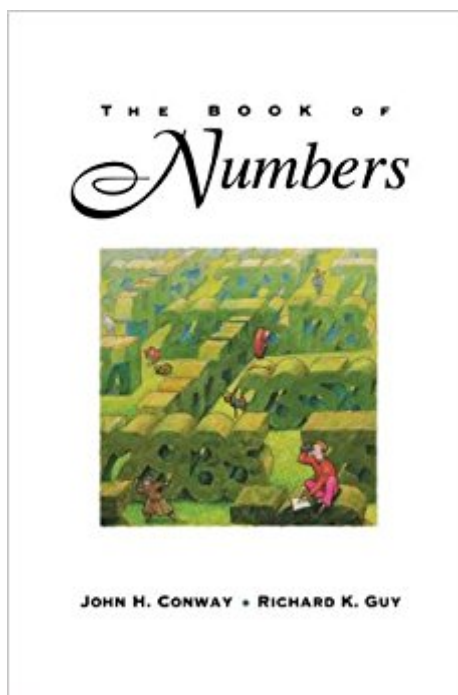


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# The Book Of Numbers



## Synopsis

"...the great feature of the book is that anyone can read it without excessive head scratching...You'll find plenty here to keep you occupied, amused, and informed. Buy, dip in, wallow." -IAN STEWART, NEW SCIENTIST"...a delightful look at numbers and their roles in everything from language to flowers to the imagination." -SCIENCE NEWS"...a fun and fascinating tour of numerical topics and concepts. It will have readers contemplating ideas they might never have thought were understandable or even possible." -WISCONSIN BOOKWATCH"This popularization of number theory looks like another classic." -LIBRARY JOURNAL

## Book Information

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## Customer Reviews

The Book of Numbers lets readers of all levels of mathematical sophistication (or lack thereof) understand the origins, patterns, and interrelationships of different numbers. Whether it is a visualization of the Catalan numbers or an explanation of how the Fibonacci numbers occur in nature, there is something in here to delight everyone. The diagrams and pictures, many of which are in color, make this book particularly appealing and fun. A few of the discussions may be confusing to those who are not adept mathematicians; those who are may be irked that certain facts are mentioned without an accompanying proof. Nonetheless, The Book of Numbers will succeed in infecting any reader with an enthusiasm for numbers.

The authors are well known to both academic and recreational mathematicians?Conway for

inventing the "game of life" and discovering surreal numbers and Guy as the editor of the "Unsolved Problems" section in American Mathematical Monthly. They also coauthored the classic *Winning Ways for Your Mathematical Plays* (Academic, 1982). This popularization of number theory looks like another classic. Though number theory does not lend itself to fun and games, the authors take such joy in the order and patterns of numbers that you can't help being fascinated by what is actually a fairly difficult subject. A combination of clear verbal explanations, wonderfully clever diagrams, and equations (for the real mathematicians) make sometimes complicated numerical concepts accessible to those "without particular mathematical background" (i.e., who are not at least graduate students in mathematics). The material is simplified but not dumbed down. A bridge to understanding and appreciating higher mathematical concepts, this book could appeal to anyone from a mathematically sophisticated high school student to a university mathematics professor. Amy Brunvand, Univ. of Utah Lib., Salt Lake City Copyright 1996 Reed Business Information, Inc.

The sections at the beginning of the book are a sheer delight. I particularly enjoyed the chapter on figurative numbers, which shows how to get sums of powers of numbers by arranging them in geometric patterns. The idea of arranging the sum of sequential numbers into a triangular shape goes back to ancient times, but I suspect that some of the other arrangements are due to Conway and Guy. There is a really nice treatment of sums of cubes. Did you know that the sum of the entries in a multiplication table from, say 1 to 9, is the sum of the cubes  $1^3 + 2^3 + \dots + 9^3$ ? I also enjoyed the section later on in the book on Catalan numbers. After the first two or three chapters, the book does seem rushed and there is much that I could not follow. I was especially frustrated by the method used to count the number of regions determined by the diagonals of a polygon. It looks like a simple and original treatment of a classical problem, but after several attempts I just can't follow the logic.

Conway and Guy start this book with an enticing survey of how numbers pervade the English language, showing the hidden (or not-so-hidden) numerical roots of common words. They also mention other numbering systems, including the Roman numerals, Greek, Egyptian, and cuneiform Babylonian - numbers that persist in our 60-based measures of minutes and seconds, in both time and angle. Next, they move into squares, triangular numbers, and many others with rich geometric meanings. Chapters 1 and 2, especially, create vivid images that bring many of their concepts to life. I had a bit of trouble finding ch.3's focus. It touches briefly combinatorics, a world in itself, and

difference techniques. I found "Jackson's Fan" fascinating, but too terse for easy application to real problems. After this, the going gets a lot tougher, fast. By ch 4, "Famous Families," the illustration is no longer as vivid as before. Ch. 6, on fractions and decimal expansions also held some interest - it touches on complexity in the decimal forms of fractions, and the numeric roots from which it springs. The section on continued fractions is only just enough to titillate without really enlightening. Discussion of imaginary numbers is OK, and offers some enjoyable insights. The section on quaternions, though, does a lot less to invite personal involvement and stir the imagination. Later sections of the book present readable surveys of their topics, but require a lot more from the reader in the way of determination and mathematical background. If the whole book sustained the initial energy, it would have been an instant classic. The later parts of the book were clear, readable, and even enjoyable, but didn't match the breadth or vividness of the first half. I enjoyed this, but I may not come back to it. //wiredweird

I own a lot of books on Mathematics and Mathematical topics. This book truly is my favorite. The color illustrations, the other drawings and diagrams make the topics very understandable and tantalizing. The section on infinite and infinitesimal numbers alone, has inspired me to submit a paper on this subject to a Mathematics Journal. This book will cause anyone who is not already a Mathphile, to quickly become one. Take a look at the middle numbers in Pascals Triangle....with a little manipulation of this sequence, you produce CATALAN NUMBERS, which further leads to a number of interesting problems with Friezes and Polygons, none of which are mind bending in their demand of your mental powers. The chapters are all short, and you can open the book at random and find something very nice to dine on. BUY THIS ONE! Dr.Pratt.

A mathematical tour-de-force. Buy it. read it. It will provoke radical thoughts about number theory.

I love this book! It does not, in any way, "dumb down" numbers for children. It is very thoughtful and well presented. I am excited to read this book aloud to my children. I feel their knowledge of numbers will definitely be expanded!

This is a delightful survey of numbers clearly aimed at as wide an audience as possible. However, as is always the case in such books the book is more formidable than it intends or than it looks. Still it is very friendly especially compared with, say, "Numbers" by Ebbinghays et al. The coverage is wide: primes, reals, Cayley numbers, Eisenstein numbers, polygonal numbers, catalan numbers,

Stirling numbers of both types and of course Bell numbers. There are the cardinals and ordinals of Cantor as well as Conway's own surreal numbers. (And an earlier reviewer was correct about misprints and color problems.) I recommend this to anyone whose mathematical maturity is at least as great as basic calculus (and who is interested).

There are fewer numbers than I was expecting, especially given the title, but it is still a very good read.

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