



# The Number Mysteries

*Marcus du Sautoy*

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Bespreking van de belangrijkste thema's van de wiskunde met aandacht voor enkele van de grootste onopgeloste wiskundige problemen aller tijden.

## The Number Mysteries Details

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Author : Marcus du Sautoy

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## From Reader Review The Number Mysteries for online ebook

### Andy says

I picked this up cheap having listened to and enjoyed his Brief History of Mathematics podcast through BBC Radio 4 (<http://www.bbc.co.uk/podcasts/series/...>). He's so enthusiastic and likeable that he really puts across the love of his subject.

So, despite disliking maths with a passion and having major 'number block' at the best of times I still gave it a read. It's a fun, lightweight and fairly superficial introduction to some mathematical fields, generally clear to follow with some nice historical anecdotes. To be honest, those are probably the best. Despite my maths grounding, I was fairly familiar with many of the concepts and areas discussed (especially the primes, geometry and chance/randomness) and suspect this book isn't that useful for anyone with an interest in maths; more a primer for the layperson.

The links were a good addition (though I mostly skipped them). The illustrations were pretty poor though, looking like a quick computer knock-up job - could have been better.

Overall, fun and easy to read (some equations, not so much) but probably too basic for most. A good intro for those who are curious.

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### ????? says

The most basic foundation for life on our planet are known to the human beings as oxygen, food, and water. However, there's another key component that rules the human world in practicality, for its absence would have rendered human beings powerless and their existence on earth meaningless. This component governs every individual's routine, rules the minds of productive creatures, and reins over their ability to perceive, evaluate, and even draw conclusions on the several aspects influencing the lives of humans and their fight for survival since generations. What is the component we are referring to? Is this component mysterious in nature? Do we human beings owe our life to this component? Any attempt at getting the answers right for these questions would make the lives of academicians such as mathematicians, physicists, statisticians, and computer scientists difficult. Marcus du Sautoy is one such Professor of Mathematics who takes the challenge head on and the component we refer to is the - Number, besides we have many forms of it to deal with. In The Number Mysteries, Marcus du Sautoy presents to the readers, an elaborated account on several kinds of number series predominantly the primes and their unique association with several mathematical mysteries. In this penned mathematical opera, the author channels his focus on unfolding the mysteries thereafter subjecting the readers to the unfolding mysteries. The Number Mysteries, as the title suggests is a mathematical journey to the world of numbers that encourages and motivates the wannabe math geniuses to take a deep dive into several unknown, hidden paradigms associated with primes and their derivatives. The math professor with his brain teasers succeeds in tickling our grey cells to get us to put our thinking caps on. The author with a definite, well defined vision regarding prospects of primes offering scope for innovation, further takes a leap forward presenting to the readers several undiscovered and unsolved conundrums on primes.

A book enthusiast who picks The Number Mysteries for a read is bound to experience and encounter broader aspects of applying principles of numbers to resolve various real world problems on football field

dimensions to as contrasting an issue as the life evolution of cicadas and their predators. There is abundant scope in this compilation for making our interest for numbers more interesting and complicated. The author's juggling with the digits in numbers takes several infinite forms. To list a few - Beckham's 23, Real Madrid keeper's 1, the apparently hypothetical instance of using sunflowers and rabbits to find primes, the Hebrew-Mesoamerican-Babylonian representation of primes and several other mind baffling infinities. He employs unique innovative techniques to arrive at variant solutions to math riddles. He has notched up the craftsmanship of an artistic nature in posing questions to the readers - a throwing the ball in your court kind of sagacity. The preceding analogy would make more sense, for this 290 odd page book evens out on intellectual matter with its readers. With every page flip, the math enthusiasts are introduced to a new challenge in the book. The challenges put forth by the author vary from calculation of distance, estimation of the nature of various mathematical figures, determination of large complex numbers - few of which are indeterminates and left at reader's discretion, locating encrypted points and appropriately decrypting them, and discussing probabilities of various types - all these and more dealing with exciting ubiquitous elements of musical notes, sports, wars, geographical maps, among many other distinct real world problems. The principles of Enigma Machine, the Chappé brothers' code, Euler's theorem, gravitational force, the technicality of quadratic equations used in determining the curve traced by Wayne Rooney's volley, use of math to predict the future of our solar system, the mystery behind the boomerang's return to the starting point are dealt with concisely by the author in the book. However, there're mild shades of grey matter in the offering for the conservative readers in the book. These take the form of the math concepts governing the dreaded world of lotteries and casinos. In my viewpoint, the book's offering (primarily, the mathematical challenges) are not to be mistaken for a guidebook to make our presence felt as gamblers in the casinos world.

Caution to the audience of *The Number Mysteries*: Be game for a game challenge of the written kind if you get your hands on this compilation.

Briefly explained, *The Number Mysteries* by Marcus du Sautoy gives an informative and fascinating account on advanced concepts of mathematics putting into effective use the chunks of various number theories to deliver power packed solutions to real and digital world hurdles. This mathematical gem wins not a bounty of \$1,000,000, but four points from my points pool. The book lovers can expect vast exposure to mathematical complexity exclusively included in the collection. Further, the math enthusiasts nurturing a liking for number symmetries, number enormities, number mysteries in addition to ambitions of winning the bounty could instantly pick this read without a second thought. An excellent mind-bender presenting an opportunity for addiction to numbers and the theories associated with them. A good read. Cheers.

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## **Thom says**

Similar to another recent book (*Nine Algorithms That Changed the Future: The Ingenious Ideas That Drive Today's Computers*), this book focuses on the four of the six unsolved mathematical Millennium Prize Problems, with one chapter per. Variations and discussions of the math and importance of these problems is very accessible to the average reader. The illustrations help illustrate the concepts and shapes discussed. A fifth chapter describes the Poincaré conjecture, only mentioning Grigori Perelman's proof at the end without seriously delving into it.

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## **Ardyth says**

I have a new celebrity crush, and he is Marcus du Sautoy.

This man's skill at showing us how to enjoy math as more than calculation is tough to beat. He embraced being the butt of the joke in Lewis Black's "History of the Joke." His "History of Mathematics" series on BBC Radio was an excellent introduction to the titans of his art. He helped Dara O'Briain show how fun and funny math can be on "School of Hard Sums." One can't argue with his commitment.

The Number Mysteries was highly readable, though there are a lot of football/soccer references which Americans may not follow. The book would have benefited from a handful more illustrations, but for the most part the visuals are sufficient. Extra points for free downloadable printable games we can play to explore these ideas!

Really great read for adults who fear math and know they shouldn't -- even better for adults who want to make sure they raise kids who don't.

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## **TheMadHatter says**

An interesting read about the magic of numbers. The author is a mathematician and is obviously passionate about the topic - which is always nice to see conveyed in the printed word. There were some nice little historical stories on the origins of some concepts or the lives of mathematicians that were really interesting and which I will incorporate into my maths classes (so gaining teaching resources is always a bonus).

There was a LOT of soccer references in this book, which for me started to getting frustrating after a while. I also felt that the book seemed to jump from topic to topic rather fast resulting in a superficial examination of a wide range of topics and a disjointed feel. I would have like to see the concepts explored in more detail (not necessarily complexity) but to have the subject teased out a bit.

I found this book at the local library and while I am glad I read it, I can't see myself purchasing it which I suppose is an indication that it really is written as a one-of-read and not a resource to keep coming back to.

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## **Paulo Glez Ogando says**

In this book there are references to external websites which can be accessed typing the address into a web browser or scanning QR codes printed in the book. Thus the book provides us with additional material. Currently (2018) some of the links are not available, though.

In each chapter there is a journey through a big mathematical theme, and at the end of the chapter a mathematical "mystery" is revealed. A problem no one has yet been able to solve. A million-dollar problem, prize by the Clay Institute. There are seven of these, though in this book we only read about five, as many as chapters.

Chapter 1 explores what we do understand about prime numbers. And not only primes, but numbering systems (the numbers of Egyptians, Greeks, Mayan, etc.). The million-dollar problem is here the Riemann hypothesis, which tells us about the deviation from the average distribution of the primes.

Chapter 2 presents the nature's weird and wonderful shapes: from the six-pointed snowflake to the spiral of DNA, from the perfectly spherical bubbles to the shape of our universe. The million-dollar problem addressed in this chapter is the Poincaré conjecture... solved in 2002 by Grigori Perelman, it is therefore a theorem. Poincaré had asked if the three dimensional sphere is characterized as the unique simply connected three manifold.

Chapter 3 is about games that allow us to develop ways of predicting how, given certain rules, events will unfold and to plan accordingly. They teach us about chance and unpredictability. Rock-paper-scissors, Monopoly, magic squares or the history of dice and what shapes make good dice. The million-dollar problem is now P vs NP, whose essence is knowing if it is easy to solve a given problem. Sometimes it is simple, if you give a solution, to check whether that is correct or wrong, but it is not so easy to find a solution starting from nothing.

Chapter 4 tells us how math has been used to create and break codes, how it lets us transmit information safely, efficiently and secretly. And there are also a few examples, like the structure of an ISBN. The million-dollar problem is here the Birch and Swinnerton-Dyer conjecture, which asks whether there is a way to tell which elliptic curves will have an infinite number of points where both coordinates are whole numbers or fractions.

If you are interested in codes, I'd recommend you the wonderful book *The Code Book: The Science of Secrecy from Ancient Egypt to Quantum Cryptography*, by Simon Singh.

Finally, chapter 5 is about the quest to predict the future. The reason a boomerang comes back, why an aeroplane flies, the motion of a pendulum, chaos theory. Even the reason why Roberto Carlos scored a goal with his amazing kick in a 1997 soccer game (France vs Brazil). At last, the final million-dollar problem is so called Navier-Stokes equations, which governs the flow of fluids such as water and air.

To expand knowledge, there are two more million-dollar problems. The Yang-Mills and Mass Gap (which suggest the existence of a "mass gap" in the solution to the quantum versions of the Yang-Mills equations) and the Hodge conjecture (which determines how much of the topology of the solution set of a system of algebraic equations can be defined in terms of further algebraic equations). Hitherto, only the Poincaré conjecture has been proved.

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## **Claudia says**

This started out strong, appealing to the commonplace use of mathematics as in the practical limitations on geometric shapes and also in delving into the patterns (or lack thereof) of prime numbers.

I was even interested in the use of math in the realm of coding, both historically and currently.

But I also feel like it lost some of its flow as it went too deep into the actual calculations of certain explanations. I know that sounds contradictory when it's a book about math, but I had hoped that it would cover a greater variety of practical examples of how math affects us, instead of delving so deeply and technically into a smaller amount of subjects.

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## WarpDrive says

Cute book about the magic of numbers.

The author is a well-regarded mathematician and a Professor of Mathematics at the University of Oxford, so his credentials are impeccable. He is also a great popularizer of the mathematical sciences, and this book is well written with passion and enthusiasm, with clear and lucid explanations and brilliant examples.

My relatively low rating does not reflect so much the intrinsic value of this book, but the value I personally got out of it: unfortunately the book is a bit simplistic (*the maths depth is at high school level, so more mathematically complex but also fascinating subjects such as complex analysis, Fourier analysis or group theory are not represented in this book*), but other users, who might be better identifying themselves with the target audience of this book, would most likely give it a higher rating.

Some of the subjects treated by the book are: number theory and prime numbers, basics of topology, fractals, basic probability calculus, basics of cryptography, and an introduction to chaotic systems. All these subjects are treated at introductory level, so there was nothing new that I found here, but they are treated by the author with concise clarity and precision, delivering a very readable and cute book - it is a fun, lightweight book perfect for a breezy, quick and relaxing reading experience that keeps the reader constantly engaged.

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## Edward says

A well-written, refreshing read about maths and some of the unsolved problems remaining. du Sautoy gradually explains complex theorems with skill, building up from simple ideas, and illustrates the progression to mind-bending concept with plenty of clear examples. A little wandering at times, but the tangents are always interesting, and help to flesh out the subject matter. All in all, a good non-fiction read for anyone interested in maths or science, especially if you haven't studied the subject to a high level.

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## Vish Wam says

The overall review when I purchased this said: 3.69. However, I felt that the book truly deserves more than that. For everyone of us, there would have always been that question 'What is the real life application of that math concept?!'. I too had this intriguingly curious question and was in pursuit of books that would help me. New to teaching basic math for undergraduate students, I myself wanted to know a lot of anecdotes from history where math was properly applied for the success of groups. There were some parts of the book that truly stood out in providing such info. Then there were some parts that highlighted the very beauty of nature and how she is full of interesting numbers, shapes, patterns and codes. Some sections especially the last one on Modulo Arithmetic (clock calculators) were truly brilliant. Overall the book in a lot of places, feels divine due to the pure information. In some sections you may feel that it's dragging. That mainly happens only if you see what lies ahead in the book and get more curious about that than what you currently read. However, If you were passionate enough to pursue your thirst for math-awareness, and if you have some patience, the book will sweep you off the floor.

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## **Hamlen says**

Marcus du Sautoy, the Simonyi Professor for the Public Understanding of Science and Professor of Mathematics at the University of Oxford, is the author of this delightful book. The book is really two books in one; a traditional math popularization and the second is a nontraditional reference book.

The book is written in five chapters. Each chapter takes a topic, develops its background, shares multiple examples and culminates in the statement of one of the Clay Institute challenges. These challenges are unsolved mathematics problems that yield a \$1,000,000 prize to whoever is able to successfully solve them. Now, there are more than 5 challenges (and one of the challenges he writes about has actually been solved) so the reader is at the mercy of the author's selection process.

The challenge in these kind of books is striking the balance between telling too much (losing the mathematical novice) and not telling enough (boring the mathematical journeyman.) He ends his book with the following: "And when you finally crack one of the big mathematical enigmas of all time, everyone will be thinking .... : How on Earth did you do that?"

Unfortunately, he left me with that thought in many areas of the book. He gives many examples of the topics he is covering. The examples are varying shades of interesting, ingenious and surprising. However, it is hard to trust the stated results in areas I don't know when I can see a handful of errors in areas that I do know.

If he spent more time justifying his results I would have enjoyed the book more.

The book within the book is a catalog of websites demonstrating many of the things he is writing about. It also includes a number of educational aids that would be of use in many points of the curriculum from 5 - 16. Yep, these demonstrations would be accessible to 5th graders and informational to college majors.

He is a Brit. He likes soccer. So, the reader should be prepared for lots of allusions to European football.

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## **Cristobal says**

An interesting look at how mathematics can help explain everyday situations. Unfortunately the digital (Kindle) edition doesn't make it easy to follow the examples. It also appears at times that the author becomes enamored of the mathematical explanations making hard to follow the writing.

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## **Phil Mechanic says**

An interesting read, at times unputdownable, at other times impenetrable. du Sautoy clearly loves his subject, and his passion consistently comes through the pages. It's when he gets into the meat of the maths that he sometimes struggles to bring his level down quite far enough for the layman to really enjoy. Certainly don't regret reading it, but not sure I'd read another.



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**McKnight says**

Perhaps I've read too many books about neuroplasticity, but I didn't find anything in this book groundbreaking. Here's the brain care in a nutshell: get 7-8 hours of sleep each night, be physically active, eat good fat and stimulate your brain.

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**Eli Joseph says**

Good in small doses.

Read in conjunction with the associated Oxford University Continuing Education course.

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