Innumeracy - Mathematical Illiteracy and Its Consequences

Why do even well-educated people understand so little about mathematics? And what are the costs of our innumeracy? John Allen Paulos, in his celebrated bestseller first published in 1988, argues that our inability to deal rationally with very large numbers and the probabilities associated with them results in misinformed governmental policies, confused personal decisions, and an increased susceptibility to pseudoscience of all kinds. Innumeracy lets us know what we're missing, and how we can do something about it. Sprinkling his discussion of numbers and probabilities with quirky stories and anecdotes, Paulos ranges freely over many aspects of modern life, from contested elections to sports stats, from stock scams and newspaper psychics to diet and medical claims, sex discrimination, insurance, lotteries, and drug testing. Readers of Innumeracy will be rewarded with scores of astonishing facts, a fistful of powerful ideas, and, most important, a clearer, more quantitative way of looking at their world.

A Mathematician Reads the Newspaper

John Allen Paulos is a master at shedding mathematical lights on our everyday world: What exactly did Lani Guinier say about quotas? What is the probability of identifying a murderer through DNA testing? Which are the real risks to our health and which the phony ones? Employing the same fun-filled, user-friendly, and quirkily insightful approach that put Innumeracy on best-seller lists, Paulos now leads us through the pages of the daily newspaper, revealing the hidden mathematical angles of countless articles. From the Senate, the SATs, and sex to crime, celebrities, and cults, Paulos takes stories that may not seem to involve mathematics at all and demonstrates how mathematical naivetean put readers at a distinct disadvantage. Whether he's using chaos theory to puncture economic and environmental predictions, applying logic and self-reference to clarify the hazards of spin doctoring and news compression, or employing arithmetic and common sense to give us a novel perspective on greed and relationships, Paulos never fails to entertain and enlighten. Even if you hated math in school, you'll love the numerical vignettes in this book.

Beyond Numeracy


Mathematics and Humor
John Allen Paulos cleverly scrutinizes the mathematical structures of jokes, puns, paradoxes, spoonerisms, riddles, and other forms of humor, drawing examples from such sources as Rabelais, Shakespeare, James Beattie, René Thom, Lewis Carroll, Arthur Koestler, W. C. Fields, and Woody Allen. "Jokes, paradoxes, riddles, and the art of non-sequitur are revealed with great perception and insight in this illuminating account of the relationship between humor and mathematics."—Joseph Williams, New York Times

"Leave your mind alone," said a Thurber cartoon, and a really complete and convincing analysis of what humour is might spoil all jokes forever. This book avoids that danger. What it does. . .is describe broadly several kinds of mathematical theory and apply them to throw sidelights on how many kinds of jokes work."—New Scientist

"Many scholars nowadays write seriously about the ludicrous. Some merely manage to be dull. A few—like Paulos—are brilliant in an odd endeavor."—Los Angeles Times Book Review

**Innumeracy in the Wild - Misunderstanding and Misusing Numbers**

"Innumeracy in the Wild explains how numeric ability supports the quality of the decisions we make and, ultimately, the life outcomes we experience. It dissects three ways that people can be good or bad with numbers and how each of these numeric competencies matter to decision making. Furthermore, it delves into how we can use this knowledge to improve decision making. Understanding the roles of numeric ability (often called numeracy) is particularly important today due to widespread innumeracy. In addition, policies in health and financial domains have shifted towards giving consumers and patients more information (which is often numeric). These changes are intended to empower individuals to take charge of their own welfare. The evidence is clear, however, that not everybody is prepared to use this information effectively and that those who are less numerate tend to make worse decisions unless provided adequate support. The book discusses four main points: the complex and systematic psychological mechanisms that underlie objective numeracy's effects in judgment and decision making; the importance of numeracy to experiencing positive life outcomes especially in health and finances; the decision-making support provided by two additional ways of knowing and using numbers; and the methods that exploit existing evidence and enable those who are less comfortable with numbers to use them more effectively and make better choices in our complex, often numeric world"--

**A Mathematician Plays The Stock Market**

Can a renowned mathematician successfully outwit the stock market? Not when his biggest investment is WorldCom. In A Mathematician Plays the Stock Market, best-selling author John Allen Paulos employs his trademark stories, vignettes, paradoxes, and puzzles to address every thinking reader's curiosity about the market -- Is it efficient? Is it random? Is there anything to technical analysis, fundamental analysis, and other supposedly time-tested methods of picking stocks? How can one quantify risk? What are the most common scams? Are there any approaches to investing that truly outperform the major indexes? But Paulos's tour through the irrational exuberance of market mathematics doesn't end there. An unrequited (and financially disastrous) love affair with WorldCom leads Paulos to question some cherished ideas of personal finance. He explains why "data mining" is a self-fulfilling belief, why "momentum investing" is nothing more than herd behavior with a lot of mathematical jargon added, why the ever-popular Elliot Wave Theory cannot be correct, and why you should take Warren Buffet's
"fundamental analysis" with a grain of salt. Like Burton Malkiel's A Random Walk Down Wall Street, this clever and illuminating book is for anyone, investor or not, who follows the markets -- or knows someone who does.

**A Numerate Life - A Mathematician Explores the Vagaries of Life, His Own and Probably Yours**

Employing intuitive ideas from mathematics, this quirky "meta-memoir" raises questions about our lives that most of us don't think to ask, but arguably should: What part of memory is reliable fact, what part creative embellishment? Which favorite presuppositions are unfounded, which statistically biased? By conjoining two opposing mindsets--the suspension of disbelief required in storytelling and the skepticism inherent in the scientific method--bestselling mathematician John Allen Paulos has created an unusual hybrid, a composite of personal memories and mathematical approaches to re-evaluating them. Entertaining vignettes from Paulos's biography abound--ranging from a bullying math teacher and a fabulous collection of baseball cards to romantic crushes, a grandmother's petty larceny, and his quite unintended role in getting George Bush elected president in 2000. These vignettes serve as springboards to many telling perspectives: simple arithmetic puts life-long habits in a dubious new light; higher dimensional geometry helps us see that we're all rather peculiar; nonlinear dynamics explains the narcissism of small differences cascading into very different siblings; logarithms and exponentials yield insight on why we tend to become bored and jaded as we age; and there are tricks and jokes, probability and coincidences, and much more. For fans of Paulos or newcomers to his work, this witty commentary on his life--and yours--is fascinating reading.

**Once Upon A Number - The Hidden Mathematical Logic Of Stories**

What two things could be more different than numbers and stories? Numbers are abstract, certain, and eternal, but to most of us somewhat dry and bloodless. Good stories are full of life: they engage our emotions and have subtlety and nuance, but they lack rigor and the truths they tell are elusive and subject to debate. As ways of understanding the world around us, numbers and stories seem almost completely incompatible. Once Upon a Number shows that stories and numbers aren't as different as you might imagine, and in fact they have surprising and fascinating connections. The concepts of logic and probability both grew out of intuitive ideas about how certain situations would play out. Now, logicians are inventing ways to deal with real world situations by mathematical means -- by acknowledging, for instance, that items that are mathematically interchangeable may not be interchangeable in a story. And complexity theory looks at both number strings and narrative strings in remarkably similar terms. Throughout, renowned author John Paulos mixes numbers and narratives in his own delightful style. Along with lucid accounts of cutting-edge information theory we get hilarious anecdotes and jokes; instructions for running a truly impressive pyramid scam; a freewheeling conversation between Groucho Marx and Bertrand Russell (while they're stuck in an elevator together); explanations of why the statistical evidence against OJ Simpson was overwhelming beyond doubt and how the Unabomber's thinking shows signs of mathematical training; and dozens of other treats. This is another winner from America's favorite mathematician.
Informal Logic - A Pragmatic Approach

Second edition of the introductory guidebook to the basic principles of constructing sound arguments and criticising bad ones. Non-technical in approach, it is based on 186 examples, which Douglas Walton, a leading authority in the field of informal logic, discusses and evaluates in clear, illustrative detail. Walton explains how errors, fallacies, and other key failures of argument occur. He shows how correct uses of argument are based on sound strategies for reasoned persuasion and critical responses. This edition takes into account many developments in the field of argumentation study that have occurred since 1989, many created by the author. Drawing on these developments, Walton includes and analyzes 36 new topical examples and also brings in work on argumentation schemes. Ideally suited for use in courses in informal logic and introduction to philosophy, this book will also be valuable to students of pragmatics, rhetoric, and speech communication.


In How Math Explains the World, mathematician Stein reveals how seemingly arcane mathematical investigations and discoveries have led to bigger, more world-shaking insights into the nature of our world. In the four main sections of the book, Stein tells the stories of the mathematical thinkers who discerned some of the most fundamental aspects of our universe. From their successes and failures, delusions, and even duels, the trajectories of their innovations—and their impact on society—are traced in this fascinating narrative. Quantum mechanics, space-time, chaos theory and the workings of complex systems, and the impossibility of a "perfect" democracy are all here. Stein's book is both mind-bending and practical, as he explains the best way for a salesman to plan a trip, examines why any thought you could have is imbedded in the number $\pi$, and—perhaps most importantly—answers one of the modern world's toughest questions: why the garage can never get your car repaired on time. Friendly, entertaining, and fun, How Math Explains the World is the first book by one of California's most popular math teachers, a veteran of both "math for poets" and Princeton's Institute for Advanced Studies. And it's perfect for any reader wanting to know how math makes both science and the world tick.