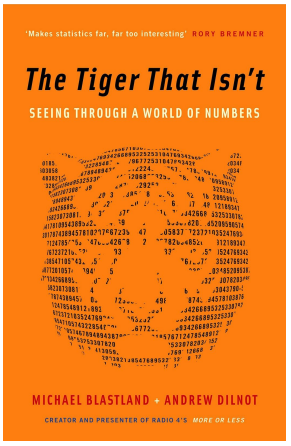
A Level Mathematics Reading List

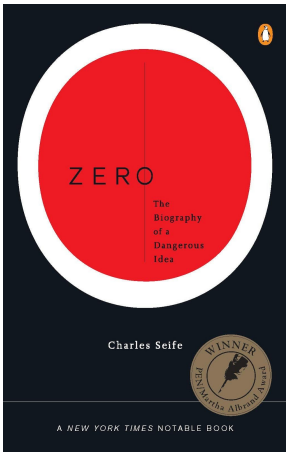
The Tiger That Isn't - Seeing Through a World of Numbers



By Michael Blastland & Andrew Dilnot

Mathematics scares and depresses most of us, but politicians, journalists and everyone in power use numbers all the time to bamboozle us. Most maths is really simple - as easy as 2+2 in fact. Better still it can be understood without any jargon, any formulas - and in fact not even many numbers. Most of it is common sense, and by using a few really simple principles one can quickly see when maths, statistics and numbers are being abused to play tricks - or create policies - which can waste millions of pounds. It is liberating to understand when numbers are telling the truth or being used to lie, whether it is health scares, the costs of government policies, the supposed risks of certain activities or the real burden of taxes.

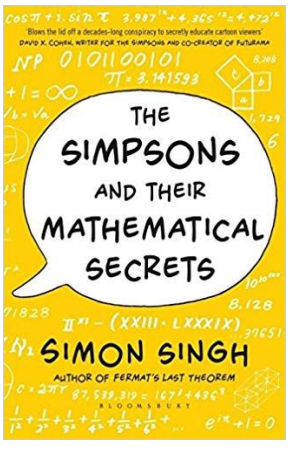
Zero: The Biography of a Dangerous Idea



By Charles Seife

Within the concept of zero lies a philosophical and scientific history of Mankind. The Babylonians invented zero, it was banned by the Greeks while on the eve of the Millennium zero was feared to be a timebomb within the world s computer systems. There was a time when zero did not exist, the concept of zero is a relatively recent Eastern concept and for centuries there was a struggle over its very existence. For many cultures zero represented the void and it could prove to undo the framework of logic. It was seen as an alien concept that could shatter the framework of Christianity and science yet European acceptance of zero as a philosophical concept was at the centre of the Renaissance. Over three thousand years the concept of zero has been at the heart of the intellectual debates that have created our culture. In the first millennium zero lay at the heart of the debate between Eastern and Western religion, while after the Renaissance zero was at the centre of the struggle between religion and science. Zero s power comes from its ability to disrupt the laws of physics and it may hold the secret of the cosmos.

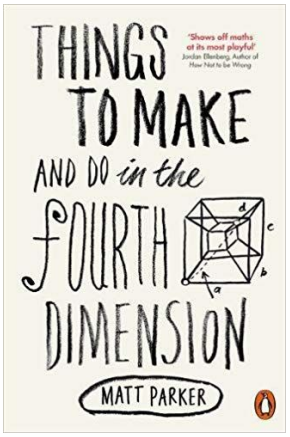
The Simpsons and Their Mathematical Secrets



By Simon Singh

You may have watched hundreds of episodes of *The Simpsons* (and its sister show *Futurama*) without ever realising that they contain enough maths to form an entire university course. In *The Simpsons and Their Mathematical Secrets*, Simon Singh explains how the brilliant writers, some of the mathematicians, have smuggled in mathematical jokes throughout the cartoon's twenty-five year history, exploring everything from to Mersenne primes, from Euler's equation to the unsolved riddle of P vs. NP, from perfect numbers to narcissistic numbers, and much more. With wit, clarity and a true fan's zeal, Singh analyses such memorable episodes as 'Bart the Genius' and 'Homer³' to offer an entirely new insight into the most successful show in television history.

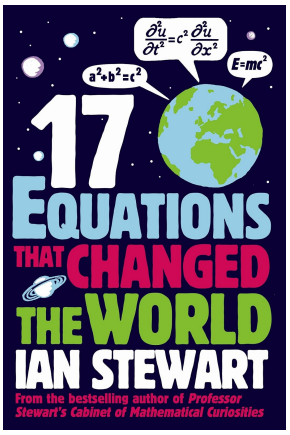
Things to Make and Do in the Fourth Dimension



By Matt Parker

This is the complete guide to exploring the fascinating world of maths you were never told about at school. 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.

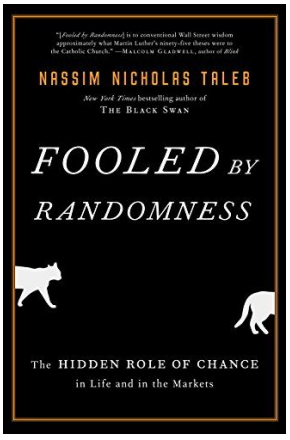
Seventeen Equations that Changed the World



Ian Stewart

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.*Seventeen Equations that Changed the World* examines seventeen ground-breaking equations that have altered the course of human history. He explores how Pythagoras's Theorem led to GPS and Satnav; how logarithms are applied in architecture; why imaginary numbers were important in the development of the digital camera, and what is really going on with Schrödinger's cat.

Fooled By Randomness

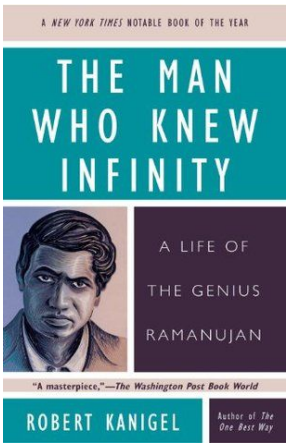


By Nassim Nicholas Taleb

Everyone wants to succeed in life. But what causes some of us to be more successful than others? Is it really down to skill and strategy - or something altogether more unpredictable?

This book is the bestselling sensation that will change the way you think about business and the world. It is all about luck: more precisely, how we perceive luck in our personal and professional experiences. Nowhere is this more obvious than in the markets - we hear an entrepreneur has 'vision' or a trader is 'talented', but all too often their performance is down to chance rather than skill. It is only because we fail to understand probability that we continue to believe events are non-random, finding reasons where none exist.

The Man Who Knew Infinity: Life of the Genius Ramanujan

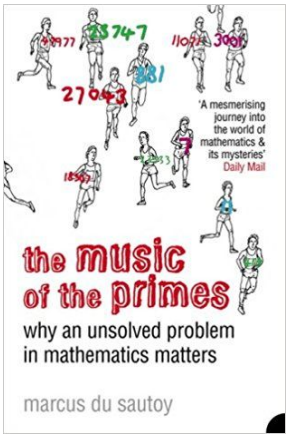


By Robert Kanigel

In 1913, a young unschooled Indian clerk wrote a letter to G H Hardy, begging the pre-eminent English mathematician's opinion on several ideas he had about numbers. Realising the letter was the work of a genius, Hardy arranged for Srinivasa Ramanujan to come to England. Thus began one of the most improbable and productive collaborations ever chronicled.

With a passion for rich and evocative detail, Robert Kanigel takes us from the temples and slums of Madras to the courts and chapels of Cambridge University, where the devout Hindu Ramanujan, 'the Prince of Intuition,' tested his brilliant theories alongside the sophisticated and eccentric Hardy, 'the Apostle of Proof'. In time, Ramanujan's creative intensity took its toll: he died at the age of thirty-two and left behind a magical and inspired legacy that is still being plumbed for its secrets today.

The Music of the Primes



By Marcus Du Sautoy

Prime numbers are the very atoms of arithmetic. They also embody one of the most tantalising enigmas in the pursuit of human knowledge. How can one predict when the next prime number will occur? Is there a formula which could generate primes? These apparently simple questions have confounded mathematicians ever since the Ancient Greeks.

In 1859, the brilliant German mathematician Bernard Riemann put forward an idea which finally seemed to reveal a magical harmony at work in the numerical landscape. The promise that these eternal, unchanging numbers would finally reveal their secret thrilled mathematicians around the world. Yet Riemann, a hypochondriac and a troubled perfectionist, never publicly provided a proof for his hypothesis and his housekeeper burnt all his personal papers on his death.

In this breathtaking book, mathematician Marcus du Sautoy tells the story of the eccentric and brilliant men who have struggled to solve one of the biggest mysteries in science. It is a story of strange journeys, last-minute escapes from death and the unquenchable thirst for knowledge. Above all, it is a moving and awe-inspiring evocation of the mathematician's world and the beauties and mysteries it contains.