UK Chemistry Olympiad 2026 Round 1 – Examiners' Report

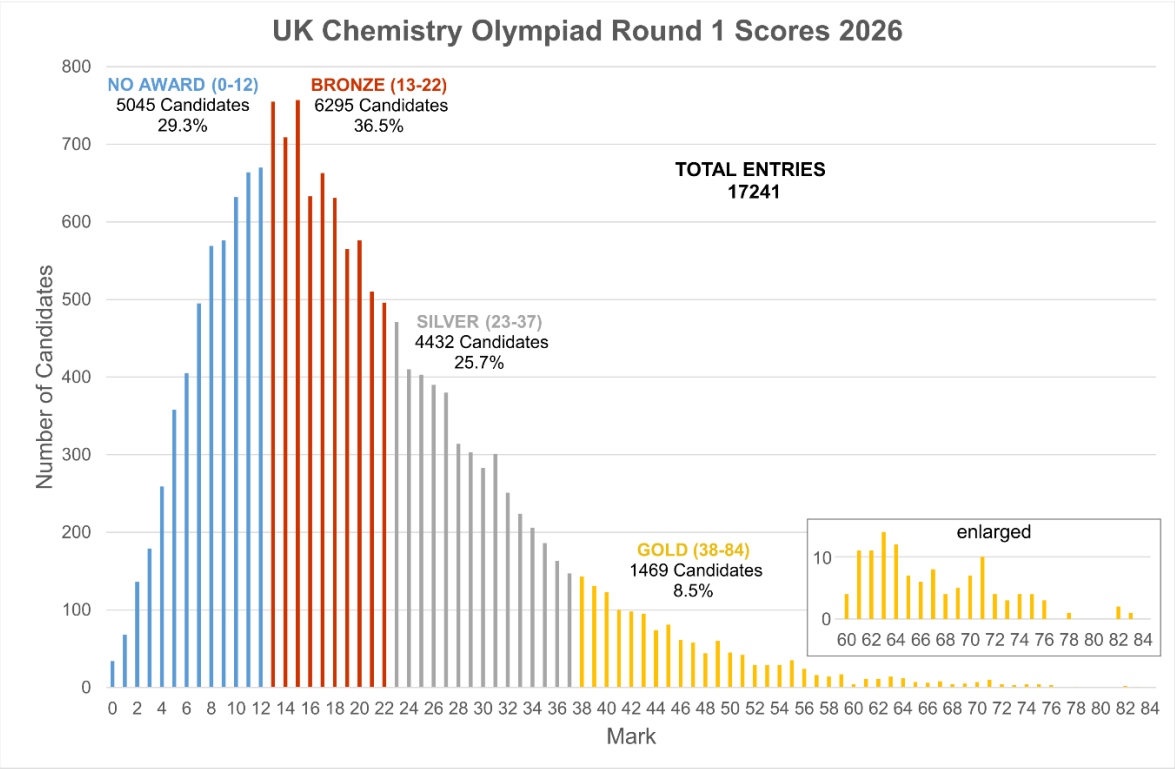
We would like to thank teachers once again for their continued support in promoting and administering the Round 1 paper. The smooth running of the competition relies heavily on the care and professionalism of colleagues in schools and colleges, and we are extremely grateful for this.

As in previous years, the paper was designed primarily with Year 13 (or equivalent) students in mind. However, we continue to welcome ambitious Year 12 (or equivalent) students who have covered the relevant material independently or through enrichment. In recent years we have seen a growing proportion of Year 12 entrants, and this trend continued this year; they now make up the majority of entries. In 2026, 64% of entrants were in Year 12 and 33% in Year 13, with a small number of younger students also taking part. We were delighted to see continued engagement from a broad range of year groups.

A total of 1153 schools submitted scores to the RSC, with 17,241 student scores submitted, a new record for the competition! 182 schools took part for the first time. Approximately 67% of participating centres were state schools and 33% were independent schools and colleges.

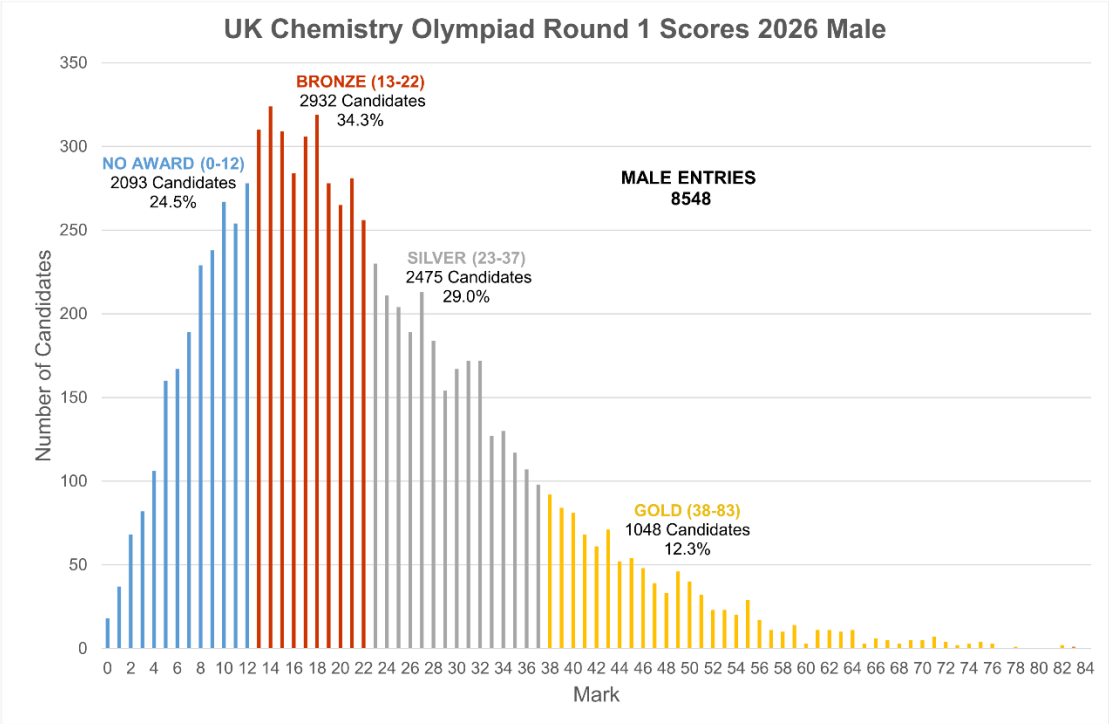
In recent years we have made a conscious effort to increase the proportion of accessible marks within the paper. Given the increasing number of Year 12 participants, we aimed to include more questions drawing upon A-level material commonly encountered earlier in the course. We are pleased that this appears to have been successful: both the overall averages and the grade boundaries were significantly higher than in 2025.

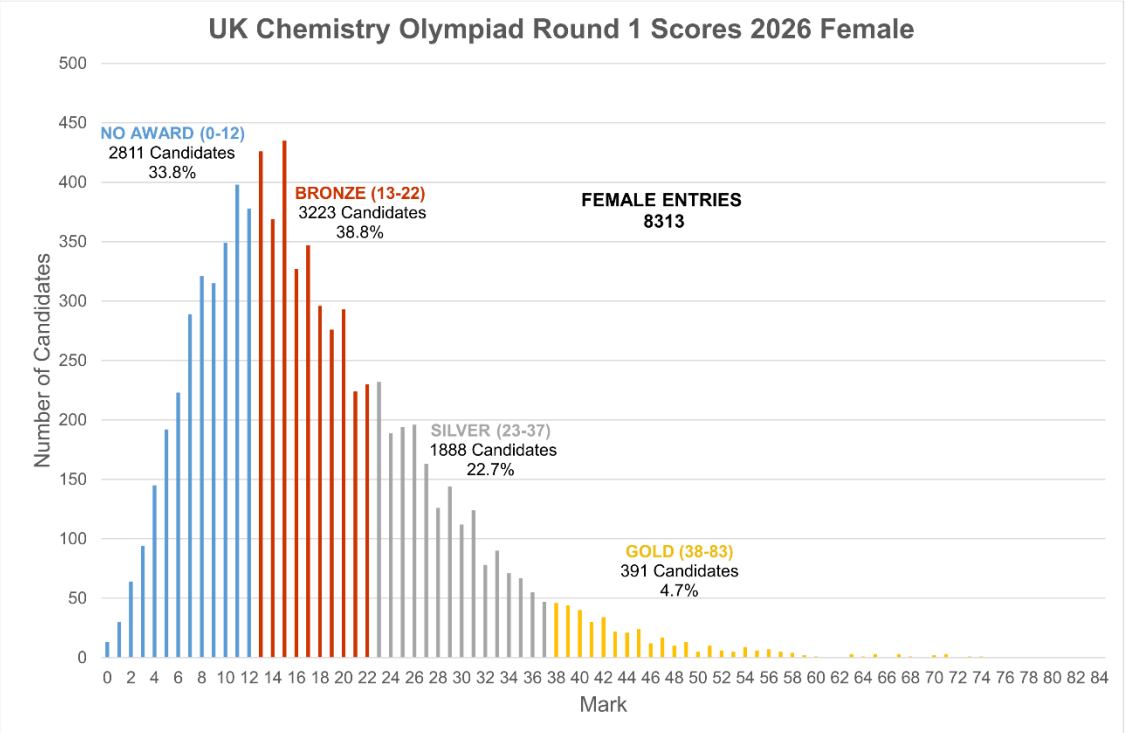
The paper was marked out of 84 marks. The grade boundaries were set to give approximately the same percentages of each award as in previous years. The Gold threshold was 38 out of 84, Silver 23, and Bronze 13. Approximately 29.3% of candidates scored between 0 and 12 marks, and so did not receive an award. The highest moderated score was a very impressive 83 out of 84!



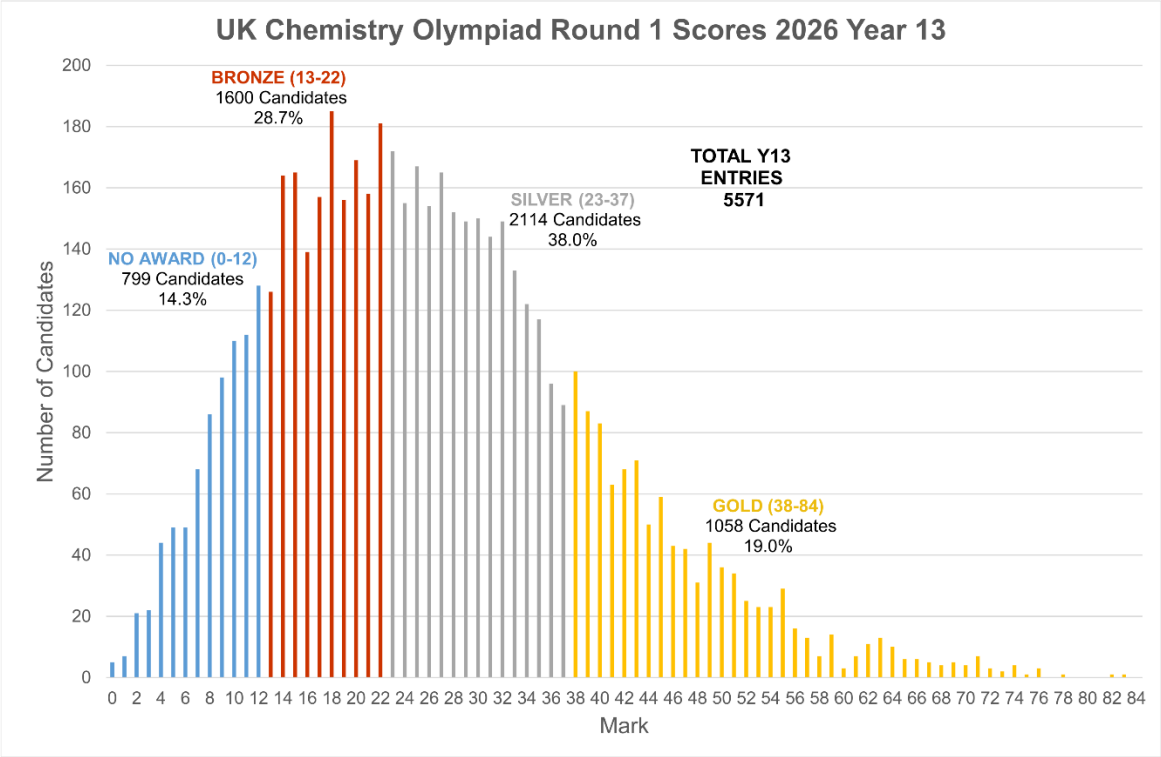
Entries were approximately 50% male, 48% female, and 2% other/blank/prefer not to say. Overall the mean score was 20, the median was 18, and the mode was 15. Male students performed slightly better overall than female students on the paper. However, the proportion of male students receiving gold awards was substantially higher than the proportion of female students receiving gold awards.

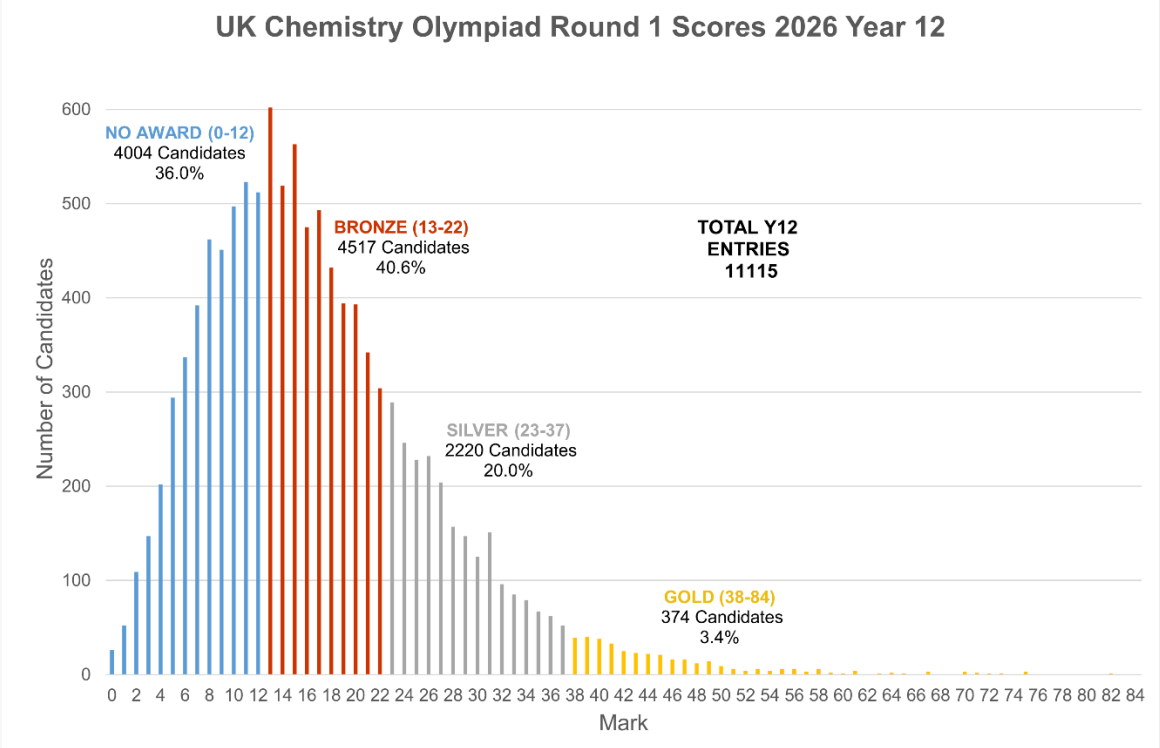
- Male students: mean 22, median 20, mode 14
- Female students: mean 18, median 16, mode 15
- Other/blank/prefer not to say: mean 22, median 19, mode 8

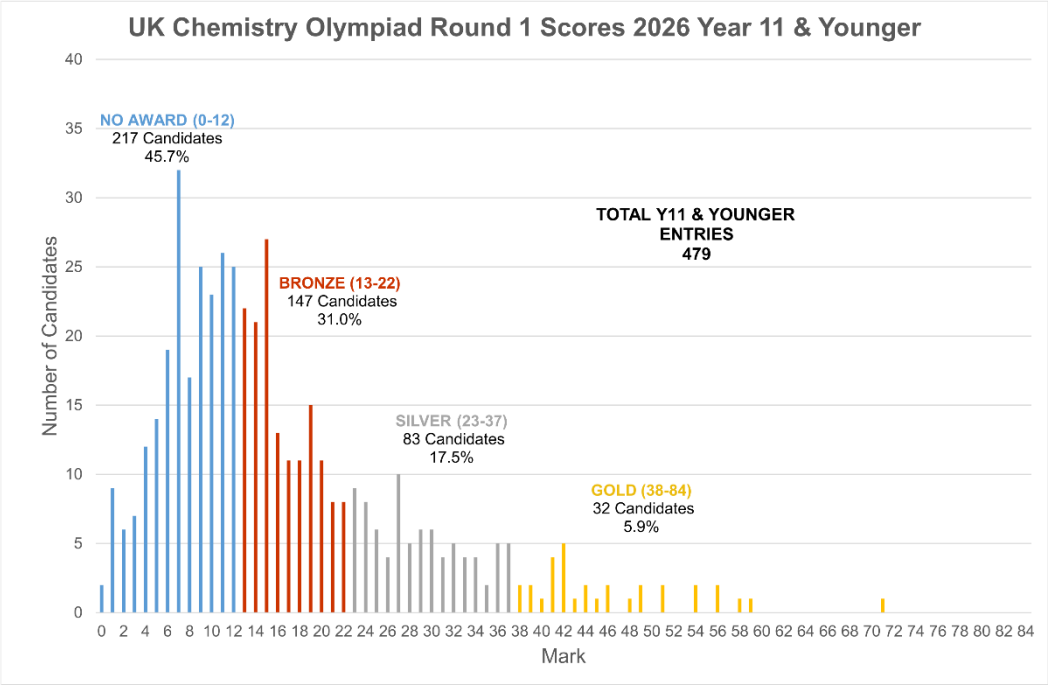




Understandably, Year 13 students performed substantially better overall than Year 12 students. The difference between Year 12 and Year 11 & Younger was less pronounced, perhaps because this was a smaller and more selective group. There were some very impressive performances from these younger students.







A total of 30 students were invited to participate in Round 2.

We are extremely grateful to teachers for their careful and accurate marking. Moderation ran smoothly this year, and it was particularly helpful where answers had been clearly underlined or highlighted. Clear annotation greatly assists moderators, especially when applying error-carried-forward marking.

As ever, we encourage candidates to attempt all parts of the paper. Even when later sections appear challenging, there are often accessible marks available. Students benefit from working through the sections they feel confident with first, before returning to more demanding material.

Question 1

This question was about ‘pee ‘ in swimming pools and provided an effective entry point into the paper. It was generally well answered and provided most students with access to the paper. A-level concepts such as oxidation numbers, disproportionation, and molecular shapes were handled confidently, even when applied to unfamiliar species.

Common issues included errors in balancing equations and incomplete dot-and-cross diagrams. Chlorine atoms were frequently drawn without a full octet. In the Henry’s law question, mistakes were often linked to unit analysis and powers of ten. Students should note that units can often be deduced logically from the quantities given.

Question 2

This question was about isocyanides. Part (a) proved more challenging than anticipated. Many candidates struggled to determine the number of lone pairs and/or their location, suggesting that resonance and electron delocalisation may not be fully secure topics for all students.

Part (b) was done well and in part (c) students seemed comfortable in manipulating the equation pV = nRT. Structural drawing was handled well overall.

Stronger candidates correctly identified the amide functionality in part (d), although a number drew tautomers instead, possibly influenced by later parts of the paper. Balancing errors were again seen in part (e).

In part (f), aniline was less frequently identified than the primary aliphatic amine. Despite a note in the question stating that amides do not react, the amide was frequently circled, suggesting that some candidates had not read the information carefully.

Only a small proportion of students correctly determined the number of possible stereochemical combinations in the later parts of this question. While many could identify a stereocentre, combinatorial reasoning proved more discriminating and parts (h), (j), and (k) were only determined correctly by a small number of students.

Question 3

This question was about compounds in henna tatoos. In part (a), the most common error was reversing concentrations within the equilibrium expression. Some candidates who made this mistake nevertheless recovered method marks in part (b) and some students who made this error were able to calculate the proportions in this question.

Recognition of structures in part (c) was generally good, with cyclohexanone identified more frequently than methyl vinyl ketone. Intramolecular hydrogen bonding was well spotted in part (d), although structural inaccuracies such as misplaced double bonds were common.

In part (e), most students correctly recognised oxidation; reduction was the most commonly seen incorrect answer, indicating that candidates at least appreciated that a redox process was involved.

The nitro group in part (f) was less successfully analysed.

Part (g) was intentionally challenging as the question did not specify the number of tautomeric structures required. Many students produced one correct structure and did not consider other alternatives, limiting their marks. They should always be encouraged to consider whether further valid alternatives may exist.

Energy calculations in parts (h)–(j) revealed numerous transcription errors, particularly missing minus signs and confusion between J and kJ. Some candidates summed only two Gibbs energy terms rather than all three. Careful bookkeeping of signs and units remains an important skill at this level.

Part (i) was accessible to the top scoring students.

Question 4

This question was about rice, spice, and mice, and featured our mascot Paddington. Part (a) was completed successfully by most candidates. However, a surprising number miscounted double bond equivalents in part (b). This is a useful concept for future preparation.

The section introducing orbitals provided effective differentiation. A common error was reversing the correct order of sequences.

Part (e)(i) proved more demanding than expected, possibly because the equation appeared unfamiliar. Encouragingly, many students who made errors here were still able to score in part (e)(ii) through correct error-carried-forward reasoning. It would be good to emphasise to students the importance of attempting latter parts of questions. The unusual equation in part (h) was well attempted, perhaps because it looked less daunting.

In the organic scheme, compound A was frequently correctly identified, but a number of structures seen did not match the given molecular formulae. Diazonium salt structures again caused difficulty, particularly with bonding and charge placement. Only in the strongest scripts did we see evidence of students successfully identifing both E and F.

Errors regarding the colour of X were seen even in high-scoring scripts, suggesting that some candidates guessed rather than using the wavelength data provided earlier. Few students explicitly linked the UV–visible spectrum to the observed colour, despite the inclusion of a colour wheel on the data sheet, suggesting that they did not refer to this.

Question 5

This question was about minerals, inspired by the 2026 host country of Uzbekistan. Although this was one of the more demanding questions on the paper, it was pleasing to see many candidates attempting substantial parts of it. Elemental analysis was handled confidently, and familiarity with unit cell concepts appeared stronger than in previous years.

Some calculated values were clearly unrealistic (for example, distances expressed in kilometres or densities larger than that of a black hole). Students should be encouraged to sense-check the magnitude of their results.

As always, clarity of working is essential. Where reasoning is not shown, moderators cannot award method marks or apply error-carried-forward credit, if it is unclear what a student has done.

General Advice

Preparation using past papers remains one of the most effective ways to prepare for the Olympiad. Topics such as diazonium salts, which were not well answered this year, have appeared previously. The RSC website also provides supporting material, including a unit cell information sheet, which students may find helpful.

We would encourage students in Year 12 or below to attempt the Cambridge Chemistry Challenge later in the year, as this is targeted specifically at younger students, and of course we hope to see them entering Round 1 again in 2027!

We hope that this report provides useful feedback for teachers and candidates. The Olympiad Working Group welcomes comments regarding the administration and content of the paper and will continue to refine future papers in response to constructive feedback.