



Examiners' Report
Principal Examiner Feedback

Summer 2019

Pearson Edexcel GCE AS Mathematics
In Statistics Paper 1 (8ST0_01)

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General introduction

Paper 1 proved to be a reasonably standard paper in terms of difficulty.

Question 1

This question tested candidates on the uniform distribution. Candidates should be careful to ensure they fully justify where numbers come from - there were several instances of candidates dividing 1 by 10 without justifying where the 10 came from. A surprisingly large number of candidates were unable to correctly identify the probability of an exact time occurring was 0, though most candidates got part (c) correct. Part (d) was a relatively straightforward conditional probability question. Despite this, many candidates were unable to score full marks.

Question 2

In part (a), candidates who were able to correctly identify that a Wilcoxon rank-sum test was required were generally able to do well on the question. However, the hypotheses were often incorrectly given. Candidates should remember that a hypothesis test only provides **evidence** and cannot prove anything for certain - conclusions should reflect this.

In part (b) candidates once again need to take more care with their justification. Many candidates gave statements suggesting the newer therapy was more effective but did not back them up with any evidence - this would score 0 marks. Candidates would do well to consider the result of a hypothesis test in any question that requires a comment - not all candidates stated the result of the hypothesis test in the conclusion. Pleasingly most candidates understood the next stage of the research would be a larger test.

Question 3

This question was a standard application of approximating a binomial distribution with a normal distribution. There was nothing out of the ordinary in this question - a well prepared candidate should have been happy to see this question.

Question 4

In part (a), several candidates had difficulties with precision. Though most were able to identify that values below 5 were an issue, full marks were only awarded if it was clear that **expected** values below 5 were the problem.

Part (b) was a standard contingency table question. Some candidates who completed the whole question on their calculators were losing working marks if anything was mistyped. Candidates may want to consider showing their working, particularly on the more complex calculations.

Candidates found part (c) challenging. Candidates were specifically asked to consider contributions to the test statistic, yet few did. Some candidates misunderstood the implication of the contributions. This is a relatively standard application of a chi-squared test and candidates should be prepared to answer this type of question.

Parts (d) and (e) were well answered on the whole.

Question 5

Part (a) of this question was straightforward for most candidates. However, in part (b) many candidates were unable to correctly test for independence, despite some guidance in part (a)(ii). In

this instance any test for independence was acceptable as the question did not specify **hence**, however candidates should be familiar with multiple methods and able to choose the most appropriate one in the instance when they are given the opportunity to choose, or a specific one if a question requires it.

Part (d) was asking about a **probability**, and not an **event** which some candidates did not spot. Once again, more precision may be required than candidates are expecting. Part (e) was a mixed bag - those who were able to start it generally achieved full marks, with the rest scoring 0. Calculations were required, again with guidance appearing in the form of part (c) though this was not specifically pointed out. Simply quoting totals was awarded 0 marks.

Question 6

This question was generally found the hardest on the paper. There were many challenging parts to the question. However, the question started in a straightforward manner. Candidates should be sure to carefully read the question - part (b) specifically requested a reference to the aims of the research.

Part (d) found some candidates unable to correctly use the context of the question, despite understanding the importance of the values 48 and 21.2. When an unfamiliar context, such as a "NEET", is introduced candidates should be careful to take time and make sure they understand the context given to them.

Part (e) once again required some more justification from candidates in their calculations. all numbers used should be justified when a question requires you to **show** something.

In part (f) most candidates were able to get at least one mark. However, they should again be careful to read a question carefully. Candidates were asked specifically to criticise the three **statements** - some were ignoring this entirely and giving general criticisms or comments.

Summary

Based on their performance on this paper, candidates should:

- read the question carefully and fully before answering the question.
- use **bullet points** with clear, specific, and concise language for explanation questions.
- try to get into the mindset of the context, rather than viewing the exam as a series of maths-led, routine questions.
- remember that not all explanations are statistical but may require some basic general knowledge and understanding in places.
- write conclusions to hypothesis tests in terms of **evidence**, rather than as a definite conclusion.

