

My Report on the Maths Lectures

Hello, I am Ben White and I have recently benefitted from the Royal Institute Maths Masterclass. This was a series of advanced mathematical puzzles and games over the period of five weeks. Each class is a separate and interesting subject in its own right but sometimes two consecutive challenges can link together. Another benefit of attending these classes is that you are taught the subject's application in the real world, rather than just the theory.

The first of the classes examined the topic of speedy mathematical problems and the best way to solve them. So for the first half of the lesson we were given a series of maths cards that we had to work out in the fastest time. We did this by table; each table divided into pairs to better tackle the problems. We did this for an hour or so and I can tell you that by the end of it we thought our brains might explode! After a quick break we returned to the classroom for a series of games such as Nim and Last Biscuit. After playing legitimately for a while we began to look into the strategies behind winning them. We eventually worked out that each game had a pattern you just needed to work out the next phase. That was the last activity and we went home expecting even more of the next session.

I can tell you now that we were not disappointed! The next week was on surfaces, and we covered everything from bubbles to theoretical possibilities. We started off pondering ruled surfaces and whether or not they could be made into various shapes and sizes. Once we had surmised that cones and spheres were impossible to cover without folding or crumpling paper we moved on to connecting shapes. With these we were given free reign with one restriction. You had to name the shape you created! We had a lot of fun trying to name some of the weird and wacky shapes people had made. After the break we returned, this time to mess around with bubbles. We were trying to create odd bubble formations by constructing different forms of wand. This was great fun and really released your inner six-year-old. Our speaker, Paul Stephenson, even studied natural sciences so he could expand his knowledge of natural geometry!

Week three was a real treat! We had Steven, a Casio representative/Maths Head in to show us the latest power calculator. These were high powered, full colour beauties that could even draw their own charts and graphs! We studied these throughout the whole lesson and boy did they do a lot! First we were shown the basics and then, as we progressed, started to use them for calculating curvature and finding the formulae for advanced mathematics. We were shown how these could help with everyday life from architecture to common calculations.

Next up was possibly my favourite lesson! This was week four with the Power of Two. To warm up we started with a few sequences. As easy as this may sound these sequences were devilishly hard as most of them were not to do with numbers at all! After that we looked at the Josephus Flavius problem. This was a problem in which Josephus Flavius and his men were philistine warriors who were trapped in a cave by the romans. Their code of honour prevented them from taking their own life so they stood in a circle, every other warrior killing the person next to him. Once this was done there would be two warriors left who simultaneously killed each other. However Josephus convinced the other warrior to leave and they became roman slaves and later Josephus became a scholar. It has been debated whether Josephus used maths to decipher where to stand or pure chance lead him to survive. To help us we learnt binary code, the language which computers speak in. This led us to learn this phrase; "*There are 10 types of people in the world, those understand binary and those who do not.*" This takes the binary number 10 or our number two and puts into a joke.

Now came the last week, lucky number 5! This was a tribute to Ian Porteous and was a series of physical puzzles such as the Soma Cube and the Happy Cube. As sweet and innocent as they may sound these puzzles were brain blowing and nearly reduced my partner to tears! That's not to say they weren't fun though, we had tonnes of enjoyment trying to crack the puzzles!

By now we were on our last week so for the last session we entered the auditorium and received our special Royal Institute certificates as well as a load of interesting mathematics-related goodies! These lessons were a great few weekends and really gave me the challenge I was looking for! I would highly recommend them to any other possible candidate and suggest you go and have a look.

Goodbye, and hopefully see you later!

Ben