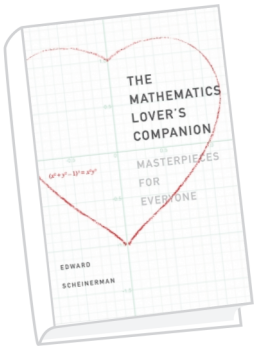
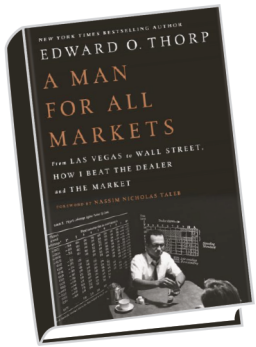
# BOOKSHELF

*New and Noteworthy Titles on Our Bookshelf*
**October 2017**




*The Mathematics Lover's Companion: Masterpieces for Everyone,* by Edward Scheinerman (Yale University Press, March 2017)

The first word in this book, "Joy," reverberates through the entire approximately 270 pages. Scheinerman has picked out a collection of "masterpieces"—he characterizes them as the mathematical equivalents of the Mona Lisa, Hamlet, or the discovery of DNA—and describes them with joyous enthusiasm. He does not so much try to make the material interesting as trust that it *is* interesting if presented in a clear and simple way that brings out the main ideas. Each of the book's three sections—"Number," "Shape," and "Uncertainty"—showcases several classic mathematical ideas, as well as some less-standard ones that have caught Scheinerman's fancy. In "Number," he discusses prime numbers, irrational numbers, transcendental numbers, and infinity, as well as that counterintuitive conundrum known as Benford's Law. Imaginary numbers—often confusing as much for their name as for the way they are pulled like rabbits out of hats—are demystified and their beauty and usefulness revealed. In the section "Shape," Scheinerman discusses, among other topics, the Platonic solids. A proof that there are only five of them follows a careful and gentle introduction to the Euler formula. The section on "Uncertainty" includes a description of dynamical systems and elucidates the often-misunderstood topic of chaos. The discussion of each topic is short and proceeds directly to its conclusion. Side comments are presented exactly as that: The book's pages have wide right-hand margins where Scheinerman tucks in little nuggets that veer slightly off the main thread. The style, while friendly and appealing, never quite slides into folksiness. Every so often Scheinerman suggests the reader carry out a little calculation, making the point that mathematics is not a spectator sport. For general readers whose mathematical sensitivity was dulled by endless drill and cookbook procedures typical of school mathematics, this book might very well be the perfect antidote.




*A Man for All Markets: From Las Vegas to Wall Street, How I Beat the Dealer and the Market,* by Edward O. Thorp (Random House, January 2017)

How to define a mathematician? One possibility is the following: A mathematician is a person who refuses to accept anything on authority, believing only what can be investigated and verified directly. That definition captures the personality of Edward O. Thorp. He became widely known for his 1962 book *Beat the Dealer,* which was the first to mathematically prove how card counting could overcome the house advantage in blackjack. In the present book, Thorp describes his long and adventurous life as a mathematician and a beater-of-odds, both in gambling houses and in financial markets. A razor-sharp and systematic thinker who teases out order where others might see chaos, Thorp is also an excellent storyteller with a very good story to tell. Starting with his childhood in the Great Depression, he covers his progression from a math PhD student at UCLA (he received his degree in 1958 under Angus Taylor), to casino-beater extraordinaire (some casinos barred him and even threatened his life), to hedge-fund manager (he helped build the field of quantitative finance). While much of the book focuses on gambling and finance, it also has parts that take place in the mathematical world—and there is even a mention of the *Notices.* Around 1960, Thorp intended to speak about his work at an AMS meeting in Washington, DC. He writes: "I submitted an abstract of my talk titled 'Fortune's Formula: The Game of Blackjack' for the program booklet (*The Notices*)." At that time, the *Notices* carried abstracts of talks at AMS meetings. The near-unanimous decision of the AMS abstracts committee was to reject Thorp's submission, because it seemed to be one of the many crackpot abstracts the committee routinely receives. Number theorist John Selfridge, who had known Thorp at UCLA and was on the committee, eventually got the decision reversed. All in all, this is an engaging autobiography that ranges over many subjects but has its heart very much in mathematics.

The BookShelf is prepared each month by Allyn Jackson. Suggestions for the BookShelf can be sent to notices-booklist@ams.org.

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