The Royal Institution
Mathematics Masterclasses in Cambridge

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Masterclasses Hit 30 Years of Age

The Royal Institution masterclasses started in 1981, following Sir Christopher Zeeman's TV Christmas Lectures. The Ri are celebrating the anniversary across the country.

Here in Cambridge we also mark the occasion. In the final series of the season we opened with Dr Sara Santos delivering a class based on notes found in the Ri's archives of the very first of Sir Christopher's masterclass, and closed with Lyndon Baker, who was a founder of the Cambridge group.

We also asked two of the participants to engage with each speaker and record their thoughts for us. We picked the names out of a hat, and found two delightful young people who responded brilliantly, and we thank them for what they have done. Their account, and photos of them with the speakers are below.

And for the next 30 years………

Maths Masterclasses: Cambridge Experiences (by James Richardson)

Over the past 5 weeks, I have been writing a little diary about what I have done over all the masterclasses, and to give my opinion about the work that I have covered.

Week 1 with Sara Santos, we had an introduction into who Professor Zeeman is, in an introduction to the Royal Institution, who are running the maths masterclasses. After the introduction, we covered different perspectives of art, and about optical illusions and the vanishing points of art. This week was the hardest of all of the weeks because I was working on areas of maths that I had never come across before.

Week 2 with Alison Kiddle, instead of going to Girton College like the 1st week, we went to the Centre for Mathematical Sciences, which I found very interesting, but the activities to come were even better. This week, I got to work in the centre's computer room, where I got to access the NRICH website, and then I got to solve different problems that really challenged me. These problems were difficult, but at the same time, quite easy because the game was covering algebra, which I had previously been working on at school. Although the work was easy, it was a great experience to work in a university, especially one attached to Cambridge University, because it was so modern and beautiful. It was a spectacular sight to see. From this week, I definitely learnt some new tricks, and I can sort things out a lot easier.

Week 3 with Stephen Keane, I returned to Girton College to cover a horrifically hard task, to master the basics of a graphical calculator. From this week, I have learnt to use and make graphs, cover various bits of algebra, and the hardest task of them all, cover the gradient on a graph to make a pretty pattern, which was really difficult for me because I hadn't covered gradients previously in school, so in that task, I had covered a whole new area in maths. Even though this week was really hard, it was also really fun.

Week 4 with Alan Davies was a really fun week, but it was, once again, a computer based activity using, once again, some algebra. In this week, I learnt to program: Random number generator. Find the rule in algebra generator, and also to program a finance generator on how much money it would cost to make different types of carpets in a range of different sizes. The best thing about this week was that I downloaded most of my work onto a memory stick to bring home, and for one of the maths teachers to use in other classes at school, and overall, it was brilliant.


Week 5 with Lydon Baker, the last week! The last week of maths was all about how different people have a different perspective of maths in general, and we had a couple of debates about, what seemed, the simplest things, which I soon found out, I had to contemplate for a very long time, for one reason, what a circle was, which I thought was simple, but found out, it wasn't. After the first half of debates about different perspectives, we looked at the taxi cab method of things, which I can't actually describe in words, but was very challenging, but in the end it was quite easy. Right at the end, I was very proud to receive my certificate, with everybody else's, after 5 mathematical weeks of brain-boggling work.

At the end of the 5 master classes that I have just enjoyed, I would just like to say thank you to all of the instructors and helpers, and the people who think of these tasks that I can join in with a lot of other clever, young mathematicians. My last thank you, is to the colleges and the university, for allowing these master classes to happen in your midst, and I have to say, that I can go away from these master classes with a lot more knowledge than I first had, and the new problem-solving skills that you have equipped me with for the future, so thank you, for making my future a much brighter place.

Enjoyable Cambridge Maths Masterclasses (by Emily Farr)

During my time experiencing The Royal Institution Mathematic Masterclasses, we learnt about lots of different things. The first lesson we had the teacher **Sara Santos**, she taught us about perspective, I learnt about how to draw perspective and I proved lots of different theorems. I think it was the hardest session we had, but it was also very interesting and I explored an area I'd never thought about before.
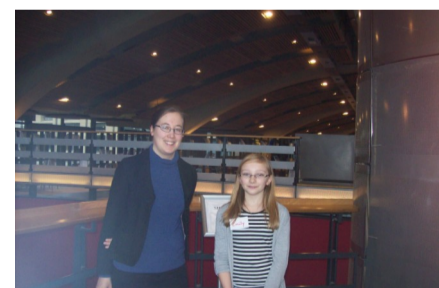
In the next session we were on the computers. Our lecturer was **Alison Kiddle** and she taught us about NRICH problems. Alison has worked on the NRICH program for two years and shared her knowledge of the website with us. We learnt about how to recognise a pattern and nth terms. I enjoyed this lesson in particular because I had been on NRICH before and I learnt some new tricks. I liked that we were doing things other than mental work.

Stephen Keane was our next lecturer and this time we learnt how to make graphs and how to use scientific calculators. Stephen teaches adults about the calculators as well as children. He taught us lots of tricks about how to use them, as well as giving us lots of problems to solve. We got a free desk calculator at the end as well!
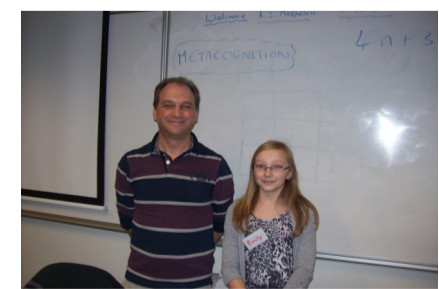
In our fourth session into the course, we had **Alan Davis**; we were on the computers again, this time on Microsoft Excel. I had used Excel a few times in school but we only did the basics. In his masterclass we did everything from currency exchanging to how to make guessing games. He taught us about the different formulae to use to get it to work. We made lots of games and tried to solve a magic square.

For our final session, we had **Lyndon Baker** as our teacher. We were doing the subject 'it's a round world'. I learnt that a circle is not what it seems. Lyndon taught us about the radius and diameter of a circle. We learnt what a circle really means and at the end we had the presentation of all our certificates. After that there was the opportunity to buy maths books and puzzles along with drinks and nibbles.

Overall, I thoroughly enjoyed myself and have learnt lots of new things. I made some new friends whom I hope to keep in contact with. I would like say thank you to all the lecturers involved and to anyone else who helped. I have taken a lot away from the experience including new knowledge, new friends and a free calculator!