



Letter from the Editor



The last few months have been extremely productive and important for MathsWorldUK. We have been involved in three major projects: the relocation of **MathsCity** in Leeds to a new site in Leeds, now to be known as **MathsCity Leeds**; the opening of a second, larger site in London, to be known as **MathsWorld London**; and the planning of a two-year project to make Leeds the **City of Maths**. We report separately below on these three projects. We hope that each in its own way will provide the impetus towards our goal of establishing the UK's National Mathematics Discovery Centre, with a long-lasting, secure future. It is our hope to achieve this goal in the next few years.

We are always open to approaches and encourage consortia to collaborate with us.

In the meantime, our two city venues are open to individuals, families and to school visits. Tickets can be booked online. We hope both centres will expand their number of interactive exhibits, attractions and puzzles during the coming months and that all visitors will have a most enjoyable time. So far, feedback from the two sites has been extremely encouraging.

Activities for **Leeds, City of Maths** are expected to commence early in 2026 and will be city wide.

I hope you all enjoy our productions. We look forward to your continuing support, help and enthusiasm.

Jack Abramsky

MathsWorld London



MathsWorld London is London's new interactive, hands-on, Mathematics Discovery Centre. A first for London, it opened its doors to the public on the 19th of October 2025. Since then, it has had a steady stream of enthusiastic visitors of all ages. There is something for everyone. It is a place to which children could take their parents or grandparents. By the 7th of November we have already had over 4000 visitors!

MathsWorld London is five minutes' walk from both Blackfriars and Southwark Underground Stations and round the corner from Tate Modern. Its address is:

ARCHES, 6 Burrell Street, London SE1 0UN.

Further details, including booking of tickets (which are valid for one year from the date of purchase and may be used multiple times), can be found at



mathsworld.com



Here are a few initial comments by visitors to **MathsWorld London**:

"I took my 8- and 12-year-old yesterday, I showed my 8-year-old photos beforehand and he said it looked like it was for babies, and I was worried it would be too young but that wasn't the case at all, it is truly suitable for all ages. We stayed for nearly 3 hours, and they didn't want to leave, but if you are in a rush then an hour there is still worthwhile. This morning my 12-year-old pleaded to go back today, but I explained we had a long drive home up north and we wouldn't make it home in time for trick or treating if we didn't leave first thing, and she declared she would rather go to MathsWorld than trick or treating. This is coming from a child who claims to love Halloween more than Christmas! If that isn't a top recommendation, I don't know what is. We spend every school holiday in London so we will definitely be returning."

Jen Pinch, parent

"MathsWorldUK is a bundle of fun, and not only for the kids. Maths can seem scary and difficult, but not here. The many hands-on activities offer a lively, challenging and hugely varied window into the diversity of mathematics. It's a wonderland, where there is lots to explore, so allow plenty of time."

Tess Canfield, Landscape planner

"I took my 5-year-old (Year 1) daughter here during half term. She had a lot of fun and spent over an hour playing with various activities. Everything was hands-on and engaging. She particularly enjoyed playing with the Genius Square and rolling the balls down the different tracks that had been set up. We also built a bridge together, investigated a mirror den, played Rush Hour, played on a small, elliptical snooker table, looked for the hidden image inside a pixelated poster, and loads more! There were still activities that we didn't get around to seeing this time, but, as each admission ticket includes an annual pass, we can always return again soon. Only a short walk across the bridge from Blackfriars station and also very close to restaurants and transport links on the South Bank. It's fantastic to have a museum that's dedicated to maths and puzzles. Thoroughly recommended!"

Rachel Taylor, parent

*"Visited over half term. Wonderful to have MathsWorld open at last in London following on from MathsCity in Leeds. It was great to see families enjoying the exhibits - toddlers putting together giant Polydron shapes, older ones trying to crack codes, **adults** playing on an elliptical billiard table. I was a teacher - I'd love to have taken my years 7, 8 or 9 on an outing to MathsWorld - so much fun maths to be explored out of the classroom."*

Rosemary Emanuel, retired teacher

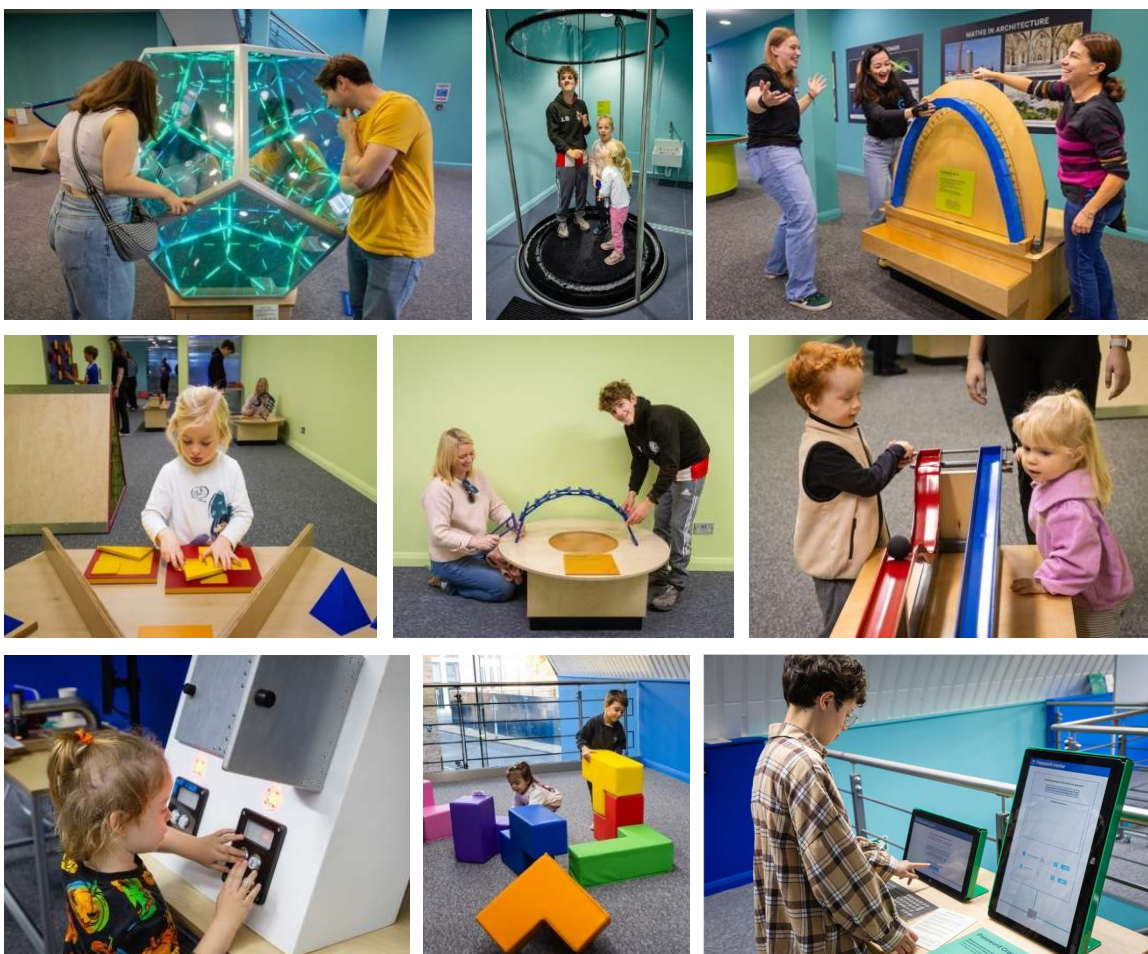


*"As it promises, it is a world of mathematics. Spread over two floors and around 7 distinct areas visitors can find a well curated assortment of exhibits giving an insight into various areas of mathematics. In a hands-on, minds-on way visitors of all ages are challenged with various puzzles, cryptics, challenges, and, of course, the hows and whys. I particularly liked the multilayered approach that engaged both children and **adults** alike. I highly recommend approaching the well-informed staff for any further discussion, exploration, or, who knows, possible pointers even professional mathematicians might need...*

One-time visitors are offered an insight on how mathematics is recreational, that will have them wanting for more; Returning ones will start to delve deeper down the rabbit hole. This exploration centre is a prime place to hone your appreciation for the queen of all sciences."

Tiago Hirth, local guide

Below, the photographs speak for themselves. This first batch of photos was taken by Yakir Zur.





MathsWorld was officially launched on the 13th of November at an invitation-only event. Our CEO, Dr Katie Chicot, welcomed the guests and thanked our key donors. She asked one of these donors, Michael Norton, to say a few words in memory of his brother, the Cambridge mathematician Simon Norton, who died six years ago and, in whose name, (through the charity CIVA) he had made a substantial donation to MathsWorldUK. Michael presented MathsWorld with a special plaque in Simon's honour. Alexander Masters, who was a tenant in Simon's house, then spoke of his impressions of Simon and his friendship with him, wittingly described in his book *The Genius in My Basement*. Finally, our Chair, Professor Margaret Brown paid tribute to our founder Geoff Wain and how he had convened the group fifteen years ago that laid the seeds for the establishment of **MathsWorld London**. Sadly, Geoff died in January without knowing about



our latest venture, but he was the guiding force behind **MathsCity Leeds**, which opened four years ago. Geoff's family were amongst the guests at the launch.

These next photographs were taken by Chris Vaughan at the official opening launch on 13th November.







On Armistice Day, Tuesday 11th of November, **MathsWorld London** hosted a talk in conjunction with GCHQ. GCHQ supplied an original Enigma Machine, and our own James Grime, with support from GCHQ colleagues, told the story of Alan Turing and the Enigma Machine.

Maths Week England was launched from **MathsWorld London** on Saturday, 15th of November by its founder Andrew Jeffrey (pictured). There was a full day's programme of workshops for children aged from 7+ to 14+. MathsWorld had a record attendance that day. The occasion featured a visit from former Prime Minister Rishi Sunak and his wife Akshata Murty, whose Richmond Project had sponsored the event.

Rishi Sunak posted the following comment on his Richmond Project Instagram site:

"To celebrate the launch of Maths Week England this weekend, we spent time with the wonderful team at MathsWorld UK, exploring how maths connects everything from puzzles and patterns to engineering, music, movement and design."

The following photographs show Rishi and Akshata Sunak having a wonderful time at MathsWorld London and engaging fully with other visitors. Most of the photos are by courtesy of the official photographer from the Richmond Project.





MathsCity Leeds

After four years in the Trinity Leeds shopping mall, **MathsCity** has relocated to Zurich House, 4 Canal Wharf, Leeds LS11 5PS



The new manager is Hari Krishnan. Hari has written: *"From a town in South India I moved to Leeds in 2021 for the master's in engineering course. I worked in various industries from a startup working on IOT (Internet of Things) devices to industrial automation. I volunteer for the St John ambulance as a first aider providing cover from the local Headingley stadium to the London Marathon. At MathsCity, along with helping to increase visitor numbers, I'll be focusing on enhancing the visitor experience, raising awareness of the engineering behind our exhibits (which involves a lot of maths), and using my expertise to create new and engaging activities."*

Below are a few photographs taken in the new venue:





Leeds, City of Maths

Ella Wilde is the Project Manager for City of Maths, overseeing the delivery of the 2-year programme across Leeds. She is working with a great team to create an impactful and engaging programme of events, experiences and resources for the people of Leeds.



Ella writes:

*"It's been a busy few months as we prepare for the start of the UK's first-ever **City of Maths** which will launch in Leeds in January 2026.*

The 2-year initiative will transform Leeds into a vibrant hub of mathematical discovery with a programme of cultural events, play and community engagement- all designed to change how people think and feel about maths.

Keep an eye out for our launch campaign across Leeds in the new year, with mathematical puzzles and prizes to be won, plus plenty of opportunities to discover another side to maths with light installations, fun resources, projects and events throughout the year.

*If you're a parent, student, teacher or would just like to find out more about **City of Maths** - sign up to the newsletter <https://www.cityofmaths.co.uk/whats-on#block-webform-block-newsletter>"*

John Bibby

The social statistician, John Bibby has died at the age of 80. John was a maverick, with very creative ideas. He was an early lecturer at the Open University and was instrumental in developing the OU course on *Statistics in Society* for non-specialists. He believed strongly in changing attitudes in mathematics and developed the concept of "Maths in a van" to help promote deep outreach to disadvantaged students and to stimulate effective learning of mathematics. John founded QED Books and MatheMagic. He was a founder supporter of MathsWorldUK and in 2012, together with Margaret Brown, Geoff Wain and a few others, co-authored a long and detailed discussion paper '*MathMus*' – *the UK Maths Museum*, which developed many of the ideas which we are now putting into practice at MathsWorld and MathsCity.



Feature: Christoph Bergemann, Trustee of MathsWorldUK

In this Newsletter we are running a piece by Christoph Bergemann, who is Head of Research at G-Research and a Trustee of MathsWorldUK. This is the second article, following on from Dame Angela McLean's piece in Newsletter No 11, in which a top professional describes the importance of mathematics in his working life.

Christoph writes:

"I'm so delighted that MathsWorld London is off to a great start! The centre would not have been possible without the hard work of our CEO Katie Chicot and MathsWorld manager Max Hughes and his team – but one crucial element of success here were our financial supporters, many of them listed at the bottom of the MathsWorld website. One weird thing you will notice is that three of our corporate supporters are in the quant finance industry. We're quite lucky that London is now a "quant powerhouse" that's home to several successful companies in this sector, but it might make you wonder: what does maths have to do with finance?

I'm a trustee of MathsWorldUK, but my "day job" is at G-Research, which is one of this cluster of leading quant finance firms in London that are supporting our charity, so I'll attempt an explanation – nothing systematic, but a few interesting examples.

One famous application of maths in finance is the Black-Scholes equation which underpins the pricing of financial derivatives such as options. So there's a link between a massive part of the financial ecosystem on the one side, and partial differential equations, Brownian motion, and stochastic calculus on the other. This connection led to the Nobel Prize in Economics in 1997 and has provided ample and lucrative employment for mathematicians in the financial industry ever since.



Diffusion. Lucrative application in finance!

Another example: attempts at estimating the risk of a portfolio that an investor holds will usually involve a lot of statistics and linear algebra, often alongside other, more advanced mathematical techniques. My favourite find here is an obscure connection to random matrix theory that is very elegant and perhaps even useful to someone out there.

But it's the modern applications of machine learning that are really driving a lot of the progress in the industry right now. Most quant finance firms are investing heavily in computational efforts to build better machine learning models for data analysis, algorithmic trading, risk management, and

portfolio optimization. Is this still maths? Of course it is! Both with regards to the top-level problems that they're trying to solve, and also in terms of what the GPU chips are actually busying themselves with when fitting or inferencing those models ... matrix multiplications! Yes, that's right, and it also applies to the wider AI landscape: somewhere around 1% of global electricity consumption nowadays is spent on matrix multiplications.



We need matrix multiplications. Lots of matrix multiplications.

What I really like about all of this is that mathematics is like a universal language that is woven through so much of modern life, and so much of my own career as well. Growing up in Germany, we had a really nice hands-on weekend maths circle in my hometown for school students interested in problem solving, and this eventually took me all the way to a silver medal at the International Maths Olympiad in 1992 (which was more fun back in the day when AI couldn't solve those problems...) At university I was then drawn towards more real-world applications, studied physics rather than maths, and did a PhD and pursued an academic career in the field of strongly correlated electron physics, a.k.a. "weird quantum stuff that happens at low temperatures". After a decade of research and teaching (including as a Fellow of Trinity College, Cambridge) I left academia and joined the financial world. But throughout all of this, a lot of the underlying mathematical concepts remained relevant and directly transferable!

The Black-Scholes equation mentioned above appears in physics as the diffusion equation (with some subtle modifications, such as the arrow of time pointing backwards).

Group theory (which I found off-puttingly abstract as a student) re-appears in physics in the form of symmetry considerations (which I found pleasingly intuitive – make of this contradiction what you will).

Topology is a beautiful and deceptively abstract subject in mathematics but has surprising applications in physics (vortex lines in superconductors, defects in liquid crystals) and can help you slice a bagel in fascinating yet utterly useless ways. To my knowledge it is totally irrelevant in finance – though I would be elated to be proved wrong on this point.

Weird tessellations appear to be all the rage these days (Einstein's hat!), and some of them have deep connections to the physics of quasicrystals.

Linear algebra appears just about everywhere.

There's so much fun to be had in maths, and something that may appear whimsical from one viewpoint often has profound applications elsewhere. Our exhibits at MathsWorld London and MathsCity Leeds try to capture this as well, in that many of them work on several different levels. It's quite fun to see how young children and their parents both get joy out of the same exhibit, but in entirely different ways. It's a mathematical wonderland, and the rabbit hole goes pretty deep."



Topology. Nice bagel, but few profitable applications in sight.



MathsWorld London is generously supported by:

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