

Mathematical Olympiad For Senior Section

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Euclidean Geometry in Mathematical Olympiads Springer Science & Business Media

The International Mathematical Olympiad (IMO) is an annual international mathematics competition held for pre-collegiate students. It is also the oldest of the international science olympiads, and competition for places is particularly fierce. This book is an amalgamation of the booklets originally produced to guide students intending to contend for placement on their country's IMO team. See also A First Step to Mathematical Olympiad Problems which was published in 2009. The material contained in this book provides an introduction to the main mathematical topics covered in the IMO, which are: Combinatorics, Geometry and Number Theory. In addition, there is a special emphasis on how to approach unseen questions in Mathematics, and model the writing of proofs. Full answers are given to all questions. Though A Second Step to Mathematical Olympiad Problems is written from the perspective of a mathematician, it is written in a way that makes it easily comprehensible to adolescents. This book is also a must-read for coaches and instructors of mathematical competitions.

Probability and Expectation Oxford University Press, USA

Over 300 unusual problems, ranging from easy to difficult, involving equations and inequalities, Diophantine equations, number theory, quadratic equations, logarithms, more. Detailed solutions, as well as brief answers, for all problems are provided.

Maths Challenge American Mathematical Soc.

Vietnam has actively organized the National Competition in Mathematics and since 1962, the Vietnamese Mathematical Olympiad (VMO). On the global stage, Vietnam has also competed in the International Mathematical Olympiad (IMO) since 1974 and constantly emerged as one of the top ten. To inspire and further challenge readers, we have gathered in this book selected problems of the VMO from 1962 to 2008. A number of Selection Test problems are also included to aid in the formation and training of a national team for IMO. The book is highly useful for high school students and teachers, coaches and instructors preparing for mathematical olympiads, as well as non-experts simply interested in having the edge over their opponents in mathematical competitions.

Mathematical Olympiad Treasures Springer Science & Business Media

Olympiad mathematics is not a collection of techniques of solving mathematical problems but a system for advancing mathematical education. This book is based on the lecture notes of the mathematical Olympiad training courses conducted by the author in Singapore. Its scope and depth not only covers and exceeds the usual syllabus, but introduces a variety concepts and methods in modern mathematics. In each lecture, the concepts, theories and methods are taken as the core. The examples are served to explain and enrich their intension and to indicate their applications. Besides, appropriate number of test questions is available for reader's practice and testing purpose. Their detailed solutions are also conveniently provided. The examples are not very complicated so that readers can easily understand. There are many real competition questions included which students can use to verify their abilities. These test questions are from many countries, e.g. China, Russia, USA, Singapore, etc. In particular, the reader can find many questions from China, if he is interested in understanding mathematical Olympiad in China. This book serves as a useful textbook of mathematical Olympiad courses, or as a reference book for related teachers and researchers. Errata(s). Errata. Sample Chapter(s). Lecture 1: Operations on Rational Numbers (145k). Request Inspection Copy. Contents: .: Operations on Rational Numbers; Linear Equations of Single Variable; Multiplication Formulae; Absolute Value and Its Applications; Congruence of Triangles; Similarity of Triangles; Divisions of Polynomials; Solutions to Testing Questions; and other chapters. Readership: Mathematics students, school teachers, college lecturers, university professors; mathematics enthusiasts

Mathematical Problems and Puzzles Cambridge University Press

A professor of history and classics describes the actual events of March 15, 44 BC, when Julius Caesar was murdered during the Roman civil wars, and compares them to those outlined by William Shakespeare in his famous play.--Publisher's description.

Geometric Inequalities World Scientific Publishing Company

In China, lots of excellent students who are good at maths take an active part in various maths contests and the best six senior high school students will be selected to form the IMO National Team to compete in the International Mathematical Olympiad. In the past ten years China's IMO Team has achieved outstanding results -- they have won the first place almost every year. The author is one of the senior coaches of China's IMO National Team, whose students have won many gold medals many times in IMO. This book is part of the Mathematical Olympiad Series which discusses several aspects related to maths contests, such as algebra, number theory, combinatorics, graph theory and geometry. This book will, in an interesting problem-solving way, explain what probability theory is: its concepts, methods and meanings; particularly, two important concepts -- probability and mathematical expectation (briefly expectation) -- are emphasized. It consists of 65 problems, appended by 107 exercises and their answers.

Lecture Notes On Mathematical Olympiad Courses World Scientific

A unique collection of competition problems from over twenty major national and international mathematical competitions for high school students. Written for trainers and participants of contests of all levels up to the highest level, this will appeal to high school teachers conducting a mathematics

club who need a range of simple to complex problems and to those instructors wishing to pose a "problem of the week", thus bringing a creative atmosphere into the classrooms. Equally, this is a must-have for individuals interested in solving difficult and challenging problems. Each chapter starts with typical examples illustrating the central concepts and is followed by a number of carefully selected problems and their solutions. Most of the solutions are complete, but some merely point to the road leading to the final solution. In addition to being a valuable resource of mathematical problems and solution strategies, this is the most complete training book on the market.

Math Storm Olympiad Problems World Scientific Publishing Company

Mathematical Olympiad Treasures aims at building a bridge between ordinary high school exercises and more sophisticated, intricate and abstract concepts in undergraduate mathematics. The book contains a stimulating collection of problems in the subjects of algebra, geometry, trigonometry, number theory and combinatorics. While it may be considered a sequel to "Mathematical Olympiad Challenges," the focus is on engaging a wider audience to apply techniques and strategies to real-world problems. Throughout the book students are encouraged to express their ideas, conjectures, and conclusions in writing. The goal is to help readers develop a host of new mathematical tools that will be useful beyond the classroom and in a number of disciplines.

The Death of Caesar World Scientific Publishing Company

In China, lots of excellent maths students takes an active part in various maths contests and the best six senior high school students will be selected to form the IMO National Team to compete in the International Mathematical Olympiad. In the past ten years, China's IMO Team has achieved outstanding results — they have won the first place almost every year.The author is one of the senior coaches of China's IMO National Team, he is the headmaster of Shanghai senior high school which is one of the best high schools of China. In the past decade, the students of this school have won the IMO gold medals almost every year.The author attempts to use some common characteristics of sequence and mathematical induction to fundamentally connect Math Olympiad problems to particular branches of mathematics. In doing so, the author hopes to reveal the beauty and joy involved with math exploration and at the same time, attempts to arouse readers' interest of learning math and invigorate their courage to challenge themselves with difficult problems.

Lecture Notes on Mathematical Olympiad Courses World Scientific

Littlewood's Miscellany, which includes most of the earlier work as well as much of the material Professor Littlewood collected after the publication of A Mathematician's Miscellany, allows us to see academic life in Cambridge, especially in Trinity College, through the eyes of one of its greatest figures. The joy that Professor Littlewood found in life and mathematics is reflected in the many amusing anecdotes about his contemporaries, written in his pungent, aphoristic style. The general reader should, in most instances, have no trouble following the mathematical passages. For this publication, the new material has been prepared by Béla Bollobás; his foreword is based on a talk he gave to the British Society for the History of Mathematics on the occasion of Littlewood's centenary.

Challenging Problems in Algebra Courier Corporation

The series is edited by the head coaches of China's IMO National Team. Each volume, catering to different grades, is contributed by the senior coaches of the IMO National Team. The Chinese edition has won the award of Top 50 Most Influential Educational Brands in China.The series is created in line with the mathematics cognition and intellectual development levels of the students in the corresponding grades. All hot mathematics topics of the competition are included in the volumes and are organized into chapters where concepts and methods are gradually introduced to equip the students with necessary knowledge until they can finally reach the competition level.In each chapter, well-designed problems including those collected from real competitions are provided so that the students can apply the skills and strategies they have learned to solve these problems. Detailed solutions are provided selectively. As a feature of the series, we also include some solutions generously offered by the members of Chinese national team and national training team.

Die Suid-Afrikaanse wiskunde-olimpiade Springer Science & Business Media

The International Mathematical Olympiad (IMO) is a competition for high school students. China has taken part in the IMO 21 times since 1985 and has won the top ranking for countries 14 times, with a multitude of golds for individual students. The six students China has sent every year were selected from 20 to 30 students among approximately 130 students who took part in the annual China Mathematical Competition during the winter months. This volume comprises a collection of original problems with solutions that China used to train their Olympiad team in the years from 2006 to 2008. Mathematical Olympiad problems with solutions for the years 2002?2006 appear in an earlier volume, Mathematical Olympiad in China.

Mathematical Olympiad Challenges American Mathematical Soc.

This is a challenging problem-solving book in Euclidean geometry, assuming nothing of the reader other than a good deal of courage. Topics covered included cyclic quadrilaterals, power of a point, homothety, triangle centers; along the way the reader will meet such classical gems as the nine-point circle, the Simson line, the symmedian and the mixtilinear incircle, as well as the theorems of Euler, Ceva, Menelaus, and Pascal. Another part is dedicated to the use of complex numbers and barycentric coordinates, granting the reader both a traditional and computational viewpoint of the material. The final part consists of some more advanced topics, such as inversion in the plane, the cross ratio and projective transformations, and the theory of the complete quadrilateral. The exposition is friendly and relaxed, and accompanied by over 300 beautifully drawn figures. The emphasis of this book is placed squarely on the problems. Each chapter contains carefully chosen worked examples, which explain not only the solutions to the

problems but also describe in close detail how one would invent the solution to begin with. The text contains a selection of 300 practice problems of varying difficulty from contests around the world, with extensive hints and selected solutions. This book is especially suitable for students preparing for national or international mathematical olympiads or for teachers looking for a text for an honor class.

102 Combinatorial Problems World Scientific / East China Normal University Press, C

"The IMO Compendium" is the ultimate collection of challenging high-school-level mathematics problems and is an invaluable resource not only for high-school students preparing for mathematics competitions, but for anyone who loves and appreciates mathematics. The International Mathematical Olympiad (IMO), nearing its 50th anniversary, has become the most popular and prestigious competition for high-school students interested in mathematics. Only six students from each participating country are given the honor of participating in this competition every year. The IMO represents not only a great opportunity to tackle interesting and challenging mathematics problems, it also offers a way for high school students to measure up with students from the rest of the world. Until the first edition of this book appearing in 2006, it has been almost impossible to obtain a complete collection of the problems proposed at the IMO in book form. "The IMO Compendium" is the result of a collaboration between four former IMO participants from Yugoslavia, now Serbia and Montenegro, to rescue these problems from old and scattered manuscripts, and produce the ultimate source of IMO practice problems. This book attempts to gather all the problems and solutions appearing on the IMO through 2009. This second edition contains 143 new problems, picking up where the 1959-2004 edition has left off.

A Decade of the Berkeley Math Circle World Scientific

See also A SECOND STEP TO MATHEMATICAL OLYMPIAD PROBLEMS The International Mathematical Olympiad (IMO) is an annual international mathematics competition held for pre-collegiate students. It is also the oldest of the international science olympiads, and competition for places is particularly fierce. This book is an amalgamation of the first 8 of 15 booklets originally produced to guide students intending to contend for placement on their country's IMO team. The material contained in this book provides an introduction to the main mathematical topics covered in the IMO, which are: Combinatorics, Geometry and Number Theory. In addition, there is a special emphasis on how to approach unseen questions in Mathematics, and model the writing of proofs. Full answers are given to all questions. Though A First Step to Mathematical Olympiad Problems is written from the perspective of a mathematician, it is written in a way that makes it easily comprehensible to adolescents. This book is also a must-read for coaches and instructors of mathematical competitions.

Graph Theory MAA

In China, lots of excellent students who are good at maths take an active part in various maths contests and the best six senior high school students will be selected to form the IMO National Team to compete in the International Mathematical Olympiad. In the past ten years China's IMO Team has achieved outstanding results — they have won the first place almost every year. The author is one of the senior coaches of China's IMO National

Team, whose students have won many gold medals many times in IMO. This book is part of the Mathematical Olympiad Series which discusses several aspects related to maths contests, such as algebra, number theory, combinatorics, graph theory and geometry. This book will, in an interesting problem-solving way, explain what probability theory is: its concepts, methods and meanings; particularly, two important concepts — probability and mathematical expectation (briefly expectation) — are emphasized. It consists of 65 problems, appended by 107 exercises and their answers.

Mathematical Olympiad in China (2007-2008) World Scientific Publishing Company

This book is a continuation of *Mathematical Olympiads 1999-2000: Problems and Solutions From Around the World*, published by the Mathematical Association of America. It contains solutions to the problems from 27 national and regional contests featured in the earlier book, together with selected problems (without solutions) from national and regional contests given during 2001. In many cases multiple solutions are provided in order to encourage students to compare different problem-solving strategies. The editors have tried to present a wide variety of problems, especially from those countries that have often done well at the IMO. The problems themselves should provide much enjoyment for all those fascinated by solving challenging mathematics questions.

50th IMO - 50 Years of International Mathematical Olympiads Simon and Schuster

Trouble in the Barker's Class

Littlewood's Miscellany World Scientific Publishing Company

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Problem-Solving Strategies World Scientific

In China, lots of excellent maths students take an active interest in various maths contests and the best six senior high school students will be selected to form the IMO National Team to compete in the International Mathematical Olympiad. In the past ten years China's IMO Team has achieved outstanding results — they won the first place almost every year. The author is one of the coaches of China's IMO National Team, whose students have won many gold medals many times in IMO. This book is part of the Mathematical Olympiad Series which discusses several aspects related to maths contests, such as algebra, number theory, combinatorics, graph theory and geometry. The book elaborates on Geometric Inequality problems such as inequality for the inscribed quadrilateral, the area inequality for special polygons, linear geometric inequalities, etc.