

# Number Theory: A Historical Approach

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Number Theory: A Historical Approach

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The author is Professor Emeritus of mathematics at Colorado College in Colorado Springs, USA. His books include *Across the Board: The Mathematics of Chessboard Problems* (Princeton), *Topics in Commutative Ring Theory* (Princeton), *Graphs: An Introductory Approach*, and *Combinatorics: Ancient and Modern*.

This is a basic comprehensive introduction to elementary number theory pitched at the undergraduate level with ample annotated references to pertinent books and journal articles for further assignments and projects. As the title suggests it expounds the mathematics with reference to the origins of ideas: who, what and why in the context of the times.

The topics are also what one would expect with the added bonus of an introduction to Sage, a powerful open-source mathematics software package with easy-to-follow worked examples. Another bonus is a guide to pronunciation which enlightened this reviewer in several cases.

I particularly liked the work on primes which naturally permeate the book, but the exposition of Bertrand's postulate by Pafnuty Chebyshev, and Sophie Germain posing as Monsieur LeBlance, since only male students could then attend the prestigious *École Polytechnique*, combine human interest with some genuine depth and rigour. Popular engagement also occurs through topics like a twelve-note scale using Pythagorean tuning in music.

The book begins with a broad sweep of the origins of number theory which forms a useful foundation for the subsequent theoretical developments. The final chapter leaves the reader with a solid dose of partitions. In between there are numerous exercises, some worked and some for the reader, with explanatory solutions to many but not all of the latter.

The book would be a very good text for any introductory undergraduate mathematics program, but particularly for those embedded in an integrated liberal arts curriculum.

