Course report 2025

Higher Applications of Mathematics

This report provides information on candidates' performance. Teachers, lecturers and assessors may find it useful when preparing candidates for future assessment. The report is intended to be constructive and informative, and to promote better understanding. You should read the report with the published assessment documents and marking instructions.

We compiled the statistics in this report before we completed the 2025 appeals process.

Grade boundary and statistical information

Statistical information: update on courses

Number of resulted entries in 2024: 2,996

Number of resulted entries in 2025: 4,682

Statistical information: performance of candidates

Distribution of course awards including minimum mark to achieve each grade

Course award	Number of candidates	Percentage	Cumulative percentage	Minimum mark required
A	730	15.6	15.6	75
B	1,038	22.2	37.8	64
C	1,242	26.5	64.3	53
D	957	20.4	84.7	42
No award	715	15.3	100%	Not applicable

We have not applied rounding to these statistics.

You can read the general commentary on grade boundaries in the appendix.

In this report:

- ‘most’ means greater than or equal to 70%
- ‘many’ means 50% to 69%
- ‘some’ means 25% to 49%
- ‘a few’ means less than 25%

You can find statistical reports on the statistics and information page of our website.

Section 1: comments on the assessment

The course assessment was accessible to most candidates. Feedback suggests that it gave candidates a good opportunity to demonstrate the breadth and depth of their knowledge of the subject at this level.

Question paper

Most candidates made a good attempt at most questions.

The level of demand for questions 9(a), 9(b)(ii) and 11(b) was higher than expected. We took this into account when setting the grade boundaries.

Project

The project performed as expected.

Feedback from the marking team indicates it was positively received by centres and was fair and accessible for candidates.

Section 2: comments on candidate performance

Areas that candidates performed well in

Question paper

Question 1: estimate the total number of portions

Most candidates performed well in this question; however, some candidates did not clearly state their assumptions, including units, before completing the calculation.

Question 2(a): complete the Venn diagram

Most candidates performed well in this question. Many candidates gained full marks.

When calculating the number of gym members who used, for example, the treadmill only, some candidates did not consider the number of gym members who used the treadmill and at least one other machine from the choice of rowing machine and cross trainer.

Question 2(b): determine the probability

Many candidates performed well in this question; however, some candidates did not calculate the total number of gym members.

Question 3: calculate net monthly salary

Most candidates attempted this question. Many candidates set out their working in a logical way.

Question 4(a): state a critical path

Most candidates stated the correct critical path and achieved full marks for this question.

Question 4(b): complete a PERT chart

Most candidates attempted this question. Many candidates completed the PERT chart correctly.

Question 5(a)(i): construct a histogram

Most candidates constructed an appropriate histogram.

Question 7(a): calculate an expected cost

Many candidates calculated the expected cost of a delay.

Question 10(a): draw a graph to model

Most candidates attempted this question. Many candidates performed well. A few candidates did not start or finish the graph at the correct points.

Question 10(b)(i): state the type of relationship

Most candidates performed well in this question.

Question 12(a): complete the 'Participant Responses' table

Most candidates attempted this question. Many candidates performed well; however, a few candidates used the hide command instead of deleting the data. A few candidates only entered 'yes' in the colour-blind column for the colour-blind participants and did not enter 'no' for the non-colour-blind participants.

Question 12(b): complete the ‘Eye Colour Summary’ table

Many candidates performed well in this question. However, a few candidates did not gain the second mark because they did not fully remove the response for participant 42.

Project

Introduction

Most candidates gained marks 1 to 4, however, some candidates did not explain the background and context of their project clearly enough to gain mark 1.

Subjective impression

Many candidates achieved marks 7, 8 and 11 by generating appropriate graphical displays, including titles, labels and scales. However, some candidates included additional graphs that were inappropriate or that they had not created themselves. This year, more candidates gained marks by describing the helpfulness of the graphs.

Presentation

Most candidates gained marks in this section and managed to stay within the word count. However, some candidates did not place enough emphasis on introducing graphical displays, descriptive statistics and additional statistics.

Most candidates used appropriate headers and maintained a flow within the reports.

Areas that candidates found demanding

Question paper

Question 4(c): determine the minimum time

Most candidates did not determine the minimum time.

Question 5(a)(ii): describe the distribution

Most candidates did not describe the distribution correctly. Many candidates stated that the data was normally distributed, skewed to the left, or unevenly distributed.

Question 5(a)(iii): generate and state the appropriate measure of location

Many candidates generated a measure of location and spread; however, many candidates did not identify the appropriate measure of location.

Question 5(b): state one reason

Many candidates did not give a valid reason why the data might misrepresent the listening hours last summer. Many candidates stated that more people could be listening this year.

Question 7(b): calculate the expected cost

Most candidates did not answer this question correctly.

Question 8(c): calculate the balance

Some candidates did not attempt this question.

Many candidates who answered question 8(c) did not enter the correct formula. Most candidates who answered question 8(c) did not amend the formula for the change in the interest rate in the correct cell.

Question 9(a): explain which type of feed

Most candidates stated the correct type of feed; however, they did not give a valid reason why this was the correct feed. Many candidates simply used the wording in the question and stated ‘because it was more varied’ rather than referencing the interquartile range from the boxplot.

Question 9(b)(ii): state the null and alternative hypothesis

Most candidates did not gain any marks in this part of the question. Most candidates did not refer to the difference in the mean mass or answer the question in context.

Question 9(b)(iii): interpret the p-value and the result in context

Some candidates interpreted the p-value; however, some candidates stated an incorrect value of 0.5 or 0.005. Most candidates did not gain the second mark for this part of the question because they did not state that there was a significant difference in the mean mass of the chicks.

Question 9(c): interpret and explain information

Most candidates did not reference the 20% from the data booklet or they made a calculation error.

Question 10(c): explain which graph

Most candidates identified the correct graph, however, very few candidates referred to the depth of the water in the container in their explanation.

Question 11(b): give one reason

Many candidates did not give an appropriate reason for paying the balance in full.

Project

Introduction

Some candidates did not state their research questions clearly and they did not always use appropriate statistical language.

Some candidates did not select appropriate statistical tests later in the project due to poorly formulated research questions.

For marks 5 and 6, most candidates did not explain sufficiently why their data was valid or unbiased. Most candidates either made a statement saying that their data was valid and unbiased or stated that the source was reliable without providing an explanation. For example, ‘Since this is a government website, it’s valid and unbiased.’

Conclusion

Many candidates did not make appropriate connections or provide a summary between their graphical displays, descriptive statistics, or additional statistics within their conclusion.

Some candidates did not gain any conclusion marks because they did not state an appropriate research question.

Section 3: preparing candidates for future assessment

The comments in the previous sections and those below can help teachers and lecturers to prepare future candidates for the Higher Applications of Mathematics course assessment.

Question paper

Teachers and lecturers should:

- Remind candidates that they should print spreadsheets in both value view and formula view.
- Remind candidates that their scripts, including printouts, are scanned in black and white.
- Encourage candidates to use the checklist on the inside of the front page of the question paper to ensure that they have printed all relevant documents.
- Encourage candidates to refer to the data booklet to help them when answering questions.
- Consider what types of questions may be asked in the question paper after the data booklet is released.
- Consider the best way to allow candidates to practise skills for questions that require them to use software packages.
- Encourage candidates to set out clear, concise and appropriate working for all questions.
- Encourage candidates to use a ruler when drawing straight lines.
- Remind candidates to use appropriate statistical language when using statistics to interpret a statistical hypothesis or test.

Project

Teachers and lecturers should:

- Ensure that candidates use appropriate data sets.
- Ensure that candidates have a suitable research question based on their data. Candidates should state research questions explicitly and follow one of the following formats:
    - I am going to investigate if there is a difference in means between…
    - I am going to investigate if there is a relationship between…
    - I am going to investigate if there is a difference between two proportions.
- Remind candidates that they must provide an explanation of why they think their data or source is valid and unbiased.
- Remind candidates that they cannot use the example projects on the Understanding Standards website for their project.
- Remind candidates that they must generate all statistical diagrams they use in their project themselves, and they must not copy statistical diagrams from textbooks or journals.
- Remind candidates to use language appropriate for the course.
- Ensure that candidates continue to make statements within the subjective impression section, such as, ‘The boxplot allows me to visually compare the median of the two data sets and gives an indication of the spread of data.’

Teachers and lecturers delivering the Higher Applications of Mathematics course, and candidates taking the course, can consult the detailed marking instructions for the 2025 course assessment on our website. Our website also contains the marking instructions from previous years.

The Understanding Standards website contains examples of candidate evidence with commentary.

Appendix: general commentary on grade boundaries

Our main aim when setting grade boundaries is to be fair to candidates across all subjects and levels and to maintain comparable standards across the years, even as arrangements evolve and change.

For most National Courses, we aim to set examinations and other external assessments and create marking instructions that allow:

- a competent candidate to score a minimum of 50% of the available marks (the notional grade C boundary)
- a well-prepared, very competent candidate to score at least 70% of the available marks (the notional grade A boundary)

It is very challenging to get the standard on target every year, in every subject, at every level. Therefore, we hold a grade boundary meeting for each course to bring together all the information available (statistical and qualitative) and to make final decisions on grade boundaries based on this information. Members of our Executive Management Team normally chair these meetings.

Principal assessors utilise their subject expertise to evaluate the performance of the assessment and propose suitable grade boundaries based on the full range of evidence. We can adjust the grade boundaries as a result of the discussion at these meetings. This allows the pass rate to be unaffected in circumstances where there is evidence that the question paper or other assessment has been more, or less, difficult than usual.

- The grade boundaries can be adjusted downwards if there is evidence that the question paper or other assessment has been more difficult than usual.
- The grade boundaries can be adjusted upwards if there is evidence that the question paper or other assessment has been less difficult than usual.
- Where levels of difficulty are comparable to previous years, similar grade boundaries are maintained.

Every year, we evaluate the performance of our assessments in a fair way, while ensuring standards are maintained so that our qualifications remain credible. To do this, we measure evidence of candidates' knowledge and skills against the national standard.

For full details of the approach, please refer to the Awarding and Grading for National Courses Policy.