtained on the spin of a roulette wheel.
- (ii) The weight of adult seals. (2)
-

2. The distances, to the nearest mile, travelled to work by 180 commuters is summarised below.

Distance in miles, d	-10	-20	-40	-60	-100
Frequency, f	24	44	52	32	28

- (a) Draw a histogram to represent this data. (4)
- (b) Approximately how many commuters travel between 25 and 45 mile to work? (3)
-

3. A discrete random variable X has a probability function given by

$$f(x) = \begin{cases} kx^2 & x = 3, 4, 5 \\ 0 & \text{otherwise} \end{cases}$$

Find the value of

- (a) k (2)
- (b) $E(X)$ (2)
- (c) $Var(X)$ (3)
-

4. In a large company 80% of the managers are male. Of these men 40% are over 40 years old whereas 70% of the female managers are over 40.

- (a) Draw a tree diagram to represent this information. (3)

Find the probability that a selected manager is:

- (b) a man under 40, (2)
- (c) either a woman or over forty. (2)
- (d) Given that the manager is over forty, find the probability that it is a woman. (3)
-

5. An examination was taken by a large number of candidates. The marks are known to be normally distributed:
16% of students scored 30 marks or less and 5% scored over 90.

- (a) Find the mean and variance of the marks. (7)
 - (b) Find the upper quartile and lower quartile of the marks. (4)
-

6. Three darts players, Ray, Steve and Tom, were asked to keep a record of the first 40 scores they achieved during practice (Each score consisted of the total for three darts being thrown) Ray's results are shown in the stem and leaf below

Score	(3 4 = 34)	Totals
3	2	(1)
4	7	(1)
5	6 8	(2)
6	8 8	(2)
7	3 7 8	(3)
8	0 4 7 9 9	(5)
9	1 2 4 4	(4)
10	2	(1)
11	0 0 3 5	(4)
12	0 0 8	(3)
13	3 6 9	(3)
14	0 6 6 7 9	(5)
15	4 6	(2)
16	3 4 8	(3)
17	2	(1)

(a) Find the median and quartiles for Ray's scores. (3)

For the other two players their scores are summarised below

	Min	Q1	Median	Q3	Max
Steve	3	82	110	120	127
Tom	80	100	110	120	160

(b) Draw boxplots for all three players on the same scale. (6)

(c) Compare and contrast the three players. (3)

(d) Who do you think should be chosen to represent the pub darts team? (2)

7. (a) By using the coding $S = x - 50$ and $T = (y - 100)/5$, find the product moment correlation coefficient between S and T (8)

x	65	80	42	47	67	24	73	59	68	33
y	105	80	110	95	85	125	95	100	90	145

- (b) What is the product moment correlation coefficient between x and y ? (2)
-

8. Twelve dogs were competing in the police dog time trials over an obstacle course. These dogs consisted of 4 Alsatians, 5 Labradors and 3 Retrievers. Find the probability that the three fastest dogs were
- (a) all Labradors, (3)
- (b) two Alsatians and one of another breed, (3)
- (c) all the same breed of dog. (3)
- (d) Given that at least one of the fastest three dogs was an Alsatian, find the probability that all three were Alsatians. (3)
-

TOTAL 75 MARKS