The University of Otago

Junior Mathematics Competition

2025 Competition Report

Department of Mathematics and Statistics Te Tari Pākarau me te Tatauraka

University of Otago
ŌTĀKOU WHAKAIHU WAKA

General Comments

The 2025 competition was unusual compared to recent competitions in that it returned to the one paper, paper based test last used in 2020.

The competition saw a slight dip in entries compared to the 2024 edition, with around 5100 students from 135 schools participating (in 2024 there were 5200 students from 146 schools participated in the first part of the competition).

A reminder that this year (like in all years after 2020) we will not award Top 100 and Top 200 certificates at all. Like recent years we award Distinction certificates to roughly the top 15% of participants nationwide in each year level, and Merits to roughly the top 50% of participants nationwide in each year level.

Although all students could sit the paper competition directly this year, the average grade across years was similar to the average grades seen in last year's Part Two, suggesting the competition was slightly easier this year.

We continue to emphasise that doing as much as possible in a question before moving onto another question is better than jumping back and forth between questions. Another good idea is to write the answer down with the minimum working possible. Students can return to 'pad' the working out when they have done as much of the competition as they can do. Once again several 'capable' students answered the early questions nearly perfectly but ran out of time and could not do justice to the later ones, mainly because they wrote too much at the beginning. There is a fine line between explaining and over-explaining your answers.

Next Year

As most of you are aware, results for this year's competition were released somewhat later than anticipated or desired. This is purely a result of the large increase in the numbers of papers that needed to be marked. As a consequence of this, it has been decided to return to a two part competition in 2026.

Although the structure for the 2026 competition will be similar to the 2024 competition, the first part of next's competition will not involve an online test environment. It will remain a multiple choice and short answer test. The exact method (or methods) of sitting the test will be detailed next year.

The second part of the competition will remain a paper based competition, restricted to those students whose performance in the first part of the competition reaches a required level. We will detail the requirements next year (they are likely to be similar to those seen in 2024).

We have set the dates for the competition next year:

Part One: The week starting the *23rd of March*.
Part Two: Wednesday, the *29th of April*.

The above dates are provisional, although we should note there are not many other weeks we can hold the first part of the competition next year.

Also, due to rising costs, next year's competition will have a **price increase** to $6.00 per student.

Once again any feedback (positive and negative) you have about the structure of the competition will be welcomed.

Brief Comments on Individual Questions

Question One (Year 9 and below)

Like the equivalent question in 2024's competition, this was mostly well answered, although the average grade did slip a little. As always the aim here is to have something that students with minimal mathematical knowledge can succeed in.

Question Two (Year 10 and below)

Again performance here was similar to that of the equivalent question in 2024's competition. It was evident that quite a few students did not know how to calculate the profits for each package type, something we had hoped would be common knowledge. In some cases poor layout cost students marks they might otherwise have earned.

Question Three

This was poorly done overall. Many students could not perform the factorisations required to determine if a number was prime or not — many students incorrectly identified 51 and 57 as prime, for example. Students with a better grasp of factorisations fared rather better here.

Question Four

Here the competition managed to break a recent pattern of Question Fours that were too difficult. Most students understood what was going on, being able to identify the cyclic nature of the shifts. However explaining what was going on in a mathematically rigorous manner proved beyond most students.

Question Five

Here many students got a good start (part (a) was especially well done), but then failed to fully grasp the situation. It was common to see students write down some correct numbers for the various parts, but not explain how they got them, nor (crucially) explain why the numbers they found were the only possibilities.

Question Six

Here we presented a classic combinatorics question. This meant that for the first three parts many students were able to use brute force to get the correct answer, while those who had a stronger mathematical knowledge were able to use combinations to great effect. It was only part (d) where most students could not make progress. Those that did often failed to account for the situation where the customer could elect to buy no snacks at all. Full marks for this question was rare.

Question Seven (Years 10 and 11)

The first of two geometry questions in the 2025 competition was the better done of the two. Quite a few students who attempted the question were able to get the correct answer to part (a). The other two parts were much more difficult, but students who could manage (b) could also manage (c) as well on the whole.

Question Eight (Year 11)

The second geometry question was less well done than Question 7. It required a strong knowledge of a variety of geometrical techniques. Students with such knowledge were still able to get full marks here, however.

Percentiles

The percentiles for the competition at each level are given below. (The total possible marks for all candidates was 100.) Note that the top papers have been check-marked by experienced members of the Mathematics and Statistics Department of the University of Otago.

	2025			2024		
	Year 9	**Year 10**	**Year 11**	**Year 9**	**Year 10**	**Year 11**
Distinction (85%ile)	41	43	44	41	39	45
70%ile	31	34	35	34	33	37
60%ile	26	29	30	31	28	32
Merit (50%ile)	21	25	26	27	24	28
25%ile	12	15	15	19	16	19

A direct comparison to last year's competition is always difficult, but it appears that this year's competition had a comparatively similar difficulty to last year's competition overall. Year 10 students fared better this year than in 2024, while Year 9 and Year 11 students did a little worse.

Please check the marks of your students against the marks given above for Distinctions and Merits and let us know if anything seems incorrect about your results.

A Note on Calculators

We continue to stress how difficult it is for students without calculators to cope in a Mathematics competition. Even a simple calculator with the 'four basic functions' would save much time. Certainly Year 10 and Year 11 students cannot be expected to work out the more complicated problems towards the end without a calculator.

Explanation of the Symbols on the Mark-Sheets

The following symbols have been utilised on the mark sheets:

Questions 3, 4, 5, and 6 (up to 20 marks each):

(blank)	No work presented or not applicable.
0	Work presented, but ungradeable, or fundamentally incorrect.
-	Minimal partial credit (1 – 5 marks).
+	Significant partial credit (6 – 13 marks).
✓	Near complete solution (14 – 17 marks).
✓✓	Full, or near full credit (18 – 20 marks).

Questions 1, 2, 7, and 8 (up to 10 marks each):

(blank)	No work presented or not applicable.
0	Work presented, but ungradeable, or fundamentally incorrect.
-	Minimal partial credit (1 – 4 marks).
+	Significant partial credit (5 – 8 marks).
✓	Complete or near complete solution (9 – 10 marks).

First, Second, Third, and Top 30 Prizes

Schools with students who have received monetary prizes will be sent prize packs via courier. We will do this as soon as all the certificates have been printed — this will likely occur in early October. Apart from certificates each prize pack contains Prezzy cards and physical copies of the model solutions for each student to keep. The unlock code for each Prezzy card will be sent in a separate email - it is most important that you **retain a copy of this email** and pass on the unlock code to your students as soon as they have their physical prizes.

Our Website

Please remember to check the front page of our website (particularly the News section) regularly for updates on the availability of results. You should monitor the website before emailing us for information which is already on there. We have emailed results to all schools, so if your school has not received its results let us know.

Final comments

Like last year's competition, this year's competition was a team effort involving several members of the Department of Mathematics and Statistics.

Thank you to all the schools that entered the competition this year. We hope to see you all next year!