

# The Math Book Clifford Pickover

A Passion for Mathematics  
The Math Book  
Computers, Pattern, Chaos and Beauty  
The Book of Black  
Computers and the Imagination  
The Math Book  
Keys to Infinity  
Weird Math  
Wonders of Numbers  
Euclid's Window  
A Beginner's Guide to Immortality  
The Biology Book  
The Mathematics of Oz  
Calculus and Pizza  
The Alien IQ Test  
Fractal 3D Magic  
The Paradox of God and the Science of Omniscience  
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The Stars of Heaven

## A Passion for Mathematics

Previous ed. published in 1997 under the title: The loom of God: mathematical tapestries at the edge of time, by Plenum Press.

## The Math Book

A year-long inspirational celebration of the beauty and wisdom of mathematics combines sage quotes by

such thinkers as Pythagoras, Richard Feynman and Robert Heinlein with sumptuous images relating to the world of math.

### **Computers, Pattern, Chaos and Beauty**

Filled with more than 200 intricate and eye-popping 3D designs, which can be viewed with the accompanying 3D glasses, a rare glimpse into the world of computer-generated fractal art provides background on everything from the classic Mandelbrot set to ethereal fractal flames. Original.

### **The Book of Black**

A Passion for Mathematics is an educational, entertaining trip through the curiosities of the math world, blending an eclectic mix of history, biography, philosophy, number theory, geometry, probability, huge numbers, and mind-bending problems into a delightfully compelling collection that is sure to please math buffs, students, and experienced mathematicians alike. In each chapter, Clifford Pickover provides factoids, anecdotes, definitions, quotations, and captivating challenges that range from fun, quirky puzzles to insanely difficult problems. Readers will encounter mad mathematicians, strange number sequences, obstinate numbers, curious constants, magic squares, fractal geese, monkeys typing Hamlet, infinity, and much, much more. A Passion for Mathematics will feed readers' fascination while giving them problem-solving skills a great workout!

## Computers and the Imagination

Learn the art of origami in a snap! This beautiful kit, featuring an instructional, step-by-step book, teaches beginners how to fold 30 new and traditional origami models--including flowers, butterflies, safari animals, sea creatures, and geometric shapes.

## The Math Book

"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

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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,

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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

### **Keys to Infinity**

BLACK HOLES A TRAVELER'S GUIDE Clifford Pickover's inventive and entertaining excursion beyond the curves of space and time. "I've enjoyed Clifford Pickover's earlier books . . . now he has ventured into the exploration of black holes. All would-be tourists are strongly advised to read his traveler's guide." -Arthur C. Clarke. "Many books have been written about black holes, but none surpass this one in arousing emotions of awe and wonder towards the mysterious structure of the universe." -Martin Gardner. "Bucky Fuller thought big. Arthur C. Clarke thinks big, but Cliff Pickover outdoes them both." -Wired. "The book is fun, zany, in-your-face, and refreshingly addictive." -Times Higher Education Supplement.

### **Weird Math**

This book will allow you to travel through time and space. To facilitate your journey, the editor has scoured the four corners of the earth in a quest for unusual people and their fascinating patterns. From Mozambique, to Asia, to many European countries, the contributors to The Pattern Book include world-

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famous cancer researchers, little-known artists and eclectic computer programmers. Some of the patterns are ultramodern, while others are centuries old. Many of the patterns are drawn from the universe of mathematics. Computer recipes are scattered throughout. Although the emphasis is on computer-generated patterns, the book is informal and the intended audience spans several fields. The emphasis is on the fun that the true pattern lover finds in doing, rather than in reading about the doing! The book is organized into three main parts: Representing Nature (for those patterns which describe or show real physical phenomena, e.g., visualizations of protein motion, sea lilies, etc.), Mathematics and Symmetry (for those patterns which describe or show mathematical behavior, e.g. fractals), and Human Art (for those patterns which are artistic works of humans and made without the aid of a computer, e.g. Moslem tiling patterns.) Contents: Representing Nature Mathematics and Symmetry Human Art Readership: Computer graphic scientists, computer scientists, artists and mathematicians. keywords: Fractals; Pattern; Computer Graphics; Computer Art; Scientific Visualization; Mathematics; Mandelbrot Set; Tilings; Symmetry; Beauty; Aesthetics; Nature “Fractals can be found everywhere, and Clifford Pickover has done a good job in selecting some of the best. The range of the collection is considerable, from ‘Wood Pattern’ to ‘Trajectories of A Neural Network Quantizer in Rhythm Space’. And all possess a simplistic beauty that justifies the presence of art in the title. Such creations, possessing enormous complexity from very simple origins, truly force us to

stretch our imaginations. All of the generation processes are very easy to understand, and some modifications for additional exploration are obvious ... One more in the collection of works devoted to fractals, this book ranks among the easiest to understand. A natural first book for those interested in fractals as objects of mathematical study or art.” Charles Ashbacher Journal of Recreational Mathematics “Artists, scientists, and computer enthusiasts will be delighted by this inspiring collection of visually striking patterns with accompanying explanations and references.” Julien C Sprott Strange Attractors: Creating Patterns in Chaos “The Pattern Book: Fractals, Art, & Nature — fascinating! A feast for both the eyes and mind! ... This book helps us gain insights on how patterns are created and their scientific connections, while letting us enjoy the impact of their visual beauty. A must for those interested in science, nature, or art.” div style="text-align: right;">Theoni Pappas The Joy of Mathematics and The Magic of Mathematics “Particularly noteworthy are the many contributions by Dr. I D Entwistle, whose name is well known to readers of Fractal Report. The images submitted by him show outstanding originality and artistry; of their class they are unique. Other contributors worthy of special mention here include Earl F Glynn and Mieczyszlaw Szyszkowicz for their striking and original images ... This beautifully illustrated and informative book can be highly recommended.” C J Freeman Fractal Report “Interesting introduction to the world of patterns.” The American Mathematical Monthly “The patterns, many in black and white, some in color, are generally intricate and beautiful. Pseudocode and

code are provided for many of the patterns. The book stimulates experiment. An excellent resource for entry into the world of patterns. Recommended for artists, scientists, and computer enthusiasts, undergraduates through professionals." G J G Junevics Choice "The Pattern Book is a visual smorgasbord ... My first prize goes to the microphotograph of leaf structure showing its dendritic and fractal character." The Chemical Intelligencer

### **Wonders of Numbers**

Filled with an abundance of complex mysteries, sequences, series, puzzles, mazes, and problems, a perplexing journey through the realm of math, mind, and meaning with the author, Dorothy, and Dr. Oz introduces readers to numbers and their role in creativity, computers, games, and practical research. (Science & Mathematics)

### **Euclid's Window**

A History of Mathematics: From Mesopotamia to Modernity covers the evolution of mathematics through time and across the major Eastern and Western civilizations. It begins in Babylon, then describes the trials and tribulations of the Greek mathematicians. The important, and often neglected, influence of both Chinese and Islamic mathematics is covered in detail, placing the description of early Western mathematics in a global context. The book concludes with modern mathematics, covering recent

developments such as the advent of the computer, chaos theory, topology, mathematical physics, and the solution of Fermat's Last Theorem. Containing more than 100 illustrations and figures, this text, aimed at advanced undergraduates and postgraduates, addresses the methods and challenges associated with studying the history of mathematics. The reader is introduced to the leading figures in the history of mathematics (including Archimedes, Ptolemy, Qin Jiushao, al-Kashi, al-Khwarizmi, Galileo, Newton, Leibniz, Helmholtz, Hilbert, Alan Turing, and Andrew Wiles) and their fields. An extensive bibliography with cross-references to key texts will provide invaluable resource to students and exercises (with solutions) will stretch the more advanced reader.

### **A Beginner's Guide to Immortality**

Describing the biology, sociology, and technology of the fictional Latoocarfian civilization of Ganymede, one of Jupiter's moons, this book includes a cornucopia of curiosities--games played on fractal boards, instructions on creating globular star clusters using personal computers, and puzzles to stimulate the imagination.

### **The Biology Book**

Do a little armchair space travel, rub elbows with alien life forms, and stretch your mind to the furthest corners of our uncharted universe. With this astonishing guidebook, you don't have to be an

astronomer to explore the mysteries of stars and their profound meaning for human existence. Clifford A. Pickover tackles a range of topics from stellar evolution to the fundamental reasons why the universe permits life to flourish. He alternates sections that explain the mysteries of the cosmos with sections that dramatize mind-expanding concepts through a fictional dialog between futuristic humans and their alien peers (who embark on a journey beyond the reader's wildest imagination). This highly accessible and entertaining approach turns an intimidating subject into a scientific game open to all dreamers. Told in Pickover's inimitable blend of fascinating state-of-the-art science and whimsical science fiction, and packed with numerous diagrams and illustrations, *The Stars of Heaven* unfolds a world of paradox and mystery, one that will intrigue anyone who has ever pondered the night sky with wonder.

### **The Mathematics of Oz**

The road that leads from the Möbius strip — a common-sense-defying continuous loop with only one side and one edge, made famous by the illustrations of M.C. Escher — goes to some of the strangest spots imaginable. It takes us to where the purely intellectual enters our world: where our senses, overloaded with grocery bills, the price of gas, and what to eat for lunch, are expected to absorb really bizarre ideas. And no better guide to this weird universe exists than the brilliant thinker Clifford A. Pickover, the 21st century's answer to Buckminster Fuller. From molecules and metal sculptures to

postage stamps, architectural structures, and models of the universe, *The Möbius Strip* gives readers a glimpse of new ways of thinking and other worlds as Pickover reaches across cultures and peers beyond our ordinary reality. Lavishly illustrated, this is an infinite fountain of wondrous forms that can be used to help explain how mathematics has permeated every field of scientific endeavor, such as the colors of a sunset or the architecture of our brains; how it helps us build supersonic aircraft and roller coasters, simulate the flow of Earth's natural resources, explore subatomic quantum realities, and depict faraway galaxies.

### **Calculus and Pizza**

The New York Times writes, "Pickover contemplates realms beyond our known reality." From one of the most original voices in imaginative nonfiction comes a stunning novel of speculation on the afterlife, immortality, and the existence of the human soul. "The Heaven Virus" is inspired by virtual universes making headlines today and offers readers a glimpse of ultimate spiritual technologies for the 22nd century and a mystic encounter in an age of electronic gods. "The Heaven Virus" blends humor, psychedelia, and hope in a meditation on the outer limits of our culture, evolutionary destiny, and inner space. This novel will draw readers who have wondered about their own passage from this existence into the world to come. Cliff Pickover is the author of forty books on science, mathematics, art, religion. He received his Ph.D. from Yale University. His website, [Pickover.com](http://Pickover.com), has

received several million visits.

### **The Alien IQ Test**

An examination of how visualization has transformed the way humans perceive and understand their world uses a computer to gain insights into the origins of human creativity. Original.

### **Fractal 3D Magic**

From atoms and fluorescent pigments to sulfa drug synthesis and buckyballs, this lush and authoritative chronology presents 250 milestones in the world of chemistry. As the "central science" that bridges biology and physics, chemistry plays an important role in countless medical and technological advances. Covering entertaining stories and unexpected applications, chemist and journalist Derek B. Lowe traces the most important—and surprising—chemical discoveries.

### **The Paradox of God and the Science of Omniscience**

Fresh, wholesome juices are perfect when you're fasting: they're low calorie, rich in vitamins and minerals, and energy boosting. These 100 recipes are specially designed for either a full or intermittent fast. Each tasty juice comes with a calorie count and nutritional information, and will fill you up so you don't feel deprived. Whether you're looking to detox or spur a sluggish metabolism, these juices will help

you drink your way to health!

### **The Science Book**

Biological data of all kinds is proliferating at an incredible rate. If humans attempt to read such data in the form of numbers and letters, they will take in the information at a snail's pace. If the information is rendered graphically, however, human analysts can assimilate it and gain insight at a much faster rate. The emphasis of this book is on the graphic representation of information-containing sequences such as DNA and amino acid sequences in order to help the human analyst find interesting and biologically relevant patterns. The editor's goal is to make this voyage through molecular biology, genetics and computer graphics as accessible to a broad audience as possible, with the inclusion of glossaries at the end of most chapters and program outlines where applicable. The book will be of most interest to biologists and computer scientists and the various large reference lists should be of interest to beginners and advanced students of biology, graphic art and computer science. Contributors have sought to find pattern and meaning in the cacophony of genetic and protein sequence data using unusual computer graphics and musical techniques.

### **Artificial Intelligence: an Illustrated History**

Containing 250 short, entertaining, and thought-provoking entries, this book explores such engaging

topics as dark energy, parallel universes, the Doppler effect, the God particle, and Maxwell's demon. The timeline extends back billions of years to the hypothetical Big Bang and forward trillions of years to a time of quantum resurrection.

### **The Medical Book**

Humanity's love affair with mathematics and mysticism reached a critical juncture, legend has it, on the back of a turtle in ancient China. As Clifford Pickover briefly recounts in this enthralling book, the most comprehensive in decades on magic squares, Emperor Yu was supposedly strolling along the Yellow River one day around 2200 B.C. when he spotted the creature: its shell had a series of dots within squares. To Yu's amazement, each row of squares contained fifteen dots, as did the columns and diagonals. When he added any two cells opposite along a line through the center square, like 2 and 8, he always arrived at 10. The turtle, unwitting inspirer of the "Yu" square, went on to a life of courtly comfort and fame. Pickover explains why Chinese emperors, Babylonian astrologer-priests, prehistoric cave people in France, and ancient Mayans of the Yucatan were convinced that magic squares--arrays filled with numbers or letters in certain arrangements--held the secret of the universe. Since the dawn of civilization, he writes, humans have invoked such patterns to ward off evil and bring good fortune. Yet who would have guessed that in the twenty-first century, mathematicians would be studying magic squares so immense and in so many dimensions that the objects defy ordinary

human contemplation and visualization? Readers are treated to a colorful history of magic squares and similar structures, their construction, and classification along with a remarkable variety of newly discovered objects ranging from ornate inlaid magic cubes to hypercubes. Illustrated examples occur throughout, with some patterns from the author's own experiments. The tesseracts, circles, spheres, and stars that he presents perfectly convey the age-old devotion of the math-minded to this Zenlike quest. Number lovers, puzzle aficionados, and math enthusiasts will treasure this rich and lively encyclopedia of one of the few areas of mathematics where the contributions of even nonspecialists count.

### **Archimedes to Hawking**

Award-winning author Clifford A. Pickover gathers into one fully illustrated volume the most important thinkers and ideas in the history of science. This unique omnibus edition includes 250 thoughtfully selected entries from many of the science-based books in the Sterling Milestones series, from biology and chemistry to engineering, math, and physics. Featuring a new introduction by Pickover, The Science Book showcases humanity's greatest achievements.

### **The Heaven Virus**

Chronologically documents two hundred and fifty medical milestones from 10,000 B.C. to modern times, including the history of separating conjoined twins, the discovery of viruses, and the Human

Genome Project.

## **Surfing through Hyperspace**

Explores topics related to "black," examining aspects of fashion, philosophy, politics, and popular culture.

## **The Mathematics Devotional**

Through Euclid's Window Leonard Mlodinow brilliantly and delightfully leads us on a journey through five revolutions in geometry, from the Greek concept of parallel lines to the latest notions of hyperspace. Here is an altogether new, refreshing, alternative history of math revealing how simple questions anyone might ask about space -- in the living room or in some other galaxy -- have been the hidden engine of the highest achievements in science and technology. Based on Mlodinow's extensive historical research; his studies alongside colleagues such as Richard Feynman and Kip Thorne; and interviews with leading physicists and mathematicians such as Murray Gell-Mann, Edward Witten, and Brian Greene, Euclid's Window is an extraordinary blend of rigorous, authoritative investigation and accessible, good-humored storytelling that makes a stunningly original argument asserting the primacy of geometry. For those who have looked through Euclid's Window, no space, no thing, and no time will ever be quite the same.

## **A History of Mathematics**

From medieval robots and Boolean algebra to artificial

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neural networks and adversarial patches, this fascinating illustrated history takes readers from past to present in the world of artificial intelligence. Across 100 illustrated entries on computing, medicine, and mythology, as well as on the threat to humanity should AI grow out of control, award-winning science author Clifford A. Pickover takes readers on a fascinating journey of how "AI" developed, where it's going, and how it's being adopted in popular culture.

### **The Maths Book**

This book covers 250 milestones in mathematical history, beginning millions of years ago with ancient "ant odometers" and moving through time to our modern-day quest for new dimensions.

### **The Zen of Magic Squares, Circles, and Stars**

Archimedes to Hawking takes the reader on a journey across the centuries as it explores the eponymous physical laws--from Archimedes' Law of Buoyancy and Kepler's Laws of Planetary Motion to Heisenberg's Uncertainty Principle and Hubble's Law of Cosmic Expansion--whose ramifications have profoundly altered our everyday lives and our understanding of the universe. Throughout this fascinating book, Clifford Pickover invites us to share in the amazing adventures of brilliant, quirky, and passionate people after whom these laws are named. These lawgivers turn out to be a fascinating, diverse, and sometimes eccentric group of people. Many were extremely

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versatile polymaths--human dynamos with a seemingly infinite supply of curiosity and energy and who worked in many different areas in science. Others had non-conventional educations and displayed their unusual talents from an early age. Some experienced resistance to their ideas, causing significant personal anguish. Pickover examines more than 40 great laws, providing brief and cogent introductions to the science behind the laws as well as engaging biographies of such scientists as Newton, Faraday, Ohm, Curie, and Planck. Throughout, he includes fascinating, little-known tidbits relating to the law or lawgiver, and he provides cross-references to other laws or equations mentioned in the book. For several entries, he includes simple numerical examples and solved problems so that readers can have a hands-on understanding of the application of the law. A sweeping survey of scientific discovery as well as an intriguing portrait gallery of some of the greatest minds in history, this superb volume will engage everyone interested in science and the physical world or in the dazzling creativity of these brilliant thinkers.

### **The Physics Book**

"Setting up residence in a pizza parlor, Clifford Pickover focuses on procedures for solving problems, offering short, easy-to-digest chapters that allow you to quickly get the essence of a technique or question. From exponentials and logarithms to derivatives and multiple integrals, the book utilizes pepperoni, meatballs, and more to make complex topics fun to

learn - emphasizing basic, practical principles to help you calculate the speed of tossed pizza dough or the rising cost of eggplant parmigiana. Plus, you'll see how simple math - and a meal - can solve more especially curious and even mind-shattering problems."--BOOK JACKET.

### **Chaos in Wonderland**

Do a little armchair time-travel, rub elbows with a four-dimensional intelligent life form, or stretch your mind to the furthest corner of an uncharted universe. With this astonishing guidebook, *Surfing Through Hyperspace*, you need not be a mathematician or an astrophysicist to explore the all-but-unfathomable concepts of hyperspace and higher-dimensional geometry. No subject in mathematics has intrigued both children and adults as much as the idea of a fourth dimension. Philosophers and parapsychologists have meditated on this mysterious space that no one can point to but may be all around us. Yet this extra dimension has a very real, practical value to mathematicians and physicists who use it every day in their calculations. In the tradition of *Flatland*, and with an infectious enthusiasm, Clifford Pickover tackles the problems inherent in our 3-D brains trying to visualize a 4-D world, muses on the religious implications of the existence of higher-dimensional consciousness, and urges all curious readers to venture into "the unexplored territory lying beyond the prison of the obvious." Pickover alternates sections that explain the science of hyperspace with sections that dramatize mind-expanding concepts

through a fictional dialogue between two futuristic FBI agents who dabble in the fourth dimension as a matter of national security. This highly accessible and entertaining approach turns an intimidating subject into a scientific game open to all dreamers. Surfing Through Hyperspace concludes with a number of puzzles, computer experiments and formulas for further exploration, inviting readers to extend their minds across this inexhaustibly intriguing scientific terrain.

### **Black Holes**

A Beginner's Guide to Immortality is a celebration of unusual lives and creative thinkers who punched through ordinary cultural norms while becoming successful in their own niches. In his latest and greatest work, world-renowned science writer Cliff Pickover studies such colorful characters as Truman Capote, John Cage, Stephen Wolfram, Ray Kurzweil, and Wilhelm Rontgen, and their curious ideas. Through these individuals, we can better explore life's astonishing richness and glimpse the diversity of human imagination. Part memoir and part surrealistic perspective on culture, A Beginner's Guide to Immortality gives readers a glimpse of new ways of thinking and of other worlds as he reaches across cultures and peers beyond our ordinary reality. He illuminates some of the most mysterious phenomena affecting our species. What is creativity? What are the religious implications of mosquito evolution, simulated Matrix realities, the brain's own marijuana, and the mathematics of the apocalypse? Could we be

a mere software simulation living in a matrix? Who is Elisabeth Kübler-Ross and Emanuel Swedenborg? Did church forefathers eat psychedelic snails? How can we safely expand our minds to become more successful and reason beyond the limits of our own intuition? How can we become immortal?

### **The Medical Book**

This book covers 250 milestones in mathematical history, beginning millions of years ago with ancient "ant odometers" and moving through time to our modern-day quest for new dimensions.

### **The Loom of God**

Who were the five strangest mathematicians in history? What are the ten most interesting numbers? Jam-packed with thought-provoking mathematical mysteries, puzzles, and games, Wonders of Numbers will enchant even the most left-brained of readers. Hosted by the quirky Dr. Googol--who resides on a remote island and occasionally collaborates with Clifford Pickover--Wonders of Numbers focuses on creativity and the delight of discovery. Here is a potpourri of common and unusual number theory problems of varying difficulty--each presented in brief chapters that convey to readers the essence of the problem rather than its extraneous history. Peppered throughout with illustrations that clarify the problems, Wonders of Numbers also includes fascinating "math gossip." How would we use numbers to communicate with aliens? Check out Chapter 30. Did you know that

there is a Numerical Obsessive-Compulsive Disorder? You'll find it in Chapter 45. From the beautiful formula of India's most famous mathematician to the Leviathan number so big it makes a trillion look small, Dr. Googol's witty and straightforward approach to numbers will entice students, educators, and scientists alike to pick up a pencil and work a problem.

### **The Pattern Book: Fractals, Art, and Nature**

With the aid of diagrams, a science-fiction tale, and examples from philosophy, music, and modern physics, a writer for Discover magazine invites readers to the forefront of science to explore the mysterious nature of time. UP.

### **The Engineering Book**

In his most ambitious book yet, Clifford Pickover bridges the gulf between logic, spirit, science, and religion. While exploring the concept of omniscience, Pickover explains the kinds of relationships limited beings can have with an all-knowing God. Pickover's thought exercises, controversial experiments, and practical analogies help us transcend our ordinary lives while challenging us to better understand our place in the cosmos and our dreams of a supernatural God. Through an inventive blend of science, history, philosophy, science fiction, and mind-stretching brainteasers, Pickover unfolds the paradoxes of God like no other writer. He provides glimpses into the

infinite, allowing us to think big, and to have daring, limitless dreams.

### **Time**

What is an imaginary number? Can two parallel lines ever meet? How can maths help us predict the future? Charting the development of maths around the world from Babylon to Bletchley Park, this book explores big questions like these and explains how the answers help us understand everything from patterns in nature to artificial intelligence. Written in clear English, The Maths Book is packed with short, pithy explanations that cut through the jargon, step-by-step diagrams that untangle knotty theories, memorable quotes, and witty illustrations that play with our ideas about numbers. This diverse and inclusive account of mathematics will have something for everybody, including the maths behind world economies and espionage. But it also traces the history of maths, from ancient ideas such as magic squares and the abacus to modern cryptography, fractals, and the final proof of Fermat's Last Theorem. Continuing the "Big Ideas" series' trademark combination of authoritative, clear text and bold graphics, The Maths Book uses an innovative visual approach to make the subject accessible to everyone, whether you're an avid student or just curious about maths.

### **The Möbius Strip**

A successful science writer and a teenage math prodigy reveal the complex mathematics that is all

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around us Everyone has stared at the crumpled page of a math assignment and wondered, where on Earth will I ever use this? It turns out, Earth is precisely the place. As teen math prodigy Agnijo Banerjee and his teacher David Darling reveal, complex math surrounds us. If we think long enough about the universe, we're left not with material stuff, but a ghostly and beautiful set of equations. Packed with puzzles and paradoxes, mind-bending concepts, and surprising solutions, *Weird Math* leads us from a lyrical exploration of mathematics in our universe to profound questions about God, chance, and infinity. A magical introduction to the mysteries of math, it will entrance beginners and seasoned mathematicians alike.

## **The Chemistry Book**

The history of medicine is as old as the history of human civilization. In *The Medical Book*, popular science writer Clifford A. Pickover explores 250 milestone discoveries in medicine that span more than 12,000 years. Whether writing on 'hard science' topics such as DNA structure, reverse transcriptase and AIDS, polymerase chain reaction, and magnetic resonance imaging (MRI), or ideas from the medical fringe such as witch doctors, patent medicines, bloodletting, and near-death experiences, Pickover brings insight and acumen to the broad spectrum of medical studies and makes it understandable to all readers. This volume is abundantly illustrated in full colour with clinical and historical art.

## **Visualizing Biological Information**

Make 25 fantastic fliers! You can create a sky-full of fabulous-looking paper planes, from old-time gliders to cutting-edge jets, that soar, swoop, sail and dive. The projects include fascinating background information on every model.

## **The Physics Devotional**

Presents a collection of exercises and puzzles that test mental acuity, mathematical prowess, abstract reasoning, moral sensitivity, and concepts of beauty.

## **The Stars of Heaven**

Fractals and chaos theory lead to startling graphics in this book by a renowned scientist, inventor, and artist, who coordinates information from disparate fields. Over 275 illustrations, 29 in color.

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