

BOOK REVIEWS

ALAN LAW

Mathematical Chestnuts from Around the World, by Ross Honsberger, published by the Mathematical Association of America, 2001, ISBN: 0-88385-330-2, softcover, 310+ pages, \$32.95 (U.S.).
Reviewed by **Mohammed Aassila**, University of Strasbourg, Strasbourg, France.

This book is No. 24 of the Dolciani Mathematical Expositions, a series including many books with challenging problems for lovers of mathematics, which often approach a subject without formally introducing the reader to it. This is another in a series of books by the author on problems and solutions taken from various national and international competitions, and from various mathematical journals.

Altogether the book has 150 problems collected into 26 sections, with no discernible reason for the order they are put in, and a chapter devoted to exercises and their solutions. At the end, the problems are classified under three subjects (roughly: Combinatorics and Combinatorial Geometry, Geometry, Algebra, Number Theory, Probability, and Calculus).

The following is just a small sample of some of the problems discussed in the book:

1. S is any set of n points in the plane, $n \geq 2$. Let D and d , respectively, denote the greatest and least distances determined by two points of S . Prove that

$$D > \frac{\sqrt{3}}{2}(\sqrt{n} - 1)d.$$

2. Let $\alpha = \{a_1, a_2, \dots, a_k\}$ be a subset of the first n positive integers which has been arranged in increasing order:

$$1 \leq a_1 < a_2 < \dots < a_k \leq n.$$

(i) How many such α are there that begin with an odd number and thereafter in parity:

$$\alpha = \{\text{odd, even, odd, even, } \dots\}?$$

For convenience, include the empty set \emptyset in the count.

(ii) How many α are there of size k ?

The author has an efficient and clear approach to proofs and explanations that allows the book to be read easily. This book is a welcome addition to the shelves of anyone associated with mathematics problem solving in general and mathematics competitions in particular.

Teaching First: A Guide for New Mathematicians, by Thomas W. Rishel, published by the Mathematical Association of America, 2000, ISBN: 0-88385-165-2, softcover, 161+ pages, \$19.00 (U.S.).
 Reviewed by **Ruby Kocurko**, Memorial University of Newfoundland, St. John's, Newfoundland.

How does one assemble all the helpful hints and valuable lessons gleaned from years of university teaching experience and present them in a digestible package for the novice teacher of university mathematics? In his book, Thomas Rishel has accomplished this daunting task in a concise, well-organized manner that addresses an abundance of concerns for the beginner. In one section, he addresses the importance of knowing the interests of your class audience. It is evident in this book that the author knows his intended audience and shares his wisdom and experience in a skilful way that encourages the reader to turn the pages.

The book is organized in three main sections followed by case studies, references and appendices. The first section deals with the day to day activity and encounters of a typical semester. Included are standard topics: lecture preparation, use of technology, grading issues, motivation of students, classroom atmosphere as well as less conventional: "how to get fired", and "getting along with colleagues". Each topic is done briefly (2–5 pages), giving essential ideas and advice in a conversational manner with hints on what to say or do in situations that may arise. At times, sample classroom scenarios, summary lists, and additional references for a topic are given. In reading this first section, I found my own thirty years in teaching university mathematics reflected in the pages. I especially liked the comment "Maybe it might help to think of the 'standing in front of the class' part of teaching as the fun part, and grading as the part you get paid for." The situations presented are both relevant, current and familiar in the university environment. As an example of the author's technique, I will quote the headings in the chapter "What Was That Question Again?":

The standard question,
 The question that makes no sense,
 The silly question,
 The unintelligible question,
 The "challenge to your authority" question,
 The "good question",
 The question you don't have any answer for.

Careful consideration is given to each type in an honest, open, sometimes humorous way drawing on past experience. The author puts a personal touch in his answers so that you get a sense that here is a person willing to share ideas and time in helping a young colleague or T.A. succeed. The last chapter in this section deals with conducting oneself in a professional manner and outlines the responsibilities involved in teaching mathematics.

In the second section, entitled “More Advanced Topics”, the author discusses more theoretical aspects of teaching and learning. Examples drawn from his own teaching of mathematics enhance the material presented. This section also considers the more difficult aspects of dealing with students and colleagues and gives advice for international students.

Since this book is aimed at Teaching Assistants, it is appropriate that the third section contains pertinent information on job applications, giving talks, teaching evaluations, and for the new faculty member – the role of research and scholarship, teaching and service. It is fitting that the closing topic is the essence of good teaching. The author claims that “good” teaching can be taught, and if one reads and follows his suggestions, one should be able to give a competent, coherent lecture and be a contributing departmental colleague. Over the years I have helped new faculty, graduate students, student markers, faculty whose first language was not English; I have written recommendations and class evaluations, given advice and mentored. In each of these cases this book would have been extremely useful, and it would be of benefit to anyone starting a university career in mathematics. The author does not claim to have all the answers but does give a comprehensive, down-to-earth approach. The collection of case studies would certainly elicit lots of opinion at our coffee room, and it is interesting that no opinion is offered, but the author has invited response from the reader.

I enjoyed this book, and only wish I had read it at the start of my career instead of at the end. It would make a valuable reference and a reassuring guide to beginning Teaching Assistants and new faculty. While it is a guide to “good” teaching, perhaps our aim should be “great” teaching. To quote the author “...great teaching comes in all forms, but mainly it comes from the delicate interaction between two personalities: that of the instructor who somehow conveys a love of learning, and the student who comes ready to absorb and apply what the instructor has to give”. My suspicion is that Thomas W. Rishel belongs in the “great” category.

A Message to all — in code

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