

Does God Play Dice Ian Stewart

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Introduction to Algebra - Peter Jephson Cameron 1998

This book is an undergraduate textbook on abstract algebra, beginning with the theories of rings and groups. As this is the first really abstract material students need, the pace here is gentle, and the basic concepts of subring, homomorphism, ideal, etc are developed in detail. Later, as students gain confidence with abstractions, they are led to further developments in group and ring theory (simple groups and extensions, Noetherian rings, and outline of universal algebra, lattices and categories) and to applications such as Galois theory and coding theory. There is also a chapter outlining the construction of the number systems from scratch and proving in three different ways that transcendental numbers exist.

Professor Stewart's Incredible Numbers - Ian Stewart 2015-04-07

At its heart, mathematics is about numbers, our fundamental tools for understanding the world. In Professor Stewart's Incredible Numbers, Ian Stewart offers a delightful introduction to the numbers that surround us, from the common (Pi and 2) to the uncommon but no less consequential (1.059463 and 43,252,003,274,489,856,000). Along the way, Stewart takes us through prime numbers, cubic equations, the concept of zero, the possible positions on the Rubik's Cube, the role of numbers in human history, and beyond! An unfailingly genial guide, Stewart brings his characteristic wit and erudition to bear on these incredible numbers,

offering an engaging primer on the principles and power of math.

The Foundations of Mathematics - Ian Stewart 1977

"There are many textbooks available for a so-called transition course from calculus to abstract mathematics. I have taught this course several times and always find it problematic. The Foundations of Mathematics (Stewart and Tall) is a horse of a different color. The writing is excellent and there is actually some useful mathematics. I definitely like this book."--The Bulletin of Mathematics Books

Do Dice Play God? - Ian Stewart 2019-06-06

Uncertainty is everywhere. It lurks in every consideration of the future - the weather, the economy, the sex of an unborn child - even quantities we think that we know such as populations or the transit of the planets contain the possibility of error. It's no wonder that, throughout that history, we have attempted to produce rigidly defined areas of uncertainty - we prefer the surprise party to the surprise asteroid. We began our quest to make certain an uncertain world by reading omens in livers, tea leaves, and the stars. However, over the centuries, driven by curiosity, competition, and a desire to be better gamblers, pioneering mathematicians and scientists began to reduce wild uncertainties to tame distributions of probability and statistical inferences. But, even as unknown unknowns became known unknowns, our pessimism made us believe that some problems were unsolvable and our intuition misled us.

Worse, as we realized how omnipresent and varied uncertainty is, we encountered chaos, quantum mechanics, and the limitations of our predictive power. Bestselling author Professor Ian Stewart explores the history and mathematics of uncertainty. Touching on gambling, probability, statistics, financial and weather forecasts, censuses, medical studies, chaos, quantum physics, and climate, he makes one thing clear: a reasonable probability is the only certainty.

Calculating the Cosmos - Ian Stewart 2016-10-25

A prize-winning popular science writer uses mathematical modeling to explain the cosmos. In *Calculating the Cosmos*, Ian Stewart presents an exhilarating guide to the cosmos, from our solar system to the entire universe. He describes the architecture of space and time, dark matter and dark energy, how galaxies form, why stars implode, how everything began, and how it's all going to end. He considers parallel universes, the fine-tuning of the cosmos for life, what forms extraterrestrial life might take, and the likelihood of life on Earth being snuffed out by an asteroid. Beginning with the Babylonian integration of mathematics into the study of astronomy and cosmology, Stewart traces the evolution of our understanding of the cosmos: How Kepler's laws of planetary motion led Newton to formulate his theory of gravity. How, two centuries later, tiny irregularities in the motion of Mars inspired Einstein to devise his general theory of relativity. How, eighty years ago, the discovery that the universe is expanding led to the development of the Big Bang theory of its origins. How single-point origin and expansion led cosmologists to theorize new components of the universe, such as inflation, dark matter, and dark energy. But does inflation explain the structure of today's universe? Does dark matter actually exist? Could a scientific revolution that will challenge the long-held scientific orthodoxy and once again transform our understanding of the universe be on the way? In an exciting and engaging style, *Calculating the Cosmos* is a mathematical quest through the intricate realms of astronomy and cosmology.

Chaos and Fractals - David P. Feldman 2012-08-09

For students with a background in elementary algebra, this book provides a vivid introduction to the key phenomena and ideas of chaos

and fractals, including the butterfly effect, strange attractors, fractal dimensions, Julia Sets and the Mandelbrot Set, power laws, and cellular automata. The book includes over 200 end-of-chapter exercises.

The Colours of Infinity - Nigel Lesmoir-Gordon 2010-10-20

A geometry able to include mountains and clouds now exists. I put it together in 1975, but of course it incorporates numerous pieces that have been around for a very long time. Like everything in science, this new geometry has very, very deep and long roots. Benoît B. Mandelbrot Introduction This enhanced and expanded edition of *THE COLOURS OF INFINITY* features an additional chapter on the money markets by the fractal master himself, Professor Benoît Mandelbrot. The DVD of the film associated with this book has been re-mastered especially for this edition with exquisite new fractal animations, which will take your breath away! Driven by the curious enthusiasm that engulfs many fractalistas, in 1994, Nigel Lesmoir-Gordon overcame enormous obstacles to raise the finance for, then shoot and edit the groundbreaking TV documentary from which this book takes its name. The film has been transmitted on TV channels in over fifty countries around the world. This book is not just a celebration of the discovery of the Mandelbrot set, it also brings fractal geometry up to date with a gathering of the thoughts and enthusiasms of the foremost writers and researchers in the field. As Ian Stewart makes clear in the opening chapter, there were antecedents for fractal geometry before 1975 when Mandelbrot gave the subject its name and began to develop the underlying theory.

What is Mathematics? - Herbert Robbins Richard Courant (Ian Stewart) 1996

A discussion of fundamental mathematical principles from algebra to elementary calculus designed to promote constructive mathematical reasoning.

Flutterland - Ian Stewart 2010-10-08

First there was Edwin A. Abbott's remarkable *Flatland*, published in 1884, and one of the all-time classics of popular mathematics. Now, from mathematician and accomplished science writer Ian Stewart, comes what Nature calls "a superb sequel." Through larger-than-life characters and

an inspired story line, *Flatterland* explores our present understanding of the shape and origins of the universe, the nature of space, time, and matter, as well as modern geometries and their applications. The journey begins when our heroine, Victoria Line, comes upon her great-great-grandfather A. Square's diary, hidden in the attic. The writings help her to contact the Space Hopper, who tempts her away from her home and family in Flatland and becomes her guide and mentor through ten dimensions. In the tradition of *Alice in Wonderland* and *The Phantom Toll Booth*, this magnificent investigation into the nature of reality is destined to become a modern classic.

Does God Play Dice? - Ian Stewart 1990

This revised edition of *Does God Play Dice?* takes a fresh look at chaos theory, its achievements, potential and the latest practical applications of chaos theory, including the development of intelligent heart pacemakers.

Keys to Infinity - Clifford A. Pickover 1997-10-02

"An original and exciting exploration of how utterly weird, and utterly beautiful, the infinite can be."-Ian Stewart, author of *Does God Play Dice?* What can we know about numbers too large to compute or even imagine? Do the tiny bubbles in the froth of a milkshake actually form an infinite fractal pattern? What are apocalyptic numbers and recursive worlds? These and dozens of equally beguiling mathematical mysteries, problems, and paradoxes fill this mind-bending new book. In each chapter, acclaimed author Clifford Pickover poses a delightful brain-teasing challenge that reveals the scope and splendor of the world of infinity. Try scaling the ladders to heaven, playing a game of infinite chess, or escaping from the land of Fractalia. Along the way you will encounter a myriad of intriguing topics from vampire numbers, to abduction algebra, to the infinity worms of Callisto. Every problem and puzzle is presented in a remarkably accessible style requiring no specialized mathematical knowledge. Over one hundred illustrations enhance the text and help to explain the mathematical concepts, and stunning color images created by the author reveal the breathtaking beauty of the patterns of infinity. A variety of computer programs offer additional ways to penetrate the enigma of infinity. For anyone who has

ever wondered just how big infinity really is, or just how small, this book will provide an endless source of insight, creativity, and fun. Advance praise for *KEYS TO INFINITY* "In this the latest of Dr. Pickover's marvelous books, he breaks all finite chains to soar into the transcendental, mind-boggling regions of mathematical infinity. Written in the author's informal, clear style, it is a treasure trove of recreational problems, many published here for the first time, with special emphasis on computer programs and riveting graphics. As you soar, fasten your seat belt."-Martin Gardner, author of *The Magic Numbers of Dr. Matrix* "Inventive, quirky, fun! Pickover presents an engaging, inspiring romp in the realm of number and mathematical thought."-Ivars Peterson, author of *The Mathematical Tourist* "Join Pickover on his wonderful merry-go-round of ideas, and reach for the infinite. *Keys to Infinity* is an engaging book. . . a must for those wishing to explore the infinite in all its manifestations."-Theoni Pappas, author of *The Joy of Mathematics* "*Keys to Infinity* contains a near infinity of absorbing themes: from stepladders to the moon and spiral earths, to worm worlds, random chords, and self-similar curlicues. Fascinating!"-Manfred Schroeder, author of *Fractals, Chaos, Power Laws* "What could be more appropriate to the subject of infinity than a book like this one, so dense with wonderful puzzles, anecdotes, images, and computer programs that you could pore over it forever? In *Keys to Infinity*, Pickover has once again assembled a mathematical feast."-Carl Zimmer, Senior Editor *Discover* "Cliff Pickover has produced yet another book of mathematical puzzles, weird facts, computer art, and simple programs to challenge our minds and enthrall us with the beauty of the infinite mathematical world in which we live."-Dr. Julien C. Sprott, author of *Strange Attractors*

In the Wake of Chaos - Stephen H. Kellert 1994-10-28

Chaos theory has captured scientific and popular attention. What began as the discovery of randomness in simple physical systems has become a widespread fascination with "chaotic" models of everything from business cycles to brainwaves to heart attacks. But what exactly does this explosion of new research into chaotic phenomena mean for our understanding of the world? In this timely book, Stephen Kellert takes

the first sustained look at the broad intellectual and philosophical questions raised by recent advances in chaos theory—its implications for science as a source of knowledge and for the very meaning of that knowledge itself.

The Dreams That Stuff Is Made Of - Stephen Hawking 2011-10-25

"God does not play dice with the universe." So said Albert Einstein in response to the first discoveries that launched quantum physics, as they suggested a random universe that seemed to violate the laws of common sense. This 20th-century scientific revolution completely shattered Newtonian laws, inciting a crisis of thought that challenged scientists to think differently about matter and subatomic particles. *The Dreams That Stuff Is Made Of* compiles the essential works from the scientists who sparked the paradigm shift that changed the face of physics forever, pushing our understanding of the universe on to an entirely new level of comprehension. Gathered in this anthology is the scholarship that shocked and befuddled the scientific world, including works by Niels Bohr, Max Planck, Werner Heisenberg, Max Born, Erwin Schrodinger, J. Robert Oppenheimer, Richard Feynman, as well as an introduction by today's most celebrated scientist, Stephen Hawking.

What's the Use? - Ian Stewart 2021-08-17

See the world in a completely new way as an esteemed mathematician shows how math powers the world—from technology to health care and beyond. Almost all of us have sat in a math class, wondering when we'd ever need to know how to find the roots of a polynomial or graph imaginary numbers. And in one sense, we were right: if we needed to, we'd use a computer. But as Ian Stewart argues in *What's the Use?*, math isn't just about boring computations. Rather, it offers us new and profound insights into our world, allowing us to accomplish feats as significant as space exploration and organ donation. From the trigonometry that keeps a satellite in orbit to the prime numbers used by the world's most advanced security systems to the imaginary numbers that enable augmented reality, math isn't just relevant to our lives. It is the very fabric of our existence.

Professor Stewart's Casebook of Mathematical Mysteries - Ian Stewart

2014-10-07

In *Professor Stewart's Casebook of Mathematical Mysteries*, acclaimed mathematician Ian Stewart presents an enticing collection of mathematical curios and conundrums. With a new puzzle on each page, this compendium of brainteasers will both teach and delight. Guided by stalwart detective Hemlock Soames and his sidekick, Dr. John Watsup, readers will delve into almost two hundred mathematical problems, puzzles, and facts. Tackling subjects from mathematical dates (such as Pi Day), what we don't know about primes, and why the Earth is round, this clever, mind-expanding book demonstrates the power and fun inherent in mathematics.

Fearful Symmetry - Ian Stewart 2010-08-01

"From the shapes of clouds to dewdrops on a spider's web, this accessible book employs the mathematical concepts of symmetry to portray fascinating facets of the physical and biological world. More than 120 figures illustrate the interaction of symmetry with dynamics and the mathematical unity of nature's patterns"--

What is Mathematics? - Richard Courant 1978

God Does Not Play Dice - David Ph. D. Shiang 2013-02

In this revolutionary and provocative work, David A. Shiang claims to offer final answers to many of humankind's most enduring mysteries. He argues that Einstein was right in rejecting the randomness of quantum theory, and he shows that Stephen Hawking (*A Brief History of Time*) and Brian Greene (*The Fabric of the Cosmos*) are mistaken in saying that evidence shows nature to be probabilistic. He takes on Richard Dawkins (*The God Delusion*) and Daniel Dennett (*Breaking the Spell*), contending that Darwin's theory of evolution by natural selection is neither scientific nor correct. He also maintains that worry and regret can be overcome, following in the footsteps of T.S. Eliot and other pioneers of the mind. Odds are high that the logical and elegant solutions Shiang presents to our deepest riddles will cause you to rethink your most fundamental beliefs. "Very provocative, erudite, and solidly based on intelligent and logical thinking! Congratulations on making an excellent contribution to

understanding the role of a higher intelligence in organizing the affairs of the universe!" - Pat McGovern, IDG Founder and Chairman, Co-founder of The McGovern Institute for Brain Research at MIT "His lucidity and logic are breathtakingly devastating. He is not afraid to defend the mind of God, either.... I cannot overstate the importance of Shiang's work and its deep influence." - Len Klikunas, Cultural Anthropologist

From Here to Infinity - Ian Stewart 1996

A retitled and revised edition of Ian Stewart's *The Problem of Mathematics*, this is the perfect guide to today's mathematics. Read about the latest discoveries, including Andrew Wile's amazing proof of Fermat's Last Theorem, the newest advances in knot theory, the Four Colour Theorem, Chaos Theory, and fake four-dimensional spaces. See how simple concepts from probability theory shed light on the National Lottery and tell you how to maximize your winnings. Discover how infinitesimals become respectable, why there are different kinds of infinity, and how to square the circle with the mathematical equivalent of a pair of scissors.

Looking Glass Universe - John Briggs 1986

Chaos and Fractals - Heinz-Otto Peitgen 2013-06-29

For almost ten years chaos and fractals have been enveloping many areas of mathematics and the natural sciences in their power, creativity and expanse. Reaching far beyond the traditional bounds of mathematics and science to the realms of popular culture, they have captured the attention and enthusiasm of a worldwide audience. The fourteen chapters of the book cover the central ideas and concepts, as well as many related topics including, the Mandelbrot Set, Julia Sets, Cellular Automata, L-Systems, Percolation and Strange Attractors, and each closes with the computer code for a central experiment. In the two appendices, Yuval Fisher discusses the details and ideas of fractal image compression, while Carl J.G. Evertsz and Benoit Mandelbrot introduce the foundations and implications of multifractals.

The Collapse of Chaos - Ian Stewart 2000-03-02

Do we live in a simple or a complex universe? Jack Cohen and Ian Stewart explore the ability of complicated rules to generate simple behaviour in nature through 'the collapse of chaos'. 'The most startling, thought-provoking book I've read all year. I was pleased to learn that most of the things I thought I knew were wrong' -- Terry Pratchett

Chance and Chaos - David Ruelle 2020-06-16

How do scientists look at chance, or randomness, and chaos in physical systems? In answering this question for a general audience, Ruelle writes in the best French tradition: he has produced an authoritative and elegant book--a model of clarity, succinctness, and a humor bordering at times on the sardonic.

How to Cut a Cake - Ian Stewart 2006-10-12

Welcome back to Ian Stewart's magical world of mathematics! This is a strange world of never-ending chess games, empires on the moon, furious fireflies, and, of course, disputes over how best to cut a cake. Each quirky tale presents a fascinating mathematical puzzle — challenging, fun, and also introducing the reader to a significant mathematical problem in an engaging and witty way.

Infinity - Ian Stewart 2017

Infinity is an intriguing topic, with connections to religion, philosophy, metaphysics, logic, and physics as well as mathematics. Its history goes back to ancient times, with especially important contributions from Euclid, Aristotle, Eudoxus, and Archimedes. The infinitely large (infinite) is intimately related to the infinitely small (infinitesimal). Cosmologists consider sweeping questions about whether space and time are infinite. Philosophers and mathematicians ranging from Zeno to Russell have posed numerous paradoxes about infinity and infinitesimals. Many vital areas of mathematics rest upon some version of infinity. The most obvious, and the first context in which major new techniques depended on formulating infinite processes, is calculus. But there are many others, for example Fourier analysis and fractals. In this Very Short Introduction, Ian Stewart discusses infinity in mathematics while also drawing in the various other aspects of infinity and explaining some of the major problems and insights arising from this concept. He argues that working

with infinity is not just an abstract, intellectual exercise but that it is instead a concept with important practical everyday applications, and considers how mathematicians use infinity and infinitesimals to answer questions or supply techniques that do not appear to involve the infinite. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

Singularities and Groups in Bifurcation Theory - Martin Golubitsky
2013-11-27

This book has been written in a frankly partisan spirit—we believe that singularity theory offers an extremely useful approach to bifurcation problems and we hope to convert the reader to this view. In this preface we will discuss what we feel are the strengths of the singularity theory approach. This discussion then leads naturally into a discussion of the contents of the book and the prerequisites for reading it. Let us emphasize that our principal contribution in this area has been to apply pre-existing techniques from singularity theory, especially unfolding theory and classification theory, to bifurcation problems. Many of the ideas in this part of singularity theory were originally proposed by René Thom; the subject was then developed rigorously by John Mather and extended by V. I. Arnold. In applying this material to bifurcation problems, we were greatly encouraged by how well the mathematical ideas of singularity theory meshed with the questions addressed by bifurcation theory. Concerning our title, *Singularities and Groups in Bifurcation Theory*, it should be mentioned that the present text is the first volume in a two-volume sequence. In this volume our emphasis is on singularity theory, with group theory playing a subordinate role. In Volume II the emphasis will be more balanced. Having made these remarks, let us set the context for the discussion of the strengths of the singularity theory approach to bifurcation. As we use the term, bifurcation theory is the study of equations with multiple solutions.

[Cows in the Maze](#) - Ian Stewart 2010-04-22

From the mathematics of mazes, to cones with a twist, and the amazing sphericon - and how to make one - Ian Stewart is back with more mathematical stories and puzzles that are as quirky as they are fascinating, and each from the cutting edge of the world of mathematics. We find out about the mathematics of time travel, explore the shape of teardrops (which are not tear-drop shaped, but something much, much more strange!), dance with dodecahedra, and play the game of Hex, amongst many more strange and delightful mathematical diversions.

Does God Play Dice? - Ian Stewart 1997-06-26

This revised edition of *Does God Play Dice?* takes a fresh look at chaos theory, its achievements, potential and the latest practical applications of chaos theory, including the development of intelligent heart pacemakers.

[The Beauty of Numbers in Nature](#) - Ian Stewart 2017-03-29

Think of a zebra's stripes, the complexities of a spider's web, the uniformity of desert dunes, or the spirals in a sunflower head ... think of a snowflake. *The Beauty of Numbers in Nature* shows how life on Earth forms the principles of mathematics. Starting with the simplest patterns, each chapter looks at a different kind of patterning system and the mathematics that underlies it. In doing so the book also uncovers some universal patterns, both in nature and man-made, from the basic geometry of ancient Greece to the visually startling fractals that we are familiar with today. Elegantly illustrated, *The Beauty of Numbers in Nature* is an illuminating and engaging vision of how the apparently cold laws of mathematics find expression in the beauty of nature.

Does God Play Dice? - Ian Stewart 1997-06-26

Since the dramatic discovery of the mathematical concept of chaos in 1989, the controversy of its contents has settled down. This revised edition of *Does God Play Dice?* takes a fresh look at its achievements and potential. With a new preface and three completely new chapters, it includes the latest practical applications of chaos theory, such as developing intelligent heart pacemakers. All this provides a fascinating new answer to Einstein's question which provided the title of this book.

Math Without Numbers - Milo Beckman 2021-01-05

An illustrated tour of the structures and patterns we call "math" The only numbers in this book are the page numbers. Math Without Numbers is a vivid, conversational, and wholly original guide to the three main branches of abstract math—topology, analysis, and algebra—which turn out to be surprisingly easy to grasp. This book upends the conventional approach to math, inviting you to think creatively about shape and dimension, the infinite and infinitesimal, symmetries, proofs, and how these concepts all fit together. What awaits readers is a freewheeling tour of the inimitable joys and unsolved mysteries of this curiously powerful subject. Like the classic math allegory Flatland, first published over a century ago, or Douglas Hofstadter's Godel, Escher, Bach forty years ago, there has never been a math book quite like Math Without Numbers. So many popularizations of math have dwelt on numbers like pi or zero or infinity. This book goes well beyond to questions such as: How many shapes are there? Is anything bigger than infinity? And is math even true? Milo Beckman shows why math is mostly just pattern recognition and how it keeps on surprising us with unexpected, useful connections to the real world. The ambitions of this book take a special kind of author. An inventive, original thinker pursuing his calling with jubilant passion. A prodigy. Milo Beckman completed the graduate-level course sequence in mathematics at age sixteen, when he was a sophomore at Harvard; while writing this book, he was studying the philosophical foundations of physics at Columbia under Brian Greene, among others.

The Joy of Mathematics - Howard Burton 2021-04-24

This book is based on an in-depth filmed conversation between Howard Burton and Ian Stewart, Emeritus Professor of Mathematics at the University of Warwick and bestselling science and science fiction writer. For Ian Stewart, mathematics is far more than dreary arithmetic, while mathematical thinking is one of the most important—and overlooked—aspects of contemporary society. This wide-ranging conversation explores what mathematics is and why it's worth doing, symmetry, networks and patterns, the relationship between logic and proof, the role of beauty in mathematical thinking, the future of

mathematics, linking mathematical oscillations to animal gaits, how to deal with the peculiarities of the mathematical community, and much more. This carefully-edited book includes an introduction, Counting Sheep, and questions for discussion at the end of each chapter: I. Fear and Loathing - Mathematics and the wider world II. Doing Mathematics - An insider's view III. Teaching Mathematics - How to get unstuck and other valuable lessons IV. Mathematics and Gender - Portuguese mysteries V. Mathematics Everywhere - And widely underappreciated About Ideas Roadshow Conversations: This book is part of an expanding series of 100+ Ideas Roadshow conversations, each one presenting a wealth of candid insights from a leading expert through a focused yet informal setting to give non-specialists a uniquely accessible window into frontline research and scholarship that wouldn't otherwise be encountered through standard lectures and textbooks.

From Here to Infinity - Ian Stewart 1996

A retitled and revised edition of Ian Stewart's *The Problem of Mathematics*, this is the perfect guide to today's mathematics. Read about the latest discoveries, including Andrew Wile's amazing proof of Fermat's Last Theorem, the newest advances in knot theory, the Four Colour Theorem, Chaos Theory, and fake four-dimensional spaces. See how simple concepts from probability theory shed light on the National Lottery and tell you how to maximize your winnings. Discover how infinitesimals become respectable, why there are different kinds of infinity, and how to square the circle with the mathematical equivalent of a pair of scissors.

The Mathematics of Life - Ian Stewart 2011-06-07

Biologists have long dismissed mathematics as being unable to meaningfully contribute to our understanding of living beings. Within the past ten years, however, mathematicians have proven that they hold the key to unlocking the mysteries of our world -- and ourselves. In *The Mathematics of Life*, Ian Stewart provides a fascinating overview of the vital but little-recognized role mathematics has played in pulling back the curtain on the hidden complexities of the natural world -- and how its contribution will be even more vital in the years ahead. In his

characteristically clear and entertaining fashion, Stewart explains how mathematicians and biologists have come to work together on some of the most difficult scientific problems that the human race has ever tackled, including the nature and origin of life itself.

Why Beauty Is Truth - Ian Stewart 2007-08-02

At the heart of relativity theory, quantum mechanics, string theory, and much of modern cosmology lies one concept: symmetry. In *Why Beauty Is Truth*, world-famous mathematician Ian Stewart narrates the history of the emergence of this remarkable area of study. Stewart introduces us to such characters as the Renaissance Italian genius, rogue, scholar, and gambler Girolamo Cardano, who stole the modern method of solving cubic equations and published it in the first important book on algebra, and the young revolutionary Evariste Galois, who refashioned the whole of mathematics and founded the field of group theory only to die in a pointless duel over a woman before his work was published. Stewart also explores the strange numerology of real mathematics, in which particular numbers have unique and unpredictable properties related to symmetry. He shows how Wilhelm Killing discovered "Lie groups" with 14, 52, 78, 133, and 248 dimensions-groups whose very existence is a profound puzzle. Finally, Stewart describes the world beyond superstrings: the "octonionic" symmetries that may explain the very existence of the universe.

Leonardo's Universe - Bülent Atalay 2008

Set against the turbulent and innovative world of the Renaissance, a detailed portrait of the master artist, scientist, inventor, and philosopher draws on the personal notebooks, journals, art, and other writings to provide a compelling study of Leonardo da Vinci and his seminal contributions to his era. 12,500 first printing.

Professor Stewart's Cabinet of Mathematical Curiosities - Ian Stewart 2010-09-03

School maths is not the interesting part. The real fun is elsewhere. Like a magpie, Ian Stewart has collected the most enlightening, entertaining and vexing 'curiosities' of maths over the years... Now, the private collection is displayed in his cabinet. There are some hidden gems of

logic, geometry and probability -- like how to extract a cherry from a cocktail glass (harder than you think), a pop up dodecahedron, the real reason why you can't divide anything by zero and some tips for making money by proving the obvious. Scattered among these are keys to unlocking the mysteries of Fermat's last theorem, the Poincaré Conjecture, chaos theory, and the P/NP problem for which a million dollar prize is on offer. There are beguiling secrets about familiar names like Pythagoras or prime numbers, as well as anecdotes about great mathematicians. Pull out the drawers of the Professor's cabinet and who knows what could happen...

What Shape is a Snowflake? - Ian Stewart 2001

An enlightening vision of how the laws of mathematics find organic expression in the beauty and patterns of nature, written by an acclaimed mathematician and science writer.

Symmetry: A Very Short Introduction - Ian Stewart 2013-05-30

In the 1800s mathematicians introduced a formal theory of symmetry: group theory. Now a branch of abstract algebra, this subject first arose in the theory of equations. Symmetry is an immensely important concept in mathematics and throughout the sciences, and its applications range across the entire subject. Symmetry governs the structure of crystals, innumerable types of pattern formation, how systems change their state as parameters vary; and fundamental physics is governed by symmetries in the laws of nature. It is highly visual, with applications that include animal markings, locomotion, evolutionary biology, elastic buckling, waves, the shape of the Earth, and the form of galaxies. In this *Very Short Introduction*, Ian Stewart demonstrates its deep implications, and shows how it plays a major role in the current search to unify relativity and quantum theory. ABOUT THE SERIES: The *Very Short Introductions* series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

Nature's Numbers - Ian Stewart 2008-08-04

"It appears to us that the universe is structured in a deeply mathematical way. Falling bodies fall with predictable accelerations. Eclipses can be accurately forecast centuries in advance. Nuclear power plants generate electricity according to well-known formulas. But those examples are the

tip of the iceberg. In *Nature's Numbers*, Ian Stewart presents many more, each charming in its own way.. Stewart admirably captures compelling and accessible mathematical ideas along with the pleasure of thinking of them. He writes with clarity and precision. Those who enjoy this sort of thing will love this book."—Los Angeles Times