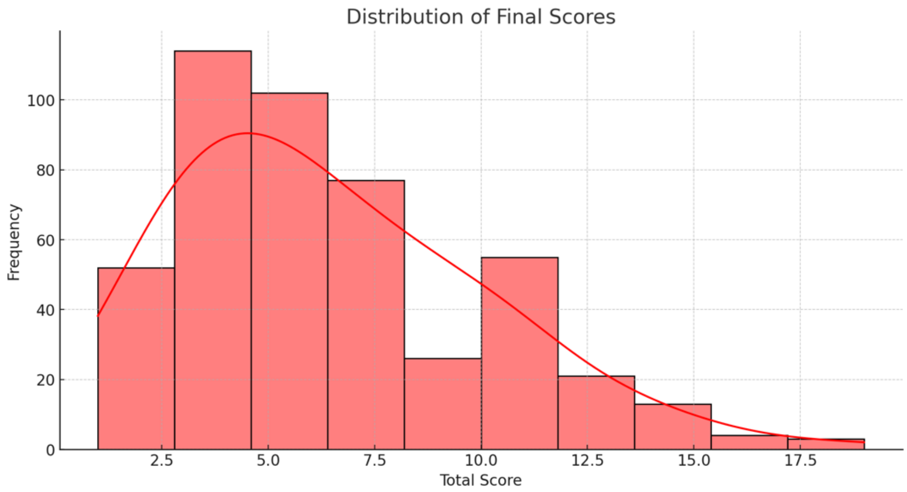
Team Maths Regional Quiz 2025

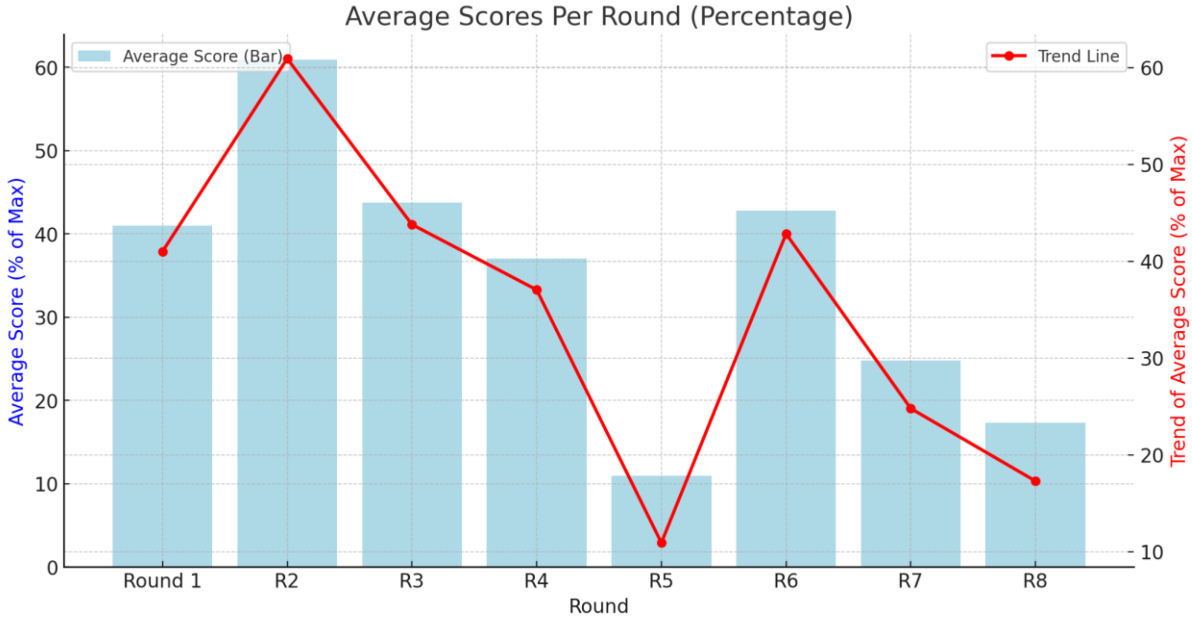
On February 27th, classrooms across 22 centres in Ireland were buzzing with excitement as over 500 teams and more than 2,000 Senior Cycle students competed in the largest Team Maths Competition to date. This year's edition of the Team Maths Quiz 2025 saw students go head-to-head in a high-pressure battle of wits, teamwork, and mathematical mastery. With the national finals set for March 29th in Portlaoise, the competition is far from over.

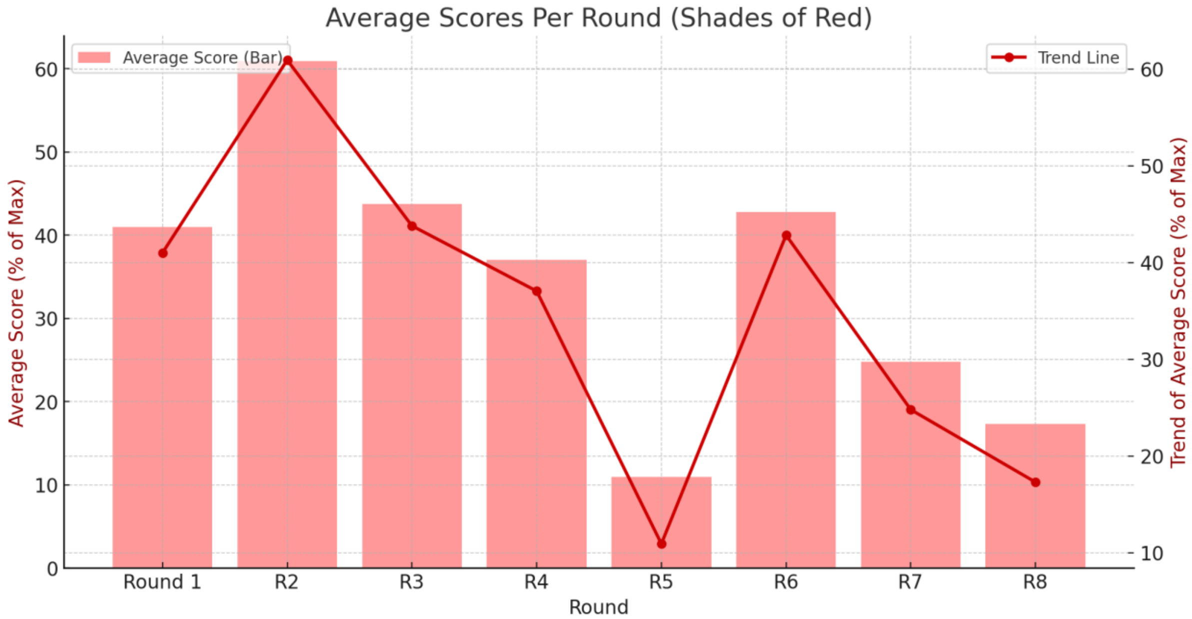
A Numbers Game: How Did the Teams Perform?

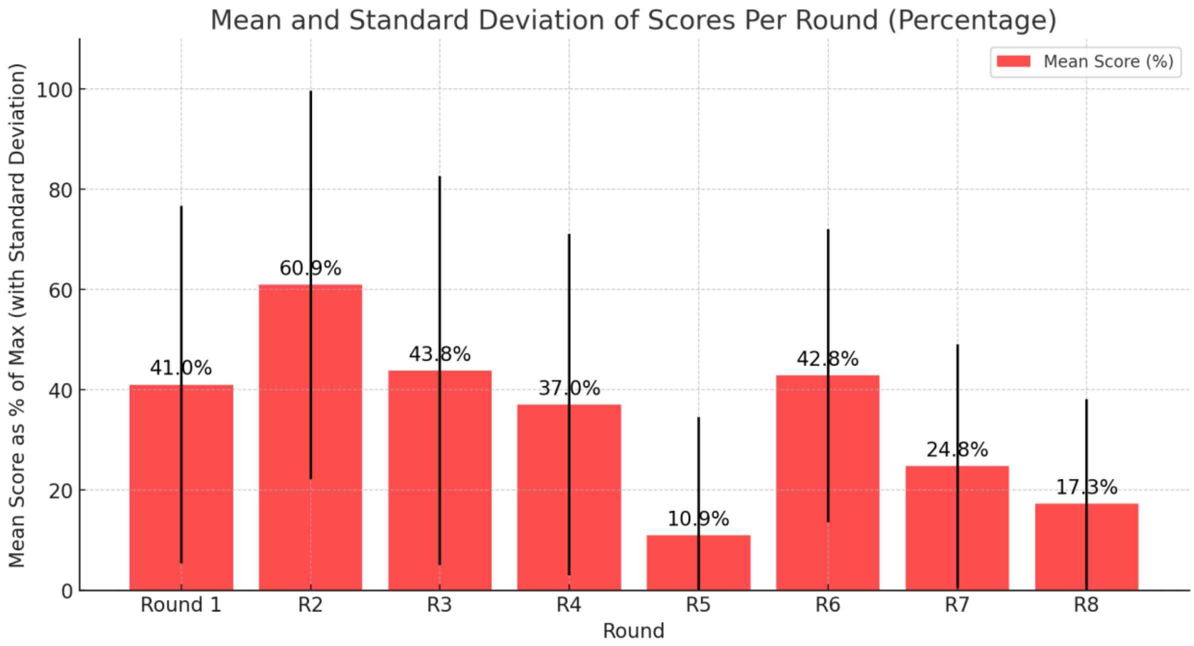
Across all teams, the mean total score was 6.42 points, with a standard deviation of 3.60 points, indicating a wide spread in results. The highest score in the country was 19 out of 20, an incredible achievement accomplished by Oatlands College, Sutton Park, and Institute of Education.

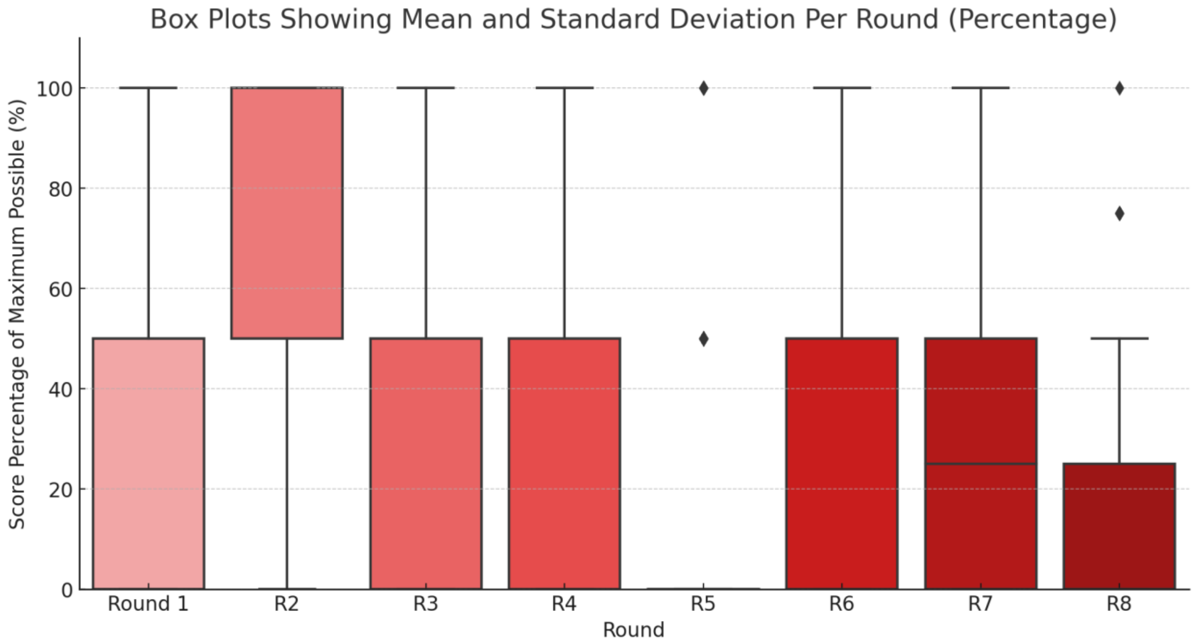


Round Overview









Best Answered – Round 2 (60.9% Average):

This round focused on the rules of logarithms and integration and was among the easiest rounds, with many teams performing well.

Question 1
Logarithmic Properties Students were required to manipulate logarithmic expressions to solve for , applying their knowledge of logarithm laws. This question tested their ability to identify patterns and simplify expressions, a skillset that many students demonstrated proficiency in.

Find the value of $k \in \mathbb{Q}$ for which:

$$k \log_a x + 2k \log_a x^2 + 3k \log_a x^3 + 4k \log_a x^4 = \log_a x$$

$$=> k \log_a x + 4k \log_a x + 9k \log_a x + 16k \log_a x = \log_a x$$

$$=> \log_a x (k + 4k + 9k + 16k) = \log_a x$$

$$(k + 4k + 9k + 16k) = 1$$

$$k = \frac{1}{30}$$

Question 2

Evaluating Definite Integrals The second question required combining multiple given integrals into a single expression. This problem tested students' understanding of the fundamental theorem of calculus and their ability to structure complex integral relationships correctly.

Given that:

$\int_a^b f(x)\,dx = 3p$, $\int_b^c f(x)\,dx = 4p + 1$ and $\int_c^d f(x)\,dx = 7p + 9$

Find, in terms of p, the value of:

$$\int_a^d f(x)\,dx$$

$$\int_a^d f(x)\,dx = \int_a^b f(x)\,dx + \int_b^c f(x)\,dx + \int_c^d f(x)\,dx = 3p + 4p + 1 + 7p + 9 = 14p + 10$$

Why Did Students Perform Well?

1. **Familiar Concepts:** Logarithm laws and definite integrals are widely covered in the Senior Cycle curriculum, making these topics well-practiced.
2. **Straightforward Approach:** The structure of both problems allowed for a clear step-by-step solution, reducing the likelihood of conceptual errors.
3. **Strong Algebra Skills:** The majority of teams demonstrated a solid grasp of algebraic manipulation, which was key to solving both problems efficiently.

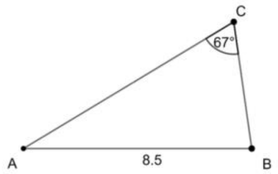
Worst Answered – Round 5 (10.9% Average):

This round contained two mathematically demanding problems that proved to be stumbling blocks for most teams.

Question 1

The Circumcircle of a Triangle Students were required to calculate the radius of the circumcircle of an acute, non-right-angled triangle given a side length and an angle. This problem tested their knowledge of circle theorems, trigonometric identities, and their ability to correctly apply the sine rule in a complex geometric context. The need to construct an auxiliary triangle and reason through the problem spatially likely contributed to the low success rate.

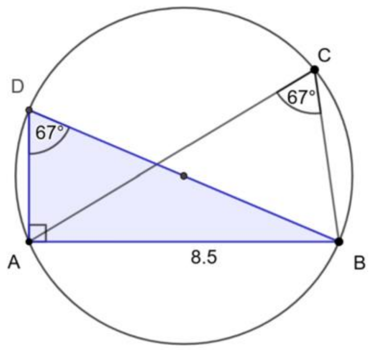
ABC is an acute, non-right-angled triangle, with $|AB| = 8.5$ and $|ACB| = 67^o$. Find the length of the radius of the circumcircle of triangle ABC. Give your answer correct to 2 decimal places.



Construct the circumcircle of triangle ABC. With AB as base, construct triangle ABD so that BD is a diameter as shown. From the right-angled triangle formed we get:

$\sin 67 = \frac{8.5}{2r}$

$$r = \frac{4.25}{\sin 67} = 4.617 \approx 4.62$$



Question 2

Finding the Square Root of Using De Moivre’s Theorem This problem required students to express in polar form, apply De Moivre’s Theorem, and extract the two complex roots. The steps involved required strong familiarity with Euler’s formula, polar coordinates, and an understanding of why complex numbers have multiple roots. Many students may have struggled with transitioning between Cartesian and polar forms, as well as correctly identifying both solutions.

Let $i = \sqrt{-1}$.

Find the value(s) of $\sqrt{i}$.

Give your answer(s) in rectangular form, $a + bi$, where $a, b \in \mathbb{R}$.

$$i = \cos(90 + n360) + i(\sin(90 + n360))$$

$$\sqrt{i} = i^{\frac{1}{2}} = (\cos\left(\frac{90}{2} + \frac{n360}{2}\right) + i(\sin(45 + n180))$$

$$n = 0:\ \sqrt{i} = \cos 45 + i\sin 45 = \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}}i$$

$$n = 1:\ \sqrt{i} = \cos 225 + i\sin 225 = -\frac{1}{\sqrt{2}} - \frac{1}{\sqrt{2}}i$$

Why Did Students Struggle?

1. **Multi-Step Reasoning:** Both questions required students to complete multiple logical steps, making it easier to make errors along the way.
2. **Advanced Geometry:** The circumcircle question required spatial visualisation and the application of multiple theorems in sequence.
3. **Complex Numbers & Polar Form:** Many students did not make the connection to polar form making it difficult to apply De Moivre’s Theorem correctly.

Final Words

A huge congratulations to all students and teachers who took part in this historic event—it was a defining moment for the Irish maths community. A special thank you to the 22 schools that hosted the competition; your support was instrumental in making this the biggest Team Maths Quiz ever. We look forward to working with you again next year to continue fostering mathematical excellence.
The journey isn't over yet, as the national finals take place in Portlaoise on March 29th, where the top teams will battle it out for the ultimate title.

For links to the questions and solutions visit https://imta.ie/team-maths/

This report was created with the support of ChatGPT, utilising AI-driven analysis to summarize performance trends and key insights from the competition.