





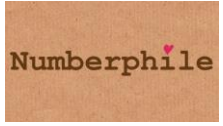
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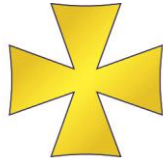
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MATHEMATICS WIDER EXPLORATION LIST

PODCASTS AND WEBSITES


There is a plethora of excellent mathematical content online, available in accessible, bite-sized chunks. You can broaden your mathematical knowledge on car journeys, the school bus or when you get a few spare minutes.

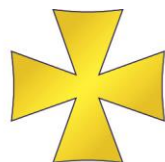
	<p>Podcast: The Infinite Monkey Cage</p> <p>Award winning science/comedy chat with Brian Cox, Robin Ince and guests. There are different scientific themes each week but the following episodes (among others) are specifically about maths:</p> <ul style="list-style-type: none">• The Science of Symmetry• Six Degrees• Randomness• Numbers, Numbers Everywhere• To Infinity and Beyond
	<p>Podcast: A Brief History of Mathematics</p> <p>Professor Marcus du Sautoy argues that mathematics is the driving force behind modern science. Ten fifteen minute podcasts reveal the personalities behind the calculations from Newton to the present day.</p>
	<p>Website: Plus Magazine</p> <p>An internet magazine which aims to introduce readers to the beauty and the practical applications of mathematics</p>
	<p>Website: Chalkdust Magazine</p> <p>Started by some doctoral students at UCL, Chalkdust Magazine is a collection of articles, features and pictures that are interesting, fun, or thought-provoking. Chalkdust is a place for five-minute articles over coffee, and fiendishly hard puzzles that will entertain you for a week.</p>
	<p>YouTube: Numberphile</p> <p>A series of short videos about numbers and other mathematical topics presented in a fun, accessible and interesting way.</p>



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<p>math for fun! <small>calculus & more</small></p>	<p>YouTube: BlackPenRedPen</p> <p>Lots of practice problems (100 problems in a video) for students. Topics include (or will include) integrals, series, derivatives, factoring trinomials, algebraic equations, trig identities ...</p>
 <p>Animated math</p>	<p>YouTube: 3Blue1Brown</p> <p>3Blue1Brown, by Grant Sanderson, is some combination of math and entertainment, depending on your disposition. The goal is for explanations to be driven by animations and for difficult problems to be made simple with changes in perspective.</p>



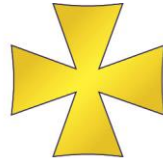
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POPULAR MATHEMATICS BOOKS

Popular mathematics books are those which explain a variety of interesting topics in mathematics in such a way that it can be understood by people without a specialist knowledge. As well as showing the application of some of the mathematics you have learned at school, these are also usually fun and humorous reads.

	<p><u>Why Do Buses Come In Threes?</u></p> <p>Why are showers always too hot or too cold? And what's the connection between a rugby player taking a conversion and a tourist trying to get the best photograph of Nelson's Column? These and many other fascinating questions are answered in this entertaining and highly informative book, which is ideal for anyone wanting to discover that maths is relevant to almost everything we do.</p>
	<p><u>Alex's Adventures in Numberland</u></p> <p>Mathematical ideas underpin just about everything in our lives: from the surprising geometry of the 50p piece to how probability can help you win in any casino. Packed with fascinating, eye-opening anecdotes, Alex's Adventures in Numberland is an exhilarating cocktail of history, reportage and mathematical proofs that will leave you awestruck.</p>
	<p><u>Math with Bad Drawings</u></p> <p>Ben Orlin instead shows us how to think like a mathematician by teaching us a new game of Tic-Tac-Toe, how to understand an economic crisis by rolling a pair of dice, and the mathematical reason why you should never buy a second lottery ticket. If you look very closely you'll even find Dr Rackham's name buried in the endnotes!</p>
	<p><u>Things to Make and Do in the Fourth Dimension</u></p> <p>Stand-up comedian and mathematician Matt Parker uses bizarre Klein Bottles, unimaginably small pizza slices, knots no one can untie and computers built from dominoes to reveal some of the most exotic and fascinating ideas in mathematics. Starting with simple numbers and algebra, this book goes on to deal with inconceivably big numbers in more dimensions than you ever knew existed. And always with something for you to make or do along the way.</p>

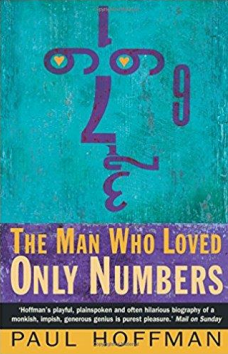
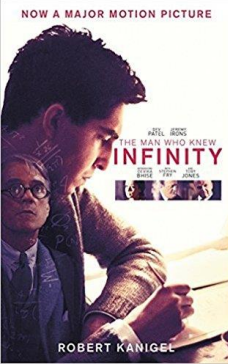
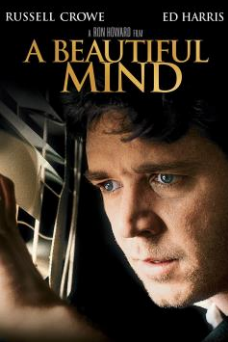


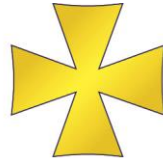
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MATHEMATICAL BIOGRAPHIES

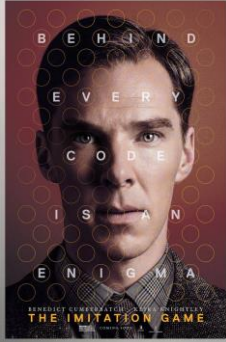
As well as giving an insight into some of the mathematics that they discovered, these biographies also give a glimpse of the people behind the theorems.

	<p><u>The Man Who Loved Only Numbers</u></p> <p>The biography of a mathematical genius. Paul Erdos was the most prolific pure mathematician in history and, arguably, the strangest too. Paul Hoffman gives us a vivid and strangely moving portrait of this singular creature, one that brings out not only Erdos's genius and his oddness, but his warmth and sense of fun, the joyfulness of his strange life.</p>
	<p><u>Film: The Man Who Knew Infinity</u></p> <p>In the 1910s, Srinivasa Ramanujan is a man of boundless intelligence that even the abject poverty of his home in Madras, India, cannot crush. Eventually, his stellar intelligence in mathematics and his boundless confidence in both attract the attention of the noted British mathematics professor, G.H. Hardy, who invites him to join him at Cambridge University. Ramanujan joins with Hardy in a mutual struggle that would define him as one of India's greatest modern scholars who broke more than one barrier in his worlds.</p>
	<p><u>Film: A Beautiful Mind</u></p> <p>From the heights of notoriety to the depths of depravity, John Forbes Nash, Jr. experienced it all. A mathematical genius, he made an astonishing discovery early in his career and stood on the brink of international acclaim. But the handsome and arrogant Nash soon found himself on a painful and harrowing journey of self-discovery. After many years of struggle, he eventually triumphed over his tragedy, and finally - late in life - received the Nobel Prize.</p>



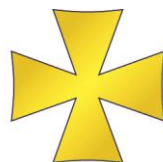
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Film: The Imitation Game

Based on the real life story of legendary cryptanalyst Alan Turing, the film portrays the nail-biting race against time by Turing and his brilliant team of code-breakers at Britain's top-secret Government Code and Cypher School at Bletchley Park, during the darkest days of World War II.



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MATHEMATICAL QUESTIONS

Some mathematical problems, such as Fermat's Last Theorem, took years to prove and others remain unsolved. These books shed light on some of the important theorems and equations in mathematics, why they are important and the story behind them.

	<p>Fermat's Last Theorem</p> <p>'I have a truly marvellous demonstration of this proposition which this margin is too narrow to contain.' It was with these words, written in the 1630s, that Pierre de Fermat intrigued and infuriated the mathematics community. For over 350 years, proving Fermat's Last Theorem eluded the world's greatest minds until Andrew Wiles in 1993.</p>
	<p>The Music of the Primes</p> <p>Whoever cracks Riemann's hypothesis will go down in history, for it has implications far beyond mathematics. In business, it is the lynchpin for security and e-commerce. In science, it has critical ramifications in Quantum Mechanics, Chaos Theory, and the future of computing. Pioneers in each of these fields are racing to crack the code and a prize of \$1 million has been offered to the winner but it is, as yet, unsolved.</p>
	<p>The Great Mathematical Problems</p> <p>The Great Mathematical Problems explains what drives mathematicians to incredible lengths to solve enigmatic questions. It contains solved problems - like the Poincaré Conjecture, cracked by the eccentric genius Grigori Perelman, who refused academic honours and a million-dollar prize for his work, and ones which, like the Riemann Hypothesis, remain baffling after centuries.</p>
	<p>Seventeen Equations that Changed the World</p> <p>From Newton's Law of Gravity to the Black-Scholes model used by bankers to predict the markets, equations, are everywhere -- and they are fundamental to everyday life. Ian Stewart explores how Pythagoras's Theorem led to GPS and Satnav to why imaginary numbers were important in the development of the digital camera.</p>