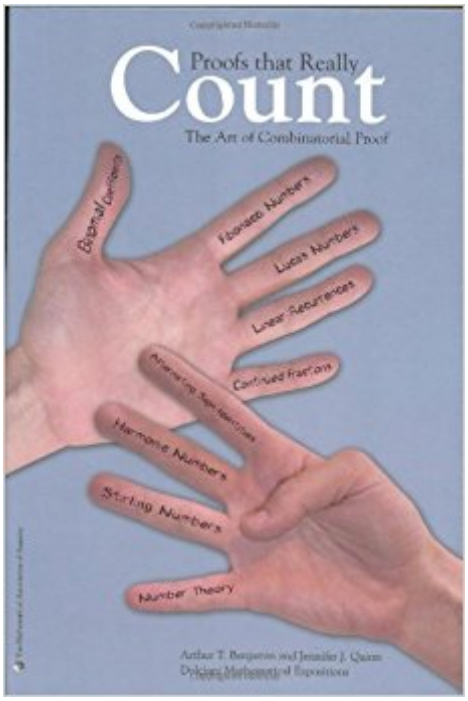
Proofs That Really Count: The Art Of Combinatorial Proof (Dolciani Mathematical Expositions)



Synopsis

Mathematics is the science of patterns, and mathematicians attempt to understand these patterns and discover new ones using a variety of tools. In Proofs That Really Count, award-winning math professors Arthur Benjamin and Jennifer Quinn demonstrate that many number patterns, even very complex ones, can be understood by simple counting arguments. The book emphasizes numbers that are often not thought of as numbers that count: Fibonacci Numbers, Lucas Numbers, Continued Fractions, and Harmonic Numbers, to name a few. Numerous hints and references are given for all chapter exercises and many chapters end with a list of identities in need of combinatorial proof. The extensive appendix of identities will be a valuable resource. This book should appeal to readers of all levels, from high school math students to professional mathematicians.

Book Information

Series: Dolciani Mathematical Expositions (Book 27)
Hardcover: 208 pages
Publisher: The Mathematical Association of America (August 1, 2003)
Language: English
ISBN-10: 0883853337
ISBN-13: 978-0883853337
Product Dimensions: 10 x 0.7 x 7 inches
Shipping Weight: 1.2 pounds (View shipping rates and policies)
Average Customer Review: 4.7 out of 5 starsÂ Â See all reviewsÂ (7 customer reviews)
Best Sellers Rank: #792,365 in Books (See Top 100 in Books) #124 inÂ Books > Science & Math > Mathematics > Pure Mathematics > Combinatorics #152 inÂ Books > Science & Math > Mathematics > Popular & Elementary > Counting & Numeration #187 inÂ Books > Science & Math > Mathematics > Reference

Customer Reviews

I was introduced to this book by a talk that one of the authors (Arthur Benjamin) gave at the MAA Mathfest in Albuquerque in August of 2005. The talk was one of the very best mathematics talks that I've ever attended. Everyone in the audience could follow what was going on, and we all left with an understanding of the basic approach to combinatorial identities used in this book. The authors' approach is to prove combinatorial identities by defining a quantity and then obtaining different formulas for that quantity. One formula becomes the left hand side of an identity while

another formula becomes the right hand side.When I read the book I found that it was just as clearly written, with lots of beautiful examples.

The proofs in this book are easy enough for a bright high schooler or even an exceptional middle schooler to understand, while still making use of insightful tricks that keep the solutions far from being obvious.

"Thoroughly engaging... Accessible to a very broad audience... While the theorems covered may not be new to research mathematicians, I would wager that very few of us have seen them proven in quite this way." -- American Mathematical Monthly [[...]I am not a mathematician and I learn something cool and useful from this book every few paragraphs. Highly recommended.

This book is a pleasure to read and find new combinatorial gems. I'd say its accessible to anyone who's done basic counting - either in high school or a first discrete math course. I found it a bit odd that it starts with the fiibonacci numbers instead of simpler identities like Pascal, Chairperson, etc but the proofs are fairly illustrative though not the very through (the authors seem to believe that the student is already familiar with the ideas of disjoint sets and unions). Overall though, if you know a few counting identities and know the basic idea behind counting in two ways, this book is a wonderful extension!It also makes for really good casual reading because unlike most math, reading a combinatorial proof doesn't usually require rewriting with pen and paper to understand well and have that "Aha!" moment.

Mathematical Proof (Wooden Books) The Art of Computer Programming, Volume 4A: Combinatorial Algorithms, Part 1 What Really Matters for Struggling Readers: Designing Research-Based Programs (3rd Edition) (What Really Matters Series) I Really, Really Want It: Celebrity. It’s a killer. 50 Maths Ideas You Really Need to Know (50 Ideas You Really Need to Know Series) What He REALLY Means When He Says... - The Ultimate Guide to Understanding Men, Knowing What They REALLY Think and How to Read Their Minds in Every Situation The Shorter Catechism with Scripture Proofs The Westminster Confession of Faith, with Scripture proofs Philosophical Devices: Proofs, Probabilities, Possibilities, and Sets The GÃ¶delian Puzzle Book: Puzzles, Paradoxes and Proofs