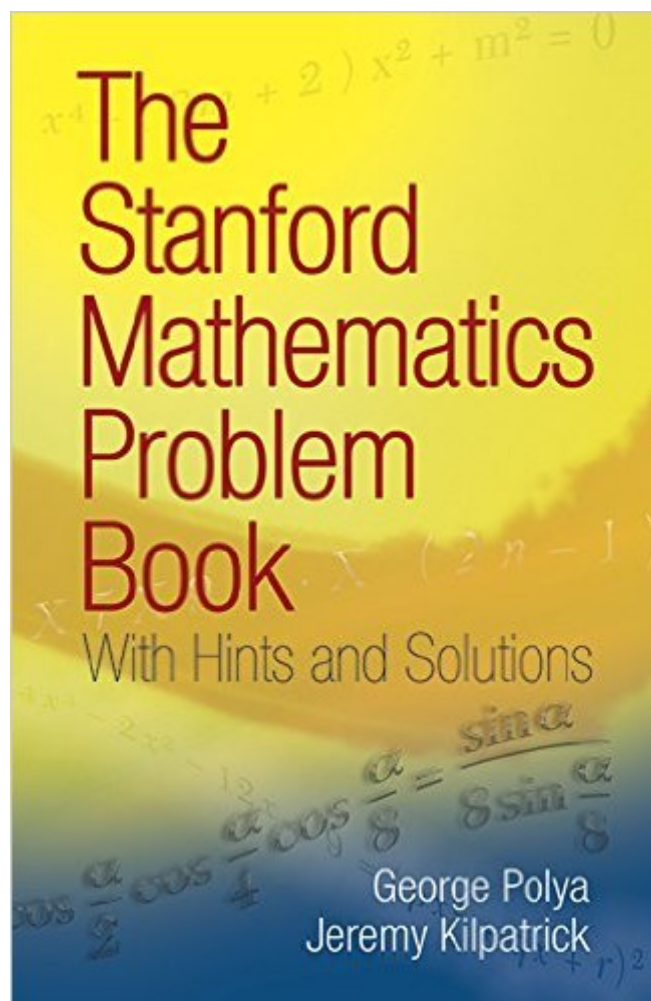


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The Stanford Mathematics Problem Book: With Hints And Solutions (Dover Books On Mathematics)



Synopsis

This volume features a complete set of problems, hints, and solutions based on Stanford University's well-known competitive examination in mathematics. It offers high school and college students an excellent mathematics workbook of rigorous problems that will assist in developing and cultivating their logic and probability skills. These 20 sets of intriguing problems test originality and insight rather than routine competence. They involve theorizing and verifying mathematical facts; examining the results of general statements; discovering that highly plausible conjectures can be incorrect; solving sequences of subproblems to reveal theory construction; and recognizing "red herrings," in which obvious relationships among the data prove irrelevant to solutions. Hints for each problem appear in a separate section, and a final section features solutions that outline the appropriate procedures. Ideal for teachers seeking challenging practice math problems for their gifted students, this book will also help students prepare for mathematics, science, and engineering programs. Mathematics buffs of all ages will also find it a source of captivating challenges.

Book Information

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Customer Reviews

This is an interesting little book for anyone who wants to bend their brain up for a little diversion or just for fun. This book is based on a test that was given to high school students to award the best a chance at a scholarship to college. This is the complete battery of problems that was given (I think minus one or two years that could not be found) to high school students in several schools.

Although the problems are "high school level", it is immediately obvious that the level of problems

given during this testing was a little more advanced from what is today perceived as high school mathematics. Very enjoyable book for stretching your mind.

The collection of problems is complete. The Stanford examination started in 1946 and ended in 1965. All exams are collected in the book; none is missing. The problems appear harder than traditional high school problems for two reasons: First they are based on what a student should be known by the end of his/her high school studies, not what he/she was taught during these years. Second, the problems are written to check the aptitude of students in mathematics, not if they can carry out routine calculations. Therefore, high school students from countries where the curriculum is rigorous and robust will recognize problems based on the material they have been taught although the problems may not be exactly the ones they have solved as homework. (Some of these problems can often be encountered as advanced-level problems in such rigorous curricula.) Students countries where the system is looser regarding the mathematical curriculum can find these problem quite challenging, unless the students have an interest in mathematics and math competitions. The book is just a collection of problems. It contains hints for those who want to try to solve them on their own. It also contains the solutions for those who do not want to try them or tried and failed to solve them. However, it contains nothing else. No related theory and no methodology. It is a very cheap book and worth having but you should not expect it to serve as a tutorial book that teaches problem-solving techniques.

Fine on computer but the problems on the Kindle Paperwhite are too small to read. Increasing the font size works for the general text but not for the actual problems. So almost unusable on the Kindle.

You would expect a book with this pedigree to be good, and it is. From 1946 to 1965, Stanford University gave high school students a chance to win a scholarship by taking a difficult math test, with just four questions. This book collects those questions, and their answers. The subject matter varies, including algebra, geometry, and trigonometry. Most notably, the questions try to measure not achievement, but aptitude. They require a sound foundation of learning, but also original thinking or a flash of insight. The first question in each set is easiest; a sharp high school student would probably have a reasonable shot at answering it. Then the questions get more difficult. I found it to be a fascinating and enjoyable collection, even when that flash of insight eluded me. Months after I bought it, I still open it occasionally and try a new problem.

My 17 year-old son loves this book so much, that when his bookbag was stolen from his locker during gym he asked me to replace this book! He's on a math team, and they work on problems like this all the time. It must be good!

The difficulty with rating a book like this is deciding what criteria should be used to rate the book. I rated the book as "4 stars" because of my reverence for George Polya. Polya was a great teacher and I have read all of his books. Unfortunately, this book does not teach the art of problem solving. It is simply a collection of interesting and challenging mathematics problems, along with solutions. The problems are very good. The difficulty of the problems depends on your level of experience and knowledge. I have a Ph.D. in mathematics, so I find the problems to be interesting and mildly challenging. A novice, or someone who is struggling to learn mathematics, may find the problems to be impossibly difficult. And when you read the solutions, you might feel stupid, because there is little chance that you would have the genius required to invent the solution. The book omits the human exploratory process of how to actually solve a mathematics problem. Most problem books and research papers omit all the pain, suffering, and hard work that goes between the problem statement and the seemingly miraculous solution. This book is a really great collection of problems, but it will NOT teach you how to create, invent, or solve these kinds of problems. If you want to learn that, I suggest that you read Polya's "How to Solve It," or Polya's "Mathematics and Plausible Reasoning." To solve mathematics problems, you need knowledge, experience, intuition, passion, hard work, good luck, and a PROCESS that works. This book has none of those things. Read the other two books of Polya's.

quite challenging, more so than most puzzle books. At least for me, a pencil and paper are necessary for this.

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