Cut The Knot Probability Riddles

Intuitive Probability and Random Processes using MATLAB®Mathematics and ComputationPatterns of the Universe40 Puzzles and Problems in Probability and Mathematical StatisticsRings and HomologyEssential Calculus with ApplicationsIncertoMage Merlin's Unsolved Mathematical MysteriesMathematical Fallacies and ParadoxesThe Moscow PuzzlesLuck, Logic, and White LiesMathematical PuzzlesAlgebra: A Very Short IntroductionGames for Your MindCut the KnotTen Great Ideas about ChanceThe Joy of SETThe Power of Logical ThinkingThe Blank SwanAnalysis IILet's Play Math536 Puzzles and Curious ProblemsClassic Problems of ProbabilityA Mathematical MosaicProof and the Art of MathematicsWhat is Mathematical Analysis?Counterexamples in ProbabilityHexaflexagons and Other Mathematical DiversionsDuelling Idiots and Other Probability PuzzlersFifty Challenging Problems in Probability with SolutionsWhat's Happening in the Mathematical SciencesProblems in Probability Theory, Mathematical Statistics and Theory of Random FunctionsThe Math of Life and DeathProbabilityIntroduction to ProbabilityStatistical Consequences of Fat TailsConcepts and Problems for Mathematical CompetitorsThe Best Writing on Mathematics 2020Perilous Problems for Puzzle LoversDifferential Topology

Intuitive Probability and Random Processes using MATLAB®

Approximately 1,000 problems — with answers and solutions included at the back of the book — illustrate such topics as random events, random variables, limit theorems, Markov processes, and much more.

Mathematics and Computation

Counterexamples (in the mathematical sense) are powerful tools of mathematical theory. This book covers counterexamples from probability theory and stochastic processes. This new expanded edition includes many examples and the latest research results. The author is regarded as one of the foremost experts in the field. Contains numbers examples.

Patterns of the Universe

A brilliant and entertaining mathematician illuminates seven mathematical principles that shape our lives. "Kit Yates shows how our private and social lives are suffused by mathematics. Ignorance may bring tragedy or farce. This is an exquisitely interesting book. It's a deeply serious one too and, for those like me who have little math, it's delightfully readable." —Ian McEwan, author of Atonement "Kit Yates is a natural storyteller. Through fascinating stories and examples, he shows how maths is the beating heart of so much of modern life. An exciting new voice in the world of science communication."

—Marcus du Sautoy, author of The Music of the Primes From birthdays to birth rates to how we perceive the passing of time, mathematical patterns shape our lives. But for those of us who left math behind in high school, the numbers and figures hurled at us as we go about our days can sometimes leave us scratching our heads and feeling as if we're fumbling through a mathematical minefield. In this eye-opening and extraordinarily accessible book, mathematician Kit Yates illuminates hidden principles that can help us understand and navigate the chaotic and often opaque surfaces of our world. In The Math of Life and Death, Yates takes us on a fascinating tour of everyday situations and grand-scale applications of mathematical concepts, including exponential growth and decay, optimization, statistics and probability, and number systems. Along the way he reveals the mathematical undersides of controversies over DNA testing, medical screening results, and historical events such as the Chernobyl disaster and the Amanda Knox trial. Readers will finish this book with an enlightened perspective on the news, the law, medicine, and history, and will be better equipped to make personal decisions and solve problems with math in mind, whether it's choosing the shortest checkout line at the grocery store or halting the spread of a deadly disease.

40 Puzzles and Problems in Probability and Mathematical Statistics

The year's finest mathematical writing from around the world This annual anthology brings together the year's finest mathematics writing from around the world. Featuring promising new voices alongside some of the foremost names in the field, The Best Writing on Mathematics 2020 makes available to a wide audience many articles not easily found anywhere else—and you don't need to be a mathematician to enjoy them. These writings offer surprising insights into the nature, meaning, and practice of mathematics today. They delve into the history, philosophy, teaching, and everyday aspects of math, and take readers behind the scenes of today's hottest mathematical debates. Here, Steven Strogatz reveals how calculus drives advances in virology, Paul Thagard argues that the power of mathematics stems from its combination of realistic and fictional qualities, and Erica Klarreich describes how Hao Huang used the combinatorics of cube nodes to solve a longstanding problem in computer science. In other essays, John Baez tells how he discovered the irresistible attractions of algebraic geometry, Mark Colyvan compares the radically different explanatory practices of mathematics and science, and Boris Odehnal reviews some surprising properties of multidimensional geometries. And there's much, much more. In addition to presenting the year's most memorable writings on mathematics, this must-have anthology includes a bibliography of other notable writings and an introduction by the editor. This book belongs on the shelf of anyone interested in where math has taken us—and where it is headed.

Rings and Homology

This book is written for high school and college students learning about probability for the first time. It will appeal to the reader who has a healthy level of enthusiasm for understanding how and why the various results of probability come about. All of the standard introductory topics in probability are covered: combinatorics, the rules of probability, Bayes' theorem, expectation value, variance, probability density, common distributions, the law of large numbers, the central limit theorem, correlation, and regression. Calculus is not a prerequisite, although a few of the problems do involve calculus. These are marked clearly. The book features 150 worked-out problems in the form of examples in the text and solved problems at the end of each chapter. These problems, along with the discussions in the text, will be a valuable resource in any introductory probability course, either as the main text or as a helpful supplement.

Essential Calculus with Applications

An introduction to computational complexity theory, its connections and interactions with mathematics, and its central role in the natural and social sciences, technology, and philosophy Mathematics and Computation provides a broad, conceptual overview of computational complexity theory—the mathematical study of efficient computation. With important practical applications to computer science and industry, computational complexity theory has evolved into a highly interdisciplinary field, with strong links to most mathematical areas and to a growing number of scientific endeavors. Avi Wigderson takes a sweeping survey of complexity theory, emphasizing the field's insights and challenges. He explains the ideas and motivations leading to key models, notions, and results. In particular, he looks at algorithms and complexity, computations and proofs, randomness and interaction, quantum and arithmetic computation, and cryptography and learning, all as parts of a cohesive whole with numerous cross-influences. Wigderson illustrates the immense breadth of the field, its beauty and richness, and its diverse and growing interactions with other areas of mathematics. He ends with a comprehensive look at the theory of computation, its methodology and aspirations, and the unique and fundamental ways in which it has shaped and will further shape science, technology, and society. For further reading, an extensive bibliography is provided for all topics covered. Mathematics and Computation is useful for undergraduate and graduate students in mathematics, computer science, and related fields, as well as researchers and teachers in these fields. Many parts require little background, and serve as an invitation to newcomers seeking an introduction to the theory of computation. Comprehensive coverage of computational complexity theory, and beyond High-level, intuitive exposition, which brings conceptual clarity to this central and dynamic scientific discipline Historical accounts of the evolution and motivations of central concepts and models A broad view of the theory

of computation's influence on science, technology, and society
Extensive bibliography

Incerto

Mage Merlin's Unsolved Mathematical Mysteries

He who untied the Gordian knot would rule all of Asia So goes the
legend of the tricky knot of Gordius, king of Phrygia.Many had tried;
many had failed, but Alexander the Great simplycut the knot with his
sword. He went on to conquer most of Asia, eventually reaching as far
east as Northern India. Cut the Knot is a book of probability riddles
curated to challenge the mind andexpand mathematical and logical
thinking skills. First housed on cut-the-knot.org, these puzzles and
their solutions represent the efforts of great minds around theworld.
Follow along as Alexander Bogomolny presents these selected riddles
bytopical progression. Try them for yourself before reading their
solutions. Just like itwas for Alexander the Great, the non-trivial,
unexpected solution might be exactlythe one you need.

Mathematical Fallacies and Paradoxes

The landmark five-book series--now in a beautifully designed, cloth-
bound deluxe hardcover boxed set The Incerto is an investigation of
opacity, luck, uncertainty, probability, human error, risk, and
decision making when we don't understand the world, expressed in the
form a personal essay with autobiographical sections, stories,
parables, and philosophical, historical, and scientific discussions,
in non-overlapping volumes that can be accessed in any order. The main
thread is that while there is inordinate uncertainty about what is
going on, there is great certainty as to what one should do about it.
This deluxe boxed set includes: FOOLED BY RANDOMNESS THE BLACK SWAN
THE BED OF PROCRUSTES ANTIFRAGILE SKIN IN THE GAME

The Moscow Puzzles

Put your wits—and survival instincts—to the test! Publisher's Note:
Perilous Problems for Puzzle Lovers was previously published in the UK
under the title So You Think You've Got Problems? In Perilous Problems
for Puzzle Lovers, Alex Bellos collects 125 of the world's greatest
stumpers—many dangerous to your person, and all dangerous to your
pride. Brace yourself to wrestle with wordplay, grapple with geometry,
and scramble for survival. For example . . . Ten lions and a sheep are
in a pen. Any lion who eats the sheep will fall asleep. A sleeping
lion will be eaten by another lion, who falls asleep in turn. If the
lions are all perfect logicians, what happens? Bellos pairs his
fiendish brainteasers with fascinating history, so you'll meet Alcuin,
Sam Loyd, and other puzzle masters of yore—in between deranged despots

and wily jailers with an unaccountable taste for riddles. Will you make it out alive? And what about the sheep?

Luck, Logic, and White Lies

Intuitive Probability and Random Processes using MATLAB® is an introduction to probability and random processes that merges theory with practice. Based on the author's belief that only "hands-on" experience with the material can promote intuitive understanding, the approach is to motivate the need for theory using MATLAB examples, followed by theory and analysis, and finally descriptions of "real-world" examples to acquaint the reader with a wide variety of applications. The latter is intended to answer the usual question "Why do we have to study this?" Other salient features are: *heavy reliance on computer simulation for illustration and student exercises *the incorporation of MATLAB programs and code segments *discussion of discrete random variables followed by continuous random variables to minimize confusion *summary sections at the beginning of each chapter *in-line equation explanations *warnings on common errors and pitfalls *over 750 problems designed to help the reader assimilate and extend the concepts Intuitive Probability and Random Processes using MATLAB® is intended for undergraduate and first-year graduate students in engineering. The practicing engineer as well as others having the appropriate mathematical background will also benefit from this book. About the Author Steven M. Kay is a Professor of Electrical Engineering at the University of Rhode Island and a leading expert in signal processing. He has received the Education Award "for outstanding contributions in education and in writing scholarly books and texts" from the IEEE Signal Processing society and has been listed as among the 250 most cited researchers in the world in engineering.

Mathematical Puzzles

What are your chances of dying on your next flight, being called for jury duty, or winning the lottery? We all encounter probability problems in our everyday lives. In this collection of twenty-one puzzles, Paul Nahin challenges us to think creatively about the laws of probability as they apply in playful, sometimes deceptive, ways to a fascinating array of speculative situations. Games of Russian roulette, problems involving the accumulation of insects on flypaper, and strategies for determining the odds of the underdog winning the World Series all reveal intriguing dimensions to the workings of probability. Over the years, Nahin, a veteran writer and teacher of the subject, has collected these and other favorite puzzles designed to instruct and entertain math enthusiasts of all backgrounds. If idiots A and B alternately take aim at each other with a six-shot revolver containing one bullet, what is the probability idiot A will win? What are the chances it will snow on your birthday in any given year? How can researchers use coin flipping and the laws of probability to obtain honest answers to embarrassing survey questions?

The solutions are presented here in detail, and many contain a profound element of surprise. And some puzzles are beautiful illustrations of basic mathematical concepts: "The Blind Spider and the Fly," for example, is a clever variation of a "random walk" problem, and "Duelling Idiots" and "The Underdog and the World Series" are straightforward introductions to binomial distributions. Written in an informal way and containing a plethora of interesting historical material, Duelling Idiots is ideal for those who are fascinated by mathematics and the role it plays in everyday life and in our imaginations.

Algebra: A Very Short Introduction

A mathematical exploration of the popular card game SET Have you ever played the addictive card game SET? Have you ever wondered about the connections between games and mathematics? If the answer to either question is "yes," then The Joy of SET is the book for you! The Joy of SET takes readers on a fascinating journey into this seemingly simple card game and reveals its surprisingly deep and diverse mathematical dimensions. Absolutely no mathematical background is necessary to enjoy this book—all you need is a sense of curiosity and adventure! The first book devoted to the mathematics of one of today's most popular card games, The Joy of SET will entertain and enlighten the game enthusiast in all of us.

Games for Your Mind

Calculus is an extremely powerful tool for solving a host of practical problems in fields as diverse as physics, biology, and economics, to mention just a few. In this rigorous but accessible text, a noted mathematician introduces undergraduate-level students to the problem-solving techniques that make a working knowledge of calculus indispensable for any mathematician. The author first applies the necessary mathematical background, including sets, inequalities, absolute value, mathematical induction, and other "precalculus" material. Chapter Two begins the actual study of differential calculus with a discussion of the key concept of function, and a thorough treatment of derivatives and limits. In Chapter Three differentiation is used as a tool; among the topics covered here are velocity, continuous and differentiable functions, the indefinite integral, local extrema, and concrete optimization problems. Chapter Four treats integral calculus, employing the standard definition of the Riemann integral, and deals with the mean value theorem for integrals, the main techniques of integration, and improper integrals. Chapter Five offers a brief introduction to differential equations and their applications, including problems of growth, decay, and motion. The final chapter is devoted to the differential calculus of functions of several variables. Numerous problems and answers, and a newly added section of "Supplementary Hints and Answers," enable the student to test his grasp of the material before going on. Concise and well

written, this text is ideal as a primary text or as a refresher for anyone wishing to review the fundamentals of this crucial discipline.

Cut the Knot

Research in mathematics is much more than solving puzzles, but most people will agree that solving puzzles is not just fun: it helps focus the mind and increases one's armory of techniques for doing mathematics. Mathematical Puzzles makes this connection explicit by isolating important mathematical methods, then using them to solve puzzles and prove a theorem. Features A collection of the world's best mathematical puzzles Each chapter features a technique for solving mathematical puzzles, examples, and finally a genuine theorem of mathematics that features that technique in its proof Puzzles that are entertaining, mystifying, paradoxical, and satisfying; they are not just exercises or contest problems.

Ten Great Ideas about Chance

This is part two of a two-volume book on real analysis and is intended for senior undergraduate students of mathematics who have already been exposed to calculus. The emphasis is on rigour and foundations of analysis. Beginning with the construction of the number systems and set theory, the book discusses the basics of analysis (limits, series, continuity, differentiation, Riemann integration), through to power series, several variable calculus and Fourier analysis, and then finally the Lebesgue integral. These are almost entirely set in the concrete setting of the real line and Euclidean spaces, although there is some material on abstract metric and topological spaces. The book also has appendices on mathematical logic and the decimal system. The entire text (omitting some less central topics) can be taught in two quarters of 25-30 lectures each. The course material is deeply intertwined with the exercises, as it is intended that the student actively learn the material (and practice thinking and writing rigorously) by proving several of the key results in the theory.

The Joy of SET

This compilation of long-inaccessible puzzles by a famous puzzle master offers challenges ranging from arithmetical and algebraical problems to those involving geometry, combinatorics, and topology, plus game, domino, and match puzzles. Includes answers.

The Power of Logical Thinking

This book considers a specific problem—generally a game or game fragment, and introduces the mathematical methods. It contains a section on the historical development of the theories of games of chance, and combinatorial and strategic games.

The Blank Swan

"A coloring book that reveals math's hidden beauty and contemplative power as never before with 78 coloring designs and games that explore symmetry, fractals, tessellations, randomness, and more."--

Analysis II

How to write mathematical proofs, shown in fully-worked out examples. This is a companion volume Joel Hamkins's Proof and the Art of Mathematics, providing fully worked-out solutions to all of the odd-numbered exercises as well as a few of the even-numbered exercises. In many cases, the solutions go beyond the exercise question itself to the natural extensions of the ideas, helping readers learn how to approach a mathematical investigation. As Hamkins asks, "Once you have solved a problem, why not push the ideas harder to see what further you can prove with them?" These solutions offer readers examples of how to write a mathematical proofs. The mathematical development of this text follows the main book, with the same chapter topics in the same order, and all theorem and exercise numbers in this text refer to the corresponding statements of the main text.

Let's Play Math

Prep for competitions at level of International Mathematical Olympiad and Putnam competition covers counting methods, number theory, inequalities and theory of equations, metrical geometry, analysis, number representations and logic. 2020 edition.

536 Puzzles and Curious Problems

A lively and engaging look at logic puzzles and their role in recreation, mathematics, and philosophy Logic puzzles were first introduced to the public by Lewis Carroll in the late nineteenth century and have been popular ever since. Games like Sudoku and Mastermind are fun and engrossing recreational activities, but they also share deep foundations in mathematical logic and are worthy of serious intellectual inquiry. Games for Your Mind explores the history and future of logic puzzles while enabling you to test your skill against a variety of puzzles yourself. In this informative and entertaining book, Jason Rosenhouse begins by introducing readers to logic and logic puzzles and goes on to reveal the rich history of these puzzles. He shows how Carroll's puzzles presented Aristotelian logic as a game for children, yet also informed his scholarly work on logic. He reveals how another pioneer of logic puzzles, Raymond Smullyan, drew on classic puzzles about liars and truthtellers to illustrate Kurt Gödel's theorems and illuminate profound questions in mathematical logic. Rosenhouse then presents a new vision for the future of logic puzzles based on nonclassical logic, which is used

today in computer science and automated reasoning to manipulate large and sometimes contradictory sets of data. Featuring a wealth of sample puzzles ranging from simple to extremely challenging, this lively and engaging book brings together many of the most ingenious puzzles ever devised, including the "Hardest Logic Puzzle Ever," metapuzzles, paradoxes, and the logic puzzles in detective stories.

Classic Problems of Probability

"Elie Ayache is the only person to present arguments about The Black Swan and rare events that I had not thought about. He does what philosophical inquiry has always done: to go the extra mile and look at the world in a deeply philosophical way." Nassim Nicholas Taleb, PhD, author of The Black Swan, Distinguished Professor, New York University Polytechnic Institute & Principal, Universa Investments. "Elie Ayache has uniquely straddled the down-to-earth world of money and complex financial derivatives and the abstract world of the mind and philosophy. Insightful and insane in equal measures, this book is not an easy read. I wouldn't recommend this for holiday reading on the beach but perhaps for while sitting in front of a log fire with a large Scotch, or probably several.??? Paul Wilmott, author of Frequently Asked Questions in Quantitative Finance October 19th 1987 was a day of huge change for the global finance industry. On this day the stock market crashed, the Nobel Prize winning Black-Scholes formula failed and volatility smiles were born, and on this day Elie Ayache began his career, on the trading floor of the French Futures and Options Exchange. Experts everywhere sought to find a model for this event, and ways to simulate it in order to avoid a recurrence in the future, but the one thing that struck Elie that day was the belief that what actually happened on 19th October 1987 is simply non reproducible outside 19th October 1987 - you cannot reduce it to a chain of causes and effects, or even to a random generator, that can then be reproduced or represented in a theoretical framework. The Blank Swan is Elie's highly original treatise on the financial markets - presenting a totally revolutionary rethinking of derivative pricing and technology. It is not a diatribe against Nassim Taleb's The Black Swan, but criticises the whole background or framework of predictable and unpredictable events - white and black swans alike - , i.e. the very category of prediction. In this revolutionary book, Elie redefines the components of the technology needed to price and trade derivatives. Most importantly, and drawing on a long tradition of philosophy of the event from Henri Bergson to Gilles Deleuze, to Alain Badiou, and on a recent brand of philosophy of contingency, embodied by the speculative materialism of Quentin Meillassoux, Elie redefines the market itself against the common perceptions of orthodox financial theory, general equilibrium theory and the sociology of finance. This book will change the way that we think about derivatives and approach the market. If anything, derivatives should be renamed contingent claims, where contingency is now absolute and no longer derivative, and the market is just its medium. The book also establishes the

missing link between quantitative modelling (no longer dependent on probability theory but on a novel brand of mathematics which Elie calls the mathematics of price) and the reality of the market."

A Mathematical Mosaic

In the sixteenth and seventeenth centuries, gamblers and mathematicians transformed the idea of chance from a mystery into the discipline of probability, setting the stage for a series of breakthroughs that enabled or transformed innumerable fields, from gambling, mathematics, statistics, economics, and finance to physics and computer science. This book tells the story of ten great ideas about chance and the thinkers who developed them, tracing the philosophical implications of these ideas as well as their mathematical impact.

Proof and the Art of Mathematics

Featured topics include permutations and factorials, probabilities and odds, frequency interpretation, mathematical expectation, decision making, postulates of probability, rule of elimination, much more. Exercises with some solutions. Summary. 1973 edition.

What is Mathematical Analysis?

The book investigates the misapplication of conventional statistical techniques to fat tailed distributions and looks for remedies, when possible. Switching from thin tailed to fat tailed distributions requires more than "changing the color of the dress." Traditional asymptotics deal mainly with either n=1 or n=?, and the real world is in between, under the "laws of the medium numbers"-which vary widely across specific distributions. Both the law of large numbers and the generalized central limit mechanisms operate in highly idiosyncratic ways outside the standard Gaussian or Levy-Stable basins of convergence. A few examples: - The sample mean is rarely in line with the population mean, with effect on "naïve empiricism," but can be sometimes be estimated via parametric methods. - The "empirical distribution" is rarely empirical. - Parameter uncertainty has compounding effects on statistical metrics. - Dimension reduction (principal components) fails. - Inequality estimators (Gini or quantile contributions) are not additive and produce wrong results. - Many "biases" found in psychology become entirely rational under more sophisticated probability distributions. - Most of the failures of financial economics, econometrics, and behavioral economics can be attributed to using the wrong distributions. This book, the first volume of the Technical Incerto, weaves a narrative around published journal articles.

Counterexamples in Probability

Differential Topology provides an elementary and intuitive introduction to the study of smooth manifolds. In the years since its first publication, Guillemin and Pollack's book has become a standard text on the subject. It is a jewel of mathematical exposition, judiciously picking exactly the right mixture of detail and generality to display the richness within. The text is mostly self-contained, requiring only undergraduate analysis and linear algebra. By relying on a unifying idea--transversality--the authors are able to avoid the use of big machinery or ad hoc techniques to establish the main results. In this way, they present intelligent treatments of important theorems, such as the Lefschetz fixed-point theorem, the Poincaré-Hopf index theorem, and Stokes theorem. The book has a wealth of exercises of various types. Some are routine explorations of the main material. In others, the students are guided step-by-step through proofs of fundamental results, such as the Jordan-Brouwer separation theorem. An exercise section in Chapter 4 leads the student through a construction of de Rham cohomology and a proof of its homotopy invariance. The book is suitable for either an introductory graduate course or an advanced undergraduate course.

Hexaflexagons and Other Mathematical Diversions

This book is based on the view that cognitive skills are best acquired by solving challenging, non-standard probability problems. Many puzzles and problems presented here are either new within a problem solving context (although as topics in fundamental research they are long known) or are variations of classical problems which follow directly from elementary concepts. A small number of particularly instructive problems is taken from previous sources which in this case are generally given. This book will be a handy resource for professors looking for problems to assign, for undergraduate math students, and for a more general audience of amateur scientists.

Duelling Idiots and Other Probability Puzzlers

"This is a graphically bold, story-driven book, accessible to readers with a middle-school math background, that engagingly introduces readers to 16 unsolved mathematical puzzles. There are two main (fictional) characters in the book: "Mage" Maryam (named in honor of the late Maryam Mirzakhani, the only woman Fields Medalist), a young female mathematician who discovers that she is a descendant of the other main character, Merlin (of the Arthurian fables). Before she dies, Maryam's grandmother hands her Merlin's lost math journal containing problems he was summoned by Camelot to solve but failed to do so. Maryam briefly introduces the 16 entries from Merlin's journal (and the corresponding math topic), then Merlin describes the problem (accompanied by beautiful illustrations), then Maryam follows up with a deeper explanation of the math, the history of the puzzle, and how close mathematicians have come to solving it"--

Fifty Challenging Problems in Probability with Solutions

Argues that Americans must improve their understanding of probability and logic

What's Happening in the Mathematical Sciences

This is, quite simply, the best and most popular puzzle book ever published in the Soviet Union. Since its first appearance in 1956 there have been eight editions as well as translations from the original Russian into Ukrainian, Estonian, Lettish, and Lithuanian. Almost a million copies of the Russian version alone have been sold. Part of the reason for the book's success is its marvelously varied assortment of brainteasers ranging from simple "catch" riddles to difficult problems (none, however, requiring advanced mathematics). Many of the puzzles will be new to Western readers, while some familiar problems have been clothed in new forms. Often the puzzles are presented in the form of charming stories that provide non-Russian readers with valuable insights into contemporary Russian life and customs. In addition, Martin Gardner, former editor of the Mathematical Games Department, Scientific American, has clarified and simplified the book to make it as easy as possible for an English-reading public to understand and enjoy. He has been careful, moreover, to retain nearly all the freshness, warmth, and humor of the original. Lavishly illustrated with over 400 clear diagrams and amusing sketches, this inexpensive edition of the first English translation will offer weeks or even months of stimulating entertainment. It belongs in the library of every puzzlist or lover of recreational mathematics.

Problems in Probability Theory, Mathematical Statistics and Theory of Random Functions

Remarkable puzzlers, graded in difficulty, illustrate elementary and advanced aspects of probability. These problems were selected for originality, general interest, or because they demonstrate valuable techniques. Also includes detailed solutions.

The Math of Life and Death

Detailing the history of probability, this book examines the classic problems of probability that have shaped the field and emphasizes problems that are counter-intuitive by nature. Classic Problems of Probability is rich in the history of probability while keeping the explanations and discussions as accessible as possible.

Probability

Introduction to Probability

Statistical Consequences of Fat Tails

Martin Gardner's Mathematical Games columns in Scientific American inspired and entertained several generations of mathematicians and scientists. Gardner in his crystal-clear prose illuminated corners of mathematics, especially recreational mathematics, that most people had no idea existed. His playful spirit and inquisitive nature invite the reader into an exploration of beautiful mathematical ideas along with him. These columns were both a revelation and a gift when he wrote them; no one--before Gardner--had written about mathematics like this. They continue to be a marvel. This volume, originally published in 1959, contains the first sixteen columns published in the magazine from 1956-1958. They were reviewed and briefly updated by Gardner for this 1988 edition.

Concepts and Problems for Mathematical Competitors

Ravi Vakil, described in the San Francisco Chronicle as "a legend in the world of math competitions" has finally released his long-awaited second edition of A Mathematical Mosaic: Patterns & Problem Solving. Regarded by many as a seminal book in the field of mathematics competitions, the first edition of A Mathematical Mosaic has received wide acclaim from mathematics teachers, professors and the mathematics community at large. In a review in The Mathematics Teacher, high school teacher John Cocharo wrote, "Without a doubt, this book is a must for any library, teacher's reference or student's amusement." André Toom in his review in the Mathematical Monthly observed, "[A Mathematical Mosaic] speaks in an interesting and understandable way about number theory, combinatorics, game theory, geometry, and calculus, to say nothing about magic tricks, puzzles and other digressions. What is most important is that whenever Vakil starts to discuss something, he never leaves the reader without a piece of exact, rigorous knowledge."

The Best Writing on Mathematics 2020

Algebra marked the beginning of modern mathematics, moving it beyond arithmetic, which involves calculations featuring given numbers, to problems where some quantities are unknown. Now, it stands as a pillar of mathematics, underpinning the quantitative sciences, both social and physical. This Very Short Introduction explains algebra from scratch. Over the course of ten logical chapters, Higgins offers a step by step approach for readers keen on developing their understanding of algebra. Using theory and example, he renews the reader's aquaintance with school mathematics, before taking them progressively further and deeper into the subject. 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.

Perilous Problems for Puzzle Lovers

This concise text is geared toward students of mathematics who have completed a basic college course in algebra. Combining material on ring structure and homological algebra, the treatment offers advanced undergraduate and graduate students practice in the techniques of both areas. After a brief review of basic concepts, the text proceeds to an examination of ring structure, with particular attention to the structure of semisimple rings with minimum condition. Subsequent chapters develop certain elementary homological theories, introducing the functor Ext and exploring the various projective dimensions, global dimension, and duality theory. Each chapter concludes with a set of exercises.

Differential Topology

Stimulating, thought-provoking analysis of the most interesting intellectual inconsistencies in mathematics, physics, and language, including being led astray by algebra (De Morgan's paradox). 1982 edition.

Read More About Cut The Knot Probability Riddles