

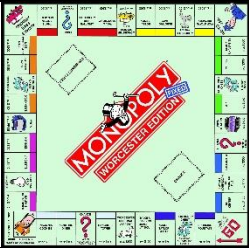






Mathematics Extended Curriculum

Key Stage 3

Activities

 <p>United Kingdom Mathematics Trust</p>	<p>Enter the Junior Maths Challenge</p>	<p>Organised through school in April – speak to your Math’s teacher to find out more information https://www.ukmt.org.uk/</p>
	<p>Visit Bletchley Park</p>	<p>To gain an insight into the code that was cracked during World War II and visit the biggest display of enigma machines in the world. https://bletchleypark.org.uk/</p>
	<p>Play strategy games e.g. Monopoly, Dominos, Risk</p>	<p>Board games such as Monopoly and Risk are fantastic to develop your problem solving and strategy planning skills.</p>
	<p>Visit the Royal Observatory, Greenwich</p>	<p>Stand on the Prime Meridian line at Greenwich which divides the eastern and western hemispheres of the earth and is the home of Greenwich Mean Time. https://www.rmg.co.uk/royal-observatory</p>
	<p>Try solving some of the Transum puzzles</p>	<p>Click on the link https://www.transum.org/Software/Puzzles/ and choose a puzzle. You can change the difficulty of the puzzle at the top of the page.</p>

World-class learning

World-class learning every lesson, every day

The highest expectations

Everyone can be successful; always expect the highest standards

No excuses

Create solutions not excuses; make positive thinking a habit

Growth mindset

Believe you can improve; work hard and value feedback

Never give up

Resilience is essential; be relentless in the pursuit of excellence

Everyone is valued

Diversity is celebrated; see the best in everyone

Integrity

Be trustworthy and honest; deliver on promises and walk the talk



Reading

	<p>The Number Devil by Hans Magnus Enzensberger</p>	<p>In his dreams, Robert, a boy who hates maths, meets a Number Devil, who leads him to discover the amazing world of numbers: infinite numbers, prime numbers, Fibonacci numbers, numbers that magically appear in triangles, and numbers that expand without end. As we dream with him, we are taken further into mathematical theory, where you will be marveling at what numbers can do.</p>
	<p>Humble Pi: A Comedy of Maths Errors by Matt Parker</p>	<p>Our modern lives are built on maths: computer programs, finance, engineering. Most of the time this maths works quietly behind the scenes, until ... it doesn't. This book explores the mathematical errors within the internet, elections, street signs, lotteries, the Roman empire and an Olympic shooting team, showing the bizarre ways maths trips us up, and what this reveals about its essential place in our world.</p>
	<p>The Magic of Maths (Murderous Maths) by Kjartan Poskitt</p>	<p>This book is full of incredible tricks to wow children, parents and teachers alike. You will discover how to use the power of maths to beat the calculator, perform amazing card tricks and read minds – all using the power of maths!</p>




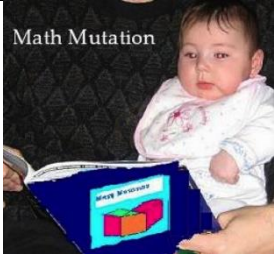
Watching and Listening

Film

	<p>Hidden Figures</p>	<p>“This film tells the powerful and previously overlooked story of three African American women in NASA, and the essential role they played in the maths behind the first American orbital space flight. It directly addresses the stereotypes and barriers that black women face, and how Katherine Johnson, Dorothy Vaughan and Mary Jackson overcame these. It</p>
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		is full of rousing, inspirational speeches and I finished watching this both humbled and proud.” - Miss Goulty
	Queen of Katwe	Living in the slum of Katwe in Uganda is a constant struggle for 10-year-old Phiona and her family. Her world changes one day when she meets Robert Katende, a missionary who teaches children how to play chess. Phiona becomes fascinated with the game and soon becomes a top player under Katende's guidance. Her success in local competitions opens the door to a golden chance to escape from a life of poverty.
Podcast		
	The Math Dude podcast	Stream Math Dude music Listen to songs, albums, playlists for free on SoundCloud
	Oxford Sparks Big Questions	https://podcasts.ox.ac.uk/series/big-questions-oxford-sparks
	Math Mutation	Math Mutation Listen to Podcasts On Demand Free TuneIn (different episodes suitable for KS 3 e.g. episode 256, 249, 247, 245, 241, 224)

World-class learning World-class learning every lesson, every day	The highest expectations Everyone can be successful; always expect the highest standards	No excuses Create solutions not excuses; make positive thinking a habit	Growth mindset Believe you can improve; work hard and value feedback	Never give up Resilience is essential; be relentless in the pursuit of excellence	Everyone is valued Diversity is celebrated; see the best in everyone	Integrity Be trustworthy and honest; deliver on promises and walk the talk
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Key Stage 4

Activities

	Visit Bletchley Park	To gain an insight into the code that was cracked during World War II and visit the biggest display of enigma machines in the world. https://bletchleypark.org.uk/
	Explore some of the nrich puzzles online	Explore some of the puzzles and challenges at https://nrich.maths.org/9196
	Enter the Intermediate Maths Challenge	Organised through school in February – speak to your Maths teacher to find out more information https://www.ukmt.org.uk/
	Play strategy games e.g. Chess	Board games such as Chess are fantastic to develop your problem solving and strategy planning skills https://www.chess.com/play/computer
	Visit the Winton Gallery at the Science Museum in London	The Winton Gallery reveals how mathematics connects to every aspect of our lives. The displays and artefacts explore the vital role of mathematicians and their ideas. https://www.sciencemuseum.org.uk/see-and-do/mathematics-winton-gallery
	Visit the Bank of England Museum	Learn all about the Bank of England, our currency, the economy and the history of banknotes https://www.bankofengland.co.uk/museum

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Reading

	<p>The Curious Incident of the Dog in the Nighttime by Mark Haddon</p>	<p>“A fantastic book about a boy who struggles in social situations but thrives on maths and exploring. The book has subtle hints of Mathematics; prime number chapters, illustrations, and diagrams that all help Christopher solve the mystery. A definite recommendation for anyone who loves reading and reflecting on how mathematics can be woven into everyday life.” – Miss Jandu</p>
	<p>Alex's Adventures in Numberland by Alex Bellos</p>	<p>Alex Bellos explodes the myth that maths is best left to the geeks and demonstrates the remarkable ways it's linked to our everyday lives. Alex explains the surprising geometry of the 50p piece, and the strategy of how best to gamble it in a casino. He shines a light on the mathematical patterns in nature, and he shows the deep connections between maths, religion and philosophy.</p>
	<p>Weird Maths: At the Edge of Infinity and Beyond by David Darling & Agnijo Banerjee</p>	<p>This book draws connections between the cutting edge of modern maths and life as we understand it, delving into the strange: Would we like alien music? Is anything truly random? Does infinity actually exist? Could we ever see into other dimensions? Packed with puzzles and paradoxes, mind-bending concepts and surprising solutions, this is for anyone who wants life's questions answered.</p>

Watching and Listening

Film

	<p>Hidden Figures</p>	<p>“This film tells the powerful and previously overlooked story of three African American women in NASA, and the essential role they played in the maths behind the first American orbital space flight. It directly addresses the stereotypes and barriers that black women face, and how Katherine Johnson, Dorothy Vaughan and Mary Jackson overcame these. It is full of rousing, inspirational speeches and I finished watching this both humbled and proud.” – Miss Goulty</p>
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	<p>The Imitation Game</p>	<p>"An incredible film that shows a detailed, moving, and interesting account of codebreaker Alan Turing. This historic event changed the course of the war thanks to a team of enthusiastic and dedicated mathematicians - including Joan Clarke, a leading female mathematician."</p> <p>- Miss Jandu</p>
	<p>The Theory of Everything</p>	<p>"I remember going to watch this film in the cinema with friends when I was at school. It is such a beautiful story describing Stephan Hawking's incredible work, life, relationship and perseverance despite being diagnosed at university with motor neuron disease. Very highly recommended!"</p> <p>- Miss Goulty</p>
	<p>Moneyball</p>	<p>Billy Beane, a baseball general manager, and Peter Brand, an economics graduate, challenge convention as they try to form a competitive baseball team using computer-based methods and statistical analysis.</p>
<p>Podcast</p>		
<p>Travels in a Mathematical World</p> 	<p>Travels in a Mathematical World</p>	<p>Listen to the podcast here: https://www.travelsinamathematicalworld.co.uk/</p>
<p>Math Mutation</p> 	<p>Math Mutation</p>	<p>Math Mutation Listen to Podcasts On Demand Free TuneIn (different episodes suitable for KS4 e.g. episode 271, 268, 233, 222, 218, 214, 206).</p>

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Key Stage 5

Activities

 <p>United Kingdom Mathematics Trust</p>	<p>Enter the Senior Maths Challenge</p>	<p>Organised through school in November – speak to your Maths teacher to find out more information https://www.ukmt.org.uk/</p>
<p>Use a different game, poker is associated with gambling</p>	<p>Play strategy games e.g.</p>	<p>Card games such as are fantastic to develop your problem solving and strategy planning skills. Stay safe by playing with chips and not real money.</p>
	<p>Visit Woolsthorpe Manor</p>	<p>This was Isaac Newton's home – including his famous apple tree. https://www.nationaltrust.org.uk/woolsthorpe-manor</p>
	<p>Explore the nrich website to investigate proofs</p>	<p>Visit https://nrich.maths.org/6384 to understand more about how proofs can go wrong.</p>
	<p>Try online paper trading</p>	<p>https://www.investopedia.com/simulator/ Try your hand at paper trading – a safe, no-risk way to learn more about investing.</p>

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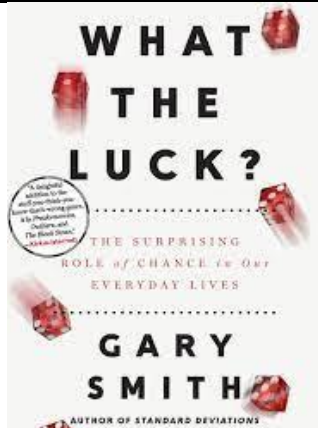


Reading

	<p>The Curious Incident of the Dog in the Nighttime by Mark Haddon</p>	<p>“A fantastic book about a boy who struggles in social situations but thrives on maths and exploring. The book has subtle hints of Mathematics; prime number chapters, illustrations, and diagrams that all help Christopher solve the mystery. A definite recommendation for anyone who loves reading and reflecting on how mathematics can be woven into everyday life.” – Miss Jandu</p>
	<p>Fermat's Last Theorem by Simon Singh</p>	<p>“Fermat's last theorem explains how eventually Andrew Wiles managed to prove, in 1995 (the year I went to university), a theorem that was first discovered in 1637, but never proven before!” - Mrs Casey</p>
	<p>The Man Who Knew Infinity: Life of the Genius Ramanujan by Robert Kanigel</p>	<p>This is a biography of the mathematician Srinivasa Ramanujan that tells the true story of his upbringing in India, and how with no formal mathematical teaching, he came to Cambridge University to work alongside the celebrated G.H. Hardy and forever change mathematics.</p>
	<p>Things to Make and Do in the Fourth Dimension by Matt Parker</p>	<p>“The extraordinary thing about maths is that it allows us to access logic and ideas beyond what our brains can instinctively do”. This book explores some extraordinary abstract concepts by building on KS4 and KS5 topics in maths, such as 4D shapes and the ideal dating algorithm. Matt Parker uses his book to show exactly how fun maths really is.</p>


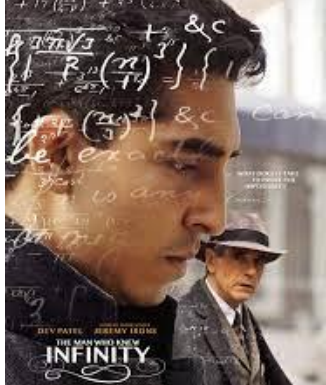
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	<p>What the Luck <i>by Gary Smith</i></p>	<p>This book breaks down the role of luck and chance in our everyday lives and attaches statistical meaning to its effect.</p> <p>Placing too much reliance on luck can have very poor outcomes, not just in sports or games, but also in politics, school, business and just about every aspect of our lives.</p> <p>It will change your impression of the world around you and give you hope for better luck next time after a bad outcome.</p>
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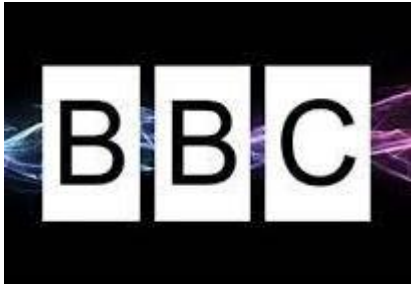

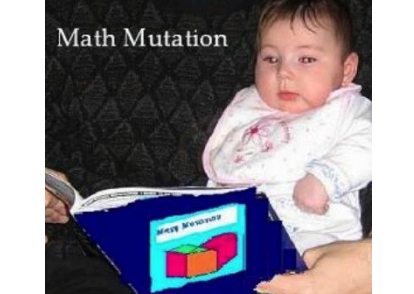
Watching and Listening

Films

	<p>The Imitation Game</p>	<p>“An incredible film that shows a detailed, moving, and interesting account of codebreaker Alan Turing. This historic event changed the course of the war thanks to a team of enthusiastic and dedicated mathematicians - including Joan Clarke, a leading female mathematician.”</p> <p>- Miss Jandu</p>
	<p>The Man Who Knew Infinity</p>	<p>The film version of the book listed above; this movie tells the story of genius Srinivasa Ramanujan, whose mathematical theories propelled him from poverty into a world in the midst of war, and his fight to show the magic of his mind.</p>

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	<p>The Story of 1: A BBC Documentary</p>	<p>Terry Jones (former member of Monty Python) travels around the world discussing the beautiful and complex history of maths, starting from carving scratches into bones in Africa, to Egyptian hieroglyphics, to the invention of 0 in India and then the more modern binary system, based solely on the numbers 1 and 0.</p>
	<p>The Theory of Everything</p>	<p>"I remember going to watch this film in the cinema with friends when I was at school. It is such a beautiful story describing Stephan Hawking's incredible work, life, relationship and perseverance despite being diagnosed at university with motor neuron disease. Very highly recommended!" – Miss Goult</p>
<p>Podcasts</p>		
	<p>Math Mutation</p>	<p>Math Mutation Listen to Podcasts On Demand Free TuneIn (different episodes suitable for KS5 e.g. episodes 209, 212, 225, 229, 235, 266, 267).</p>

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