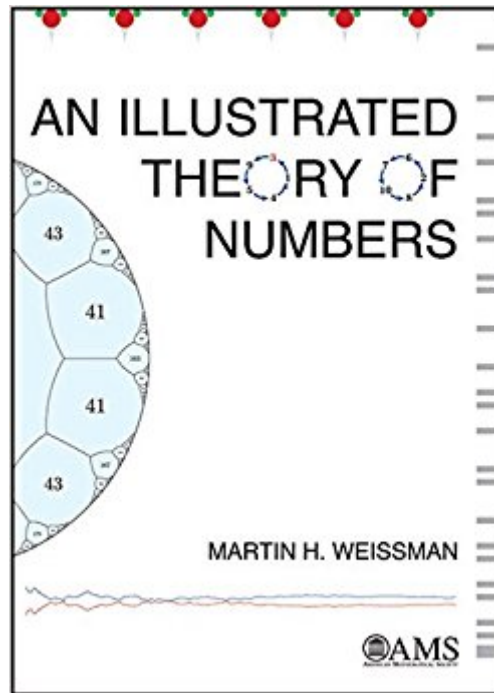




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# An Illustrated Theory Of Numbers



## Synopsis

An Illustrated Theory of Numbers gives a comprehensive introduction to number theory, with complete proofs, worked examples, and exercises. Its exposition reflects the most recent scholarship in mathematics and its history. Almost 500 sharp illustrations accompany elegant proofs, from prime decomposition through quadratic reciprocity. Geometric and dynamical arguments provide new insights, and allow for a rigorous approach with less algebraic manipulation. The final chapters contain an extended treatment of binary quadratic forms, using Conway's topograph to solve quadratic Diophantine equations (e.g. Pell's equation) and to study reduction and the finiteness of class numbers. Data visualizations introduce the reader to open questions and cutting-edge results in analytic number theory such as the Riemann hypothesis, boundedness of prime gaps, and the class number 1 problem. Accompanying each chapter, historical notes curate primary sources and secondary scholarship to trace the development of number theory within and outside the Western tradition. Requiring only high school algebra and geometry, this text is recommended for a first course in elementary number theory, and to all mathematicians seeking a fresh perspective on an ancient subject.

## Book Information

Hardcover: 323 pages

Publisher: American Mathematical Society (August 8, 2017)

Language: English

ISBN-10: 1470434938

ISBN-13: 978-1470434939

Product Dimensions: 1 x 8.5 x 11 inches

Shipping Weight: 2.6 pounds (View shipping rates and policies)

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## Customer Reviews

This is a meticulously written and stunningly laid-out book influenced not only by the classical masters of number theory like Fermat, Euler, and Gauss, but also by the work of Edward Tufte on data visualization. Assuming little beyond basic high school mathematics, the author covers a tremendous amount of territory, including topics like Ford circles, Conway's topographs, and

Zolotarev's lemma which are rarely seen in introductory courses. All of this is done with a visual and literary flair which very few math books even strive for, let alone accomplish.-- Matthew Baker, Georgia Institute of Technology • An Illustrated Theory of Numbers • is a textbook like none other I know; and not just a textbook, but a work of practical art. This book would be a delight to use in the undergraduate classroom, to give to a high school student in search of enlightenment, or to have on your coffee table, to give guests from the world outside mathematics a visceral and visual sense of the beauty of our subject.-- Jordan Ellenberg, University of Wisconsin-Madison, author of •How Not to Be Wrong: the Power of Mathematical Thinking• Weissman's book represents a totally fresh approach to a venerable subject. Its choice of topics, superb exposition and beautiful layout will appeal to professional mathematicians as well as to students at all levels.-- Kenneth A. Ribet, University of California, Berkeley

Martin H. Weissman, University of California, Santa Cruz, CA.

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