



AS

Further Mathematics

7366/2S

Report on the examination

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General

The paper was accessible to the full range of students, with ample opportunity for all to demonstrate their understanding, whilst still presenting appropriate challenge to those at the top end. Students typically performed most strongly on items requiring routine manipulation of standard formulae or straightforward calculation. By contrast, questions demanding interpretation, or significant algebraic manipulation, were generally handled less well. It is recommended that future students ensure they practise these aspects thoroughly, as the ability to interpret and manipulate expressions remains central to the specification.

Question 1

Approximately three quarters of students achieved the available mark. The most frequent error arose in the calculation of variance, with many not recognising that the mean must be squared and subsequently did not take the square root of 36 to obtain the correct standard deviation of 6.

Question 2

A similar proportion of students (over three quarters) were successful in this question. However, a significant number calculated the variance of the distribution, rather than the required standard deviation.

Question 3

Performance matched that of Question 1, with about three quarters scoring the mark. Again, the most common mistake was to provide the variance instead of the standard deviation.

Question 4

(a) The vast majority of students were able to access the mark for this part, indicating sound understanding of the topic. However, a small minority calculated the probability for “less than or equal to 2” rather than for the value specifically required by the question. Isolated cases were observed where students gave the mean of the distribution in place of the probability, suggesting a misreading of the question.

(b) Approximately three quarters of students achieved full marks. The most significant error arose from confusion between the cumulative probability and the mean for Y ; a notable proportion consequently gave 1 as the answer. Some attempted to set $E(X) = 5$ or determined the median of Y , rather than the required mean. Calculation errors were not uncommon, and these sometimes prevented otherwise correct working from being fully credited.

Question 5

(a) This standard question was completed successfully by about three quarters of students. Common errors were the use of an inappropriate z -value, incorrect squaring of the given standard deviation, converting it unnecessarily to an s -value, or employing an incorrect formula. A number attempted the correct method but did not secure full marks due to rounding errors.

(b) This part proved more challenging, with only about one third of students achieving full marks. Many students had difficulty establishing a valid equation to solve, frequently making errors with the standard deviation, the z -value, or the formula used. Even where students formed a correct equation, a significant proportion were unable to solve it accurately. A minority successfully employed a trial and improvement strategy. Non-response was more frequent for this part, indicating that some students were unsure how to proceed.

Question 6

(a) Approximately three quarters of students obtained the mark for this part. The most frequent error was omitting the 0.5 from the calculation, or alternatively, attempting to find the reciprocal of the value instead. Students who used the area of a triangle approach generally produced more accurate results than those who attempted integration; in the latter group, a not insignificant number obtained an answer of 1.

(b) In this part, around half of students were awarded full marks. The most common misconception was treating the gradient as positive, which led to the formation of an incorrect equation. Some students made errors in solving the equation or in carrying out the integration. There was a significant level of non-response for this part.

Question 7

(a) The vast majority of students performed strongly on this part, with most securing full marks. However, a small number of students were observed to calculate an incorrect probability. The most common errors included finding the probability of “less than or equal to 2,” “less than or equal to 1,” or the probability of “exactly 2,” rather than the required value. Centres are reminded to encourage students to read questions carefully.

(b)(i) Approximately half of students achieved the mark for this part. A variety of responses was seen, with common mistakes including confusion between Type I and Type II errors. Some students described a Type II error instead of the required Type I, while others lost the mark due to ambiguous phrasing or the use of double negatives, resulting in a reversal of the intended meaning. Furthermore, a number of responses lacked essential context or omitted the term “mean,” both of which are required for a complete and accurate answer.

(b)(ii) About half of students secured at least three marks on this question. The final mark was frequently lost due to insufficient demonstration of working, particularly in relation to justifying the choice of tails and providing all relevant probabilities with the required degree of accuracy. Some students attempted only one tail or selected incorrect tails to sum. There was also a

notable proportion of non-responses. Centres should encourage students to clearly show all stages of their working and to ensure answers are given to the required level of precision.

(c) The majority of students did not gain credit for this part. A wide range of errors was observed; many answers were incomplete, often lacking contextual reference or omitting key terms such as “mean” or “per hour.” Some students instead focused on comparing the mean and variance or described other Poisson conditions.

Question 8

(a) Roughly half of students managed to obtain at least three marks. A recurring set of errors was observed, typical of hypothesis testing: omission or incorrect formulation of hypotheses, incorrect critical values, and were not able to state whether the null hypothesis should be rejected. In some cases, conclusions were omitted entirely or not expressed in the context of the question. A number of students provided a definite conclusion

(b)(i) About half of students were awarded full marks, although a significant minority left this part blank. Students who secured only one mark tended to construct the expected table rather than the observed table. Errors included the introduction of additional variables and mistakes in one or more entries, although the overall approach was sometimes valid.

(b)(ii) About half of students did not attempt this part or scored no marks. More successful students managed to obtain a correct equation, although many struggled with the algebraic manipulation required to solve it. Some progressed as far as forming a quadratic equation or used calculators to solve, but errors in rearrangement or calculation were common. Crucially, a number of students did not appreciate the importance of the test statistic in forming the correct equation to solve.

(c) The majority of students did not achieve the mark for this part, despite it being a standard question that appears regularly. Many did not recognise the nature of the question and instead provided a comparison of the two entries or descriptions more relevant to correlation. A small number of responses indicated a partial understanding, referencing a difference between observed and expected values, but fell short of specifying that the observed was greater than expected. Non-response rates were high, with approximately a quarter of students omitting this part entirely.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.