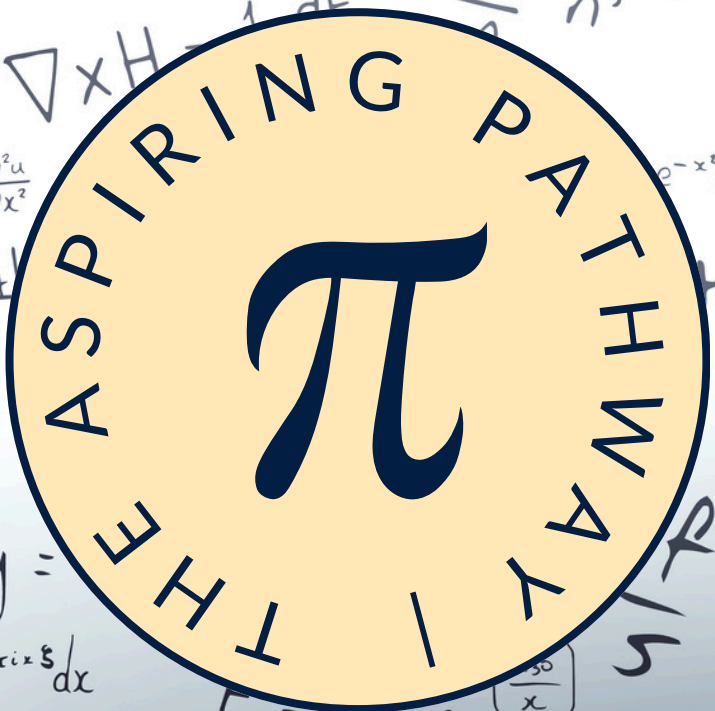
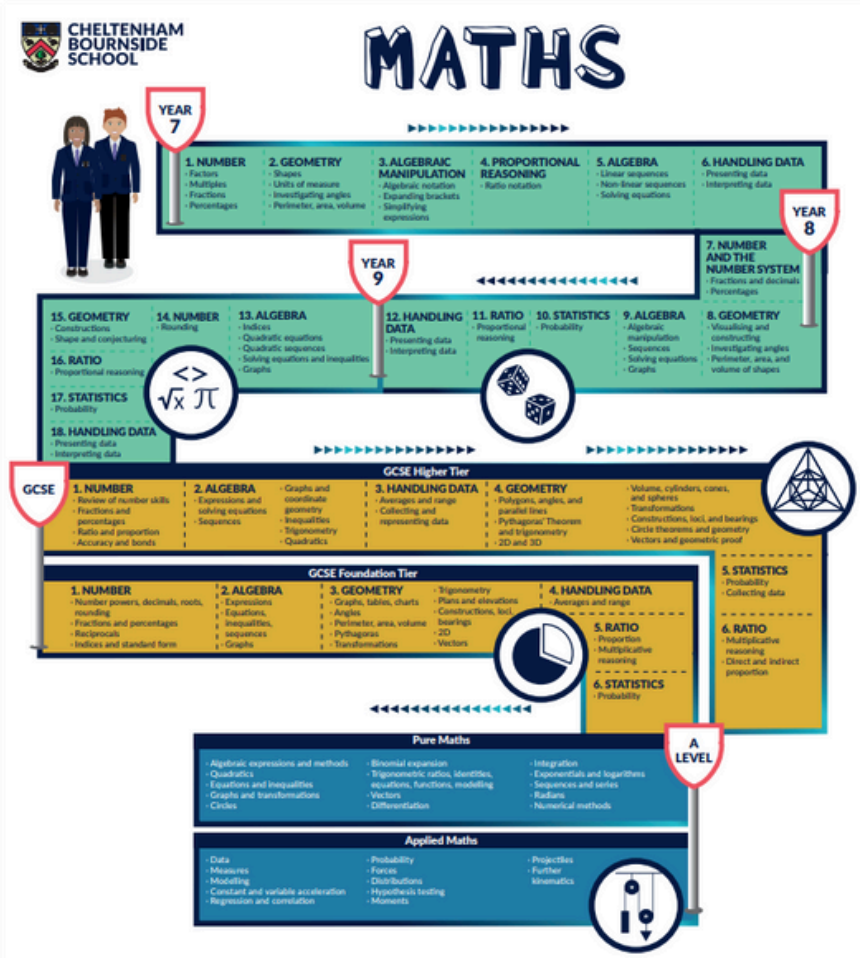
‘The Aspiring Mathematician.’ KS4/5



CHELTENHAM BOURNSIDE SCHOOL

Inspiring lives through learning

‘The Aspiring Mathematician’



‘The Aspiring Mathematician’

Welcome to the Maths department!

If you truly want to become an aspiring mathematician, there are a few things you need to commit to. First, develop a genuine curiosity—not just about getting the right answers, but about understanding why those answers make sense.

Mathematics isn’t about memorization; it’s about patterns, logic, and problem-solving. You’ll need to build resilience, because mistakes are part of the process. Don’t shy away from difficult problems—embrace them.

Start thinking more deeply, ask better questions, and don’t be afraid to explore topics that go beyond the classroom. Learn to communicate your reasoning clearly, both in writing and out loud. Most importantly, be patient with yourself.

Growth in mathematics takes time, persistence, and a willingness to be uncomfortable at times. If you can commit to this mindset, then you won’t just be good at math—you’ll be on your way to becoming a true mathematical thinker.

Miss Panniers
Head of Mathematics

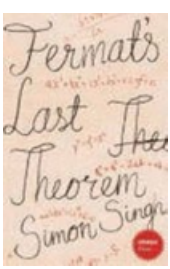
Reading list

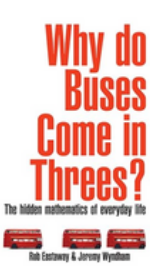
Fermat's Last Theorem - *Simon Singh*
Read the thrilling tale of a quest to solve one of mathematics' longest standing problems.

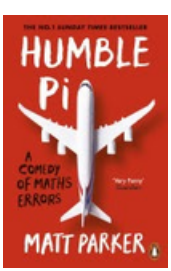
Why do buses come in threes? The hidden mathematics of everyday life - *Rob Eastaway and Jeremy Wyndham*
Ever wondered why it is better to buy a lottery ticket on a Friday? Or what connects a rugby player going for a conversion and a tourist taking a photo of Nelsons Column in London? Or why showers are always a bit too hot or too cold? This is the book for you!

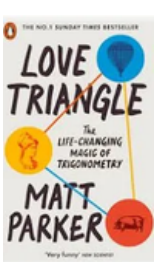
Humble Pi: a comedy of math errors - *Matt Parker*
Accessible and fun stories about mathematical fails.

Love Triangle: the life changing magic of trigonometry - *Matt Parker*
Explore the wonderful world of triangle properties in an engaging and fun way









Competitions

UK Maths Trust

Senior UKMT

All year 12s studying maths will be entered and the competition will run in school during lesson time usually around October. This is a series of multiple-choice problem-solving maths questions designed to test your ability to think around a problem. Students who do exceptionally well can qualify for further rounds of the competition. Past papers can be found on this website Competition Papers

CHELTENHAM BOURNSIDE SCHOOL

Intermediate Maths Challenge

Intermediate Maths Challenge runs for students in year 10 - some students will be invited to take part and there will be a sign up sheet for anyone else who would like to challenge themselves.

Competitions

TOM ROCKS MATHS
Maths, but not as you know it!

Tom Rocks Maths Essay Competition
Organised by YouTube Mathematician Tom Rocks and the Department for Continuing Education at Oxford University and usually takes place around April. Students can submit an essay on any mathematical topic and the competition is designed to get students thinking about maths beyond the curriculum.

More information is available along with previous entries and winning essays for ideas: Tom Rocks Maths: Essay Competition 2025 | Oxford University Department for Continuing Education

Liverpool Maths Society Open Challenge
This runs every February Half term. They release six problems that students need to write formal written mathematical answers for. In encourages students to think around a problem and present their answers in a clear, coherent logical way, as well as striving to reach a “final answer”.

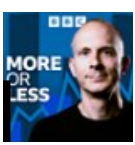
Listen and Watch

Podcasts

A Problem Squared Podcast
A podcast dedicated to solving life's problems (through maths) by Matt Parker and Bec Hill

A Brief History of Mathematics Podcast - BBC Radio 4
Professor of Mathematics Marcus du Sautoy reveals the personalities behind the calculations and argues that mathematics is the driving force behind modern science.

The Secret of Mathematics Podcast - University of Oxford - A series of talks and lectures from Oxford Mathematicians exploring the power and beauty of their subject. These talks would appeal to anyone interested in mathematics and its ever-growing range of applications from medicine to economics and beyond.



More or Less: Behind the Stats Podcast - BBC Radio 4
Tim Harford and the More or Less team try to make sense of the statistics which surround us.

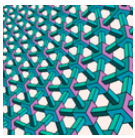
Breaking Math Podcast
Breaking Math is a deep-dive science, technology, engineering, AI, and mathematics podcast that explores the world through the lens of logic, patterns, and critical thinking. Hosted by Autumn Phaneuf, an expert in industrial engineering, operations research and applied mathematics, and Gabriel Hesch, an electrical engineer with a passion for mathematical clarity, the show is dedicated to uncovering the mathematical structures behind science, engineering, technology, and the systems that shape our future.

Listen and Watch

Films/YouTube/TV

Numberphile

YouTube channel full of interesting mathematical videos on weird and wonderful topics. They also run a Podcast that features famous mathematicians investigating different real life mathematical scenarios or talking about their research into famous mathematical problems.



TED talks - Math talks to blow your mind

A collection of interesting and informative maths related TED talks.Numbers, patterns and equations are at the core of these talks, which will teach you how to fold better origami and how to quantify history.

Oxford University Mathematics YouTube channel

Features videos of public maths lectures on a number of topics including crossover topics between maths and sciences

Listen and Watch

Social media

X

@The MathFlow
Deep Math insights through figures, proofs, concepts, visualisations, quotes, problems, archives and memes

@Brainy_Bits_Hub
A hub for daily Math puzzles, IQ tests and riddles

@Riazi_Cafe_en
An account to encourage Mathematical thinking

@InterestingSTEM
Interesting and educative contents on Science, Technology, Engineering and Mathematics

TikTok

@neildoesmaths
Last Minute Cram Courses!

@hannahkettlemaths
GCSE content!

@mathematics.guy
Maths above all subjects

@bicenmaths
Revision classes

Work Experience and Events

Cheltenham Science Festival – the festival runs every year, usually at the start of June, and includes several mathematical talks on a variety of topics along with events to engage students with science and mathematical careers. Follow @cheltfest to get information about next year's event.

King's Maths School London Summer School programme – the school run two programmes one aimed at Year 10 girls who are interested in maths and one at students in year 11 who are hoping to study maths at A Level. They priorities students who received Free School Meals in year 7-11 and who come from non-selective secondary schools. Information about the course and application criteria can be found on their website: KCLMS Summer Schools | King's Maths School

NRICH Prepare to Study Maths at University – this website contains articles and problems to help students who are interested in studying maths get a better understanding of what studying maths at University would be like: Prepare for university | NRICH Problems are split into different areas from pure maths, applied maths, mathematical sciences and mathematical engineering.

Work Experience and Events

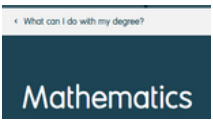
Virtual Insight Programme at PwC | Early Careers
Experience our different business areas such as Audit, Consulting, Tax and Operate to find out what it means to be an expert in that area.

Year 12 Work Experience | Imperial College London
This programme will give you an insight into the exciting world of research at Imperial College London. One of the Streams is Mathematics.

Early Careers Programmes | Deloitte UK
Each of our programmes has been designed to help you build your career your way. Find out more about the path that could be right for you.

Starting With Maths: Patterns & Formulas | OpenLearn
Patterns occur everywhere, especially mathematics. Being able to recognise, describe and use these patterns is an important skill that helps you to tackle different problems.

Discovery Work Experience | KPMG
The programme is available for students finishing Year 13 in 2026 and are looking to start an apprenticeship in autumn 2026. This is the perfect chance to discover if KPMG is the place for you.



What Can I do with my mathematics degree? | Prospects This article gives lots of ideas on work placements for students interested in maths.

inspire breakfast lectures

The Careers Team at Bournside deliver regular Inspire Breakfast Lectures. Open to students in Year 10 - 13, these business-focused breakfasts invite speakers from all corners of industry to share their professional experiences and valuable insights with Bournside students over breakfast; opening our eyes to the opportunities available across many industry sectors.

Take a look at upcoming speakers and reserve your space here.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E = mc
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∇ × H = 1/c ∂E/∂t
Φ(x) = 1/√2πσ e (x−μ)2/2σ2
E = mc2
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