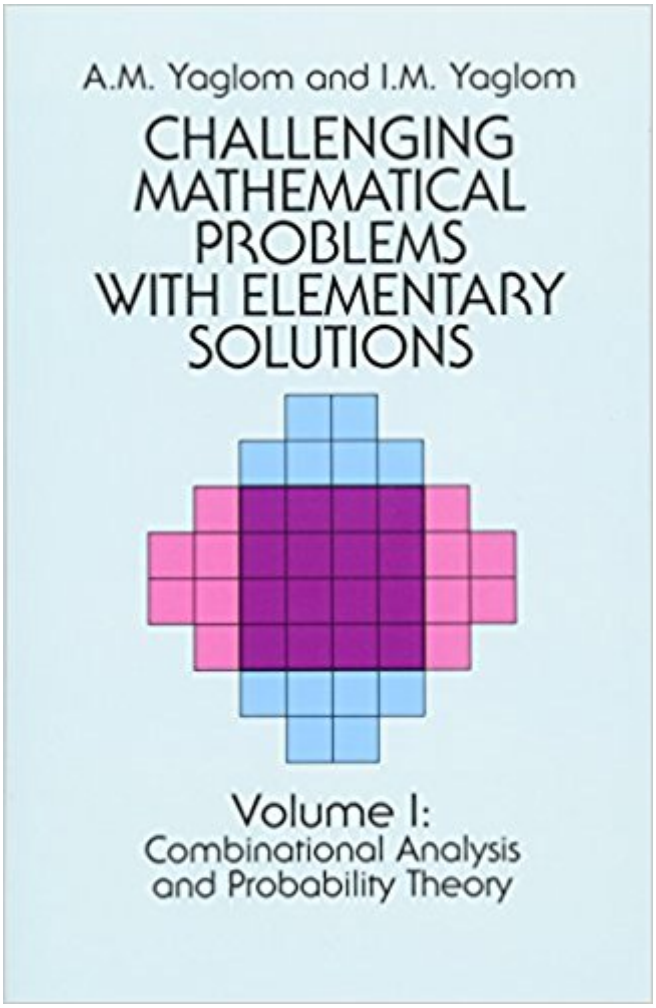
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Challenging Mathematical Problems With Elementary Solutions, Vol. 1



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Synopsis

Designed for advanced high school students, undergraduates, graduate students, mathematics teachers, and any lover of mathematical challenges, this two-volume set offers a broad spectrum of challenging problems Ã¢â ¬â • ranging from relatively simple to extremely difficult. Indeed, some rank among the finest achievements of outstanding mathematicians.Translated from a well-known Russian work entitled Non-Elementary Problems in an Elementary Exposition, the chief aim of the book is to acquaint the readers with a variety of new mathematical facts, ideas, and methods. And while the majority of the problems represent questions in higher ("non-elementary") mathematics, most can be solved with elementary mathematics. In fact, for the most part, no knowledge of mathematics beyond a good high school course is required.Volume One contains 100 problems, with detailed solutions, all dealing with probability theory and combinatorial analysis. Topics include the representation of integers as sums and products, combinatorial problems on the chessboard, geometric problems on combinatorial analysis, problems on the binomial coefficients, problems on computing probabilities, experiments with infinitely many possible outcomes, and experiments with a continuum of possible outcomes.Volume Two contains 74 problems from various branches of mathematics, dealing with such topics as points and lines, lattices of points in the plane, topology, convex polygons, distribution of objects, nondecimal counting, theory of primes, and more. In both volumes the statements of the problems are given first, followed by a section giving complete solutions. Answers and hints are given at the end of the book.Ideal as a text, for self-study, or as a working resource for a mathematics club, this wide-ranging compilation offers 174 carefully chosen problems that will test the mathematical acuity and problem-solving skills of almost any student, teacher, or mathematician.

Book Information

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Customer Reviews

Text: English, Russian (translation)

I've read the Russian original of this book. It is wonderful. I really enjoyed it, and often used the ideas I found there to solve other problems. Highly recommended, espesially for the high school students unterested in mathematics, but extremely interesting for anybody who likes math.

Excellent

Good !

The product is excellent. It is quite explanatory. The exercises have various levels of difficulty. Ideal for those who want to delve in solving problems.

This book introduces many advanced techniques in problem solving. In particular, if you are planning to participate in Mathematics Olympiads, this book is a must read. The techniques of problem solving given in this book are amazing. To cite just one example, read the three totally different solutions to Problems 83 and 84 ("Bertrand's Ballot problem" in an equivalent formulation). All solutions are illuminating (in particular, look at the third solution - it uses the technique of illuminating a stair case by parallel beams of light!) - pun intended! The book is a gold mine of ideas - dig in and enjoy!

We, I and my students, really liked the book.It has place in praparing students for participation in mathematical contests. It is good for induvidual work, too.problems are ordered by topic, not by tehnique to be used, and that encourages student`s creativity. Hints, given along whit the complete solutions, help and guide them to the right solution. Also, they allow students to fine a different method of soluiton.

The reviewer below seems rather confused. This book has problems which COULD be solved in a

mechanical way, but almost all the solutions given are simple and creative. Futhermore, there are often two solutions given. I find the problems hard, but maybe I am just not very smart. How could this book alter your perception of truth? By giving you knowledge?

It's amazing that so many results that you may have seen in more advanced books proven with more advanced techniques can also be proven with elementary methods. Some of the constructions are amazingly clever. Additionally, the authors take time to highlight the important results in elementary mathematics that are often used in more advanced areas without qualification.

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