



A-LEVEL MATHEMATICS

MS2B STATISTICS 2B
Report on the Examination

6360
June 2016

Version: 1.0

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General

Students generally demonstrated a high level of competence in the numerical calculations, with working usually well set out. Interpretation of the results of such calculations was less well accomplished. There was also a tendency to disregard the outcome of statistical tests.

Question 1

Many students handled the Poisson calculations well, using tables, formula or calculator. Part **(e)** proved most challenging with many students incorrectly using $Po(8)$.

Question 2

Although many students correctly identified μ , the use of a z -value, rather than t_9 , often prevented further success.

Question 3

Part **(a)** was generally answered correctly. In part **(b)** some students tried to calculate $P(X < 3)$ by the subtraction of $P(X > 3)$ from 1, whereas simply adding the given probabilities avoided this error. Only a minority remembered to multiply by 2 to complete the answer. Part **(c)** was well answered with clear working in both calculations. Part **(d)** elicited many irrelevant answers citing “not random”, “not independent” or similar. A minority of students recognised that the question related to X , rather than the context, and so correctly identified those features of the probabilities which were unlike a Poisson distribution. Part **(e)** was well handled, apart from some confusion in the use of £ and p, and a reluctance of some students to give a mean value as 30.8p, as if they believed that it must be a whole number of pence.

Question 4

Many students recognised the rectangular distribution and answered well. Most understood the significance of “Hence” and correctly derived the standard deviation rather than using the formula.

Question 5

Most students correctly stated the hypotheses in terms of an association, although some preferred “independent”, with the danger of having the dependence the wrong way round. The use of “correlation” was inappropriate. Many correctly combined columns and used Yates’ correction, although a minority omitted one or both of these. The calculations were generally well done and many students reached the conclusion that mechanical problems were not associated with engine type. Surprisingly, in part **(b)**, this conclusion was often ignored, or quoted but then ignored, and Arisa was advised to buy a petrol engine car.

Question 6

Part **(a)** was well done with many students handling the negative test statistic competently. In part **(b)** some did not produce a confidence interval, but did a second hypothesis test. Those who had found a confidence interval were sometimes not sure what was signified by it containing the mainland mean, and so wrote answers that tried to ‘sit on the fence’ between support and not support. As in Question 5, they seemed unwilling to believe the statistical result, in this case that the mean on Island B could really be anywhere between 14.9 and 18.5. In part **(c)** a minority of students felt that, because they did not know the standard deviation, then they could not decide whether the Island C data supported Gerald’s belief or not.

Question 7

There was much confusion between the cumulative distribution function, $F(x)$, and the probability density function, $f(x)$. Often a graph of $F(x)$ was drawn in part (a) and also $x F(x)$ was integrated in part **(b)**. For other students, however, this was a straightforward question.

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