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# Math Olympiad Elementary Sample Questions

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61th International Mathematical Olympiad  
103 Trigonometry Problems  
Principles and Techniques in Combinatorics  
Mathematical Olympiads for Elementary School 5 - Fifth Grade  
Creative Problem Solving in School Mathematics  
Number Theory  
102 Combinatorial Problems  
Competition Math for Middle School  
One Hundred Problems in Elementary Mathematics  
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The IMO Compendium  
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Elementary School Math Competition Practice Tests  
Challenging Mathematical Problems with Elementary Solutions  
Math Competition Questions  
Mock Exams for Math Olympians (Volume 1)  
Mathematical Problems and Puzzles  
Ultimate Math Contest Preparation, Problem Solving Strategies, Math IQ Puzzles  
A Festival in Math  
Math Competition Questions-2  
Elementary School Mathematics for Parents and Teachers  
Mathematical Olympiads for Beginning Students  
Mathematical Olympiads for Elementary School 2 - Second Grade

Mathematical Olympiads for Elementary School 4 - Fourth Grade  
Math Olympiad Contest Problems, Volume 2 (REVISED)  
Elementary School Math Contests  
The USSR Olympiad Problem Book  
Math Olympiad Contest Problems for Elementary and Middle Schools  
A Decade of the Berkeley Math Circle  
A First Step to Mathematical Olympiad Problems  
Inequalities  
MATHEMATICS OLYMPIOD FOR IMO ASPIRANTS  
Problem-Solving Strategies  
MATHEMATICAL OLYMPIAD IN CHINA  
Euclidean Geometry in Mathematical Olympiads  
Mathematical Olympiads 2000-2001  
Grade Five Competition from the Leningrad Mathematical Olympiad

*Math Olympiad  
Elementary Sample  
Questions*

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guest*

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## **WHITEHEAD FARMER**

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*61th International Mathematical Olympiad*  
World Scientific Publishing Company  
Incorporated  
Both a challenge to mathematically  
inclined readers and a useful  
supplementary text for high school and  
college courses, One Hundred Problems in  
Elementary Mathematics presents an  
instructive, stimulating collection of

problems. Many problems address such  
matters as numbers, equations,  
inequalities, points, polygons, circles,  
ellipses, space, polyhedra, and spheres.  
An equal number deal with more amusing  
or more practical subjects, such as a picnic  
ham, blood groups, rooks on a chessboard,  
and the doings of the ingenious Dr.  
Abracadabrus. Are the problems in this  
book really elementary? Perhaps not in the  
lay reader's sense, for anyone who desires  
to solve these problems must know a fair  
amount of mathematics, up to calculus.  
Nevertheless, Professor Steinhaus has

given complete, detailed solutions to  
every one of his 100 problems, and  
anyone who works through the solutions  
will painlessly learn an astonishing amount  
of mathematics. A final chapter provides a  
true test for the most proficient readers:  
13 additional unsolved problems, including  
some for which the author himself does  
not know the solutions.

### **103 Trigonometry Problems**

Independently Published

This book has been designed to fulfil the  
preparation needs of candidates who  
aspire to crack International Mathematics

Olympiad, National Talent Search Exam, and other competitive exams. The book is strictly based on the latest curriculum from International Mathematics Olympiad. It has been prepared in accordance with the latest syllabus issued from CBSE, ICSE and other school boards across the country. The book consists of three sections namely Logical Reasoning, Mathematical Reasoning and Everyday Mathematics. The Concepts, Formulae and important Tips are given in the beginning of each chapter. Fully solved Multiple Choice Questions (MCQs) with detailed explanations enhance the problem solving skills of students. Model Papers are included in the book for thorough practice, and Previous Years' IMO papers given in the CDs help candidates to understand the level of difficulty and grasp the structure of questions asked in the exam. Salient Features:

- i Concepts are introduced gradually
- i Simple, lucid and systematic presentation
- i Detailed solutions at the end of each chapter
- i Previous years' Question Papers and Model Test Papers

Highly Recommended  
The book is highly recommended for the candidates who aspire to get distinction in Mathematics

and Science Olympiads at national and international level. It will prove very useful for various other competitive examinations such as: NTSE, NSTSE, SLSTSE, SSC, DSC, B. Ed, TET, CTET etc.

*Principles and Techniques in Combinatorics* Springer Science & Business Media

This book is intended for the Mathematical Olympiad students who wish to prepare for the study of inequalities, a topic now of frequent use at various levels of mathematical competitions. In this volume we present both classic inequalities and the more useful inequalities for confronting and solving optimization problems. An important part of this book deals with geometric inequalities and this fact makes a big difference with respect to most of the books that deal with this topic in the mathematical olympiad. The book has been organized in four chapters which have each of them a different character. Chapter 1 is dedicated to present basic inequalities. Most of them are numerical inequalities generally lacking any geometric meaning. However, where it is possible to provide a geometric interpretation, we include it as we go

along. We emphasize the importance of some of these inequalities, such as the inequality between the arithmetic mean and the geometric mean, the Cauchy-Schwarz inequality, the rearrangement inequality, the Jensen inequality, the Muirhead theorem, among others. For all these, besides giving the proof, we present several examples that show how to use them in mathematical olympiad problems. We also emphasize how the substitution strategy is used to deduce several inequalities.

Mathematical Olympiads for Elementary School 5 - Fifth Grade Springer  
Elementary School Math Competition Practice Tests offers students 30 sets of practice tests, 10 sets for each two grades: 1-2, 3-4, and 5-6. There are altogether 780 questions. The answer keys to all questions and step-by-step solutions for most questions are at the back of the book. The goal of the book is to kindle students' interest in math, strengthen their passion for math, and sharpen their problem-solving skills in math. All questions are original, interesting, and well thought of. A lot of questions are related to our daily life. Students will love

these questions. Colorful Illustrations and diagrams are provided for many questions so that young learners can understand the questions easily and solve them quickly.

The suggested time limit for each practice test is 75 minutes. Enjoy math!

Creative Problem Solving in School

Mathematics World Scientific

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.

Number Theory Courier Corporation

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.

*102 Combinatorial Problems* Createspace Independent Publishing Platform

This book introduces the development of the International Mathematical Olympiad in China from 1986 to 2013, especially the questions and answers of all the previous International Mathematical Olympiad since 1986. This book is suitable for the students who want to participate in high school International Maths Olympic, tutors and fans of general mathematics. This reprint has been authorized by Harbin Institute of Technology Press in North America.

Competition Math for Middle School

American Mathematical Soc.

Popular Lectures in Mathematics, Volume 12: Mathematical Problems and Puzzles: From the Polish Mathematical Olympiads contains sample problems from various

fields of mathematics, including arithmetic, algebra, geometry, and trigonometry. The contest for secondary school pupils known as the Mathematical Olympiad has been held in Poland every year since 1949/50. This book is composed of two main parts. Part I considers the problems and solutions about integers, polynomials, algebraic fractions and irrational experience. Part II focuses on the problems of geometry and trigonometric transformation, along with their solutions. The provided solutions aim to extend the student's knowledge of mathematics and train them in mathematical thinking. This book will prove useful to secondary school mathematics teachers and students.

One Hundred Problems in Elementary Mathematics Springer Science & Business Media

Elementary School Math Contests contains over 500 challenging math contest problems and detailed step-by-step solutions in Number Theory, Algebra, Counting & Probability, and Geometry. The problems and solutions are accompanied with formulas, strategies, and tips. This book is written for beginning mathletes who are interested in learning advanced

problem solving and critical thinking skills in preparation for elementary and middle school math competitions.

**Challenge your Brain 1** Courier Dover Publications

Mathematical Olympiads for Elementary School 2 - Second Grade My First Book of Mathematical Olympiads (Workbook Plus) The Mathematical Olympiads for the Second Grade of Elementary School discussed here are none other than the Mathematical Olympiads for Schoolchildren "Unikum", which are held every year in the city of Lipetsk (Russia) since 2010, and organized by the Faculty of Physics, Mathematics and Computer Science of Lipetsk State Pedagogical University and the Center for Continuing Education of Children "Strategy". Likewise, these Olympiads consist of two rounds, a qualifying round and a final round, both consisting of a written exam. The problems included in this book correspond to the final round of these Olympiads. The present edition called Workbook Plus seeks to consolidate the mathematical skills acquired with the previous workbook since it includes new variants of problems as well as more challenging tasks. In this

workbook has been compiled all the Olympiads held during the years 2011-2020 and is especially aimed at schoolchildren between 7 and 8 years old, with the aim that the students interested either in preparing for a math competition or simply in practicing entertaining problems to improve their math skills, challenge themselves to solve these interesting problems; or it could even be used for a self-evaluation in this competition, trying the student to solve the greatest number of problems in each exam in a maximum time of 1 hour 10 minutes. It can also be useful for teachers, parents, and math study circles. The book has been carefully crafted so that the student can work on the same book without the need for additional sheets, what will allow the student to have an orderly record of the problems already solved. Each exam includes a set of 8 problems from different school math topics. To be able to face these problems successfully, no greater knowledge is required than that covered in the school curriculum; however, many of these problems require an ingenious approach to be tackled successfully. Students are

encouraged to keep trying to solve each problem as a personal challenge, as many times as necessary; and to parents who continue to support their children in their disciplined preparation. Once an answer is obtained, it can be checked against the answers given at the end of the book.

*The IMO Compendium* Shing Lee Publishers Pte Ltd

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.

**Developing Math Talent** Createspace Independent Publishing Platform  
The Mathematical Olympiads for the Fifth Grade of Elementary School discussed here are none other than the Open Mathematical Olympiads of the City for the 5th grade which are held every year in the city of Moscow since 2007, at the facilities of the Technological University of Russia - MIREA. These Olympiads consist of two independent rounds, one written and one oral. Likewise, the problems included here correspond to the written round, which present two levels of difficulty, of 10 and 5 problems respectively. In this workbook has been compiled all the Olympiads held during the years 2011-2020 and is especially aimed at schoolchildren between 10 and 11 years old, with the aim that the students interested either in preparing for a math competition or simply in practicing entertaining problems to improve their math skills, challenge themselves to solve these interesting problems (recommended even to middle school students with little or no experience in Math Olympiads and who require comprehensive preparation before a

competition); or it could even be used for a self-evaluation in this competition, trying the student to solve the greatest number of problems in each exam in a maximum time of 2 hours. It can also be useful for teachers, parents, and math study circles. The book has been carefully crafted so that the student can work on the same book without the need for additional sheets, what will allow the student to have an orderly record of the problems already solved. Each exam includes a set of 15 problems from different school math topics. To be able to face these problems successfully, no greater knowledge is required than that covered in the school curriculum; however, many of these problems require an ingenious approach to be tackled successfully. Students are encouraged to keep trying to solve each problem as a personal challenge, as many times as necessary; and to parents who continue to support their children in their disciplined preparation. Once an answer is obtained, it can be checked against the answers given at the end of the book.

**The IMO Compendium** Springer Science & Business Media  
Math competition book level-2 is a

developmental practice question text for all students who wish to prepare for math contest. There are 1000 practice questions. Which book to develop and improve students' practice skills. Math Competition Questions are challenge student in grade 4 and 5. This book level is two. Variety of challenge problems that include easy, medium and hard math problems cover. In this book you see different questions. However math competition question book are great starting point to train students for math competition. This book is good for elementary school students who wants extra practice prepare for math contest. This book include 1000 is very much interested in doing the questions. I hope you have been enjoyed these book.

**Lecture Notes on Mathematical Olympiad Courses** Springer Science & Business Media

A textbook suitable for undergraduate courses. The materials are presented very explicitly so that students will find it very easy to read. A wide range of examples, about 500 combinatorial problems taken from various mathematical competitions and exercises are also included.

**Mathematical Olympiad Treasures** V&S Publishers

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.

*Elementary School Math Competition Practice Tests* American Mathematical Soc. Mathematical Olympiads for Beginning Students - The Zeroth Book for Elementary Schoolers is an initiative that arises at the suggestion of parents and teachers to want to count on a practical study material for the training of future Math Olympians who currently have nascent math skills. This problem book is a collection of 400 select problems with five levels of difficulty, covering the complete training program for beginners, and is especially aimed at elementary school children between 6 and 11 years old with little or no experience in Math Olympiads who seek to strengthen their math skills and become a Math Olympian. It may even be of great help for beginners in math, for

whom it may be their first book on the subject. Each level consists of a set of 10 exams, where each exam consists of 8 problems inspired by problems from Math Olympiads around the world. Further, an answer sheet is included after each exam and at the end of the book the student will find the answers to all the problems proposed in it. It is worth mentioning that this problem book is a comprehensive preparation material, that is, anyone who begins with this training program is recommended to start from the first level without skipping any of them, in this way the students will experience the gradual improvement of their math skills, evidencing their progress continuously. Likewise, students are suggested to carry out the following training scheme: between 6 and 7 years old, up to level 2; between 7 and 8 years, up to level 3; between 8 and 9 years old, up to level 4; between 9 and 11 years old, up to level 5. It is important to clarify that what is suggested above is only referential as it is the minimum required for those ages; however, students are always encouraged to continually overcome themselves and face increasingly higher levels of

difficulty. For the success of this training program, the essential presence of a guide, tutor or parent is recommended during the learning process of the student, so that they can be guided in the face of doubts and encouraged in the face of obstacles that may arise. So students are encouraged to start their training as soon as possible and become a successful contestant in Math Olympiads, and parents are encouraged to ensure and closely monitor the proper preparation of their children.

*Challenging Mathematical Problems with Elementary Solutions* Springer Nature 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.

**Math Competition Questions** Springer Science & Business Media

The Math Festival is a mass participation event for 6th and 7th grade students, who have a special interest in mathematics. This event includes various activities including a mathematics Olympiad, conferences for students and parents, mathematical games, among others. This festival has been held every year at the Moscow State University - M. V. Lomonosov since 1990, and since 1994 it is held within the framework of the Moscow Mathematical Olympiads. This workbook includes all the Olympiads held during the years 2011-2020 and is especially aimed at middle school students as well as students in the last year of elementary school, with the purpose that the students interested in either preparing for a competition or simply in practicing entertaining problems to improve his math skills, challenge themselves to solve these



interesting problems; or it could even be useful in the realization of simulations of this competition, trying the student to solve the greatest number of problems in each exam in a maximum time of 2 hours. It can also be useful for teachers, parents, and math study circles. The book has been carefully crafted so that the student can work on the same book without the need for additional sheets, what will allow the student to have an orderly record of the problems already solved. Each test in each grade (6th and 7th) includes a set of 6 problems on different school math topics. Generally, the first 2 problems are usually the most accessible, although this is not always the case. To be able to face these problems successfully, no more knowledge is required than that covered in the school curriculum; however, many of these problems require an ingenious approach to be tackled successfully. Only in very particular cases, some problems will require some special knowledge to be solved. Students are encouraged to keep trying to solve each problem as a personal challenge, as many times as necessary. Once an answer is obtained, it can be checked against the answers provided at

the end of the book.

**Mock Exams for Math Olympians (Volume 1)** Glenwood Publications Incorporated

This workbook is aimed at math contests preparation for grades 1 and 2 and has a separate answer book. All contents are in English except some headings for the purpose of selling in China. Only the knowledge of basic chess moves is needed in solving some of the problems. The chess moves can be easily learned in a few minutes with my inventions of Geometry Chess Symbols which show what you see is what you move. There are not many math contests for grades 1 and 2. The main reason, I think, is the limited math computation ability of lower grades students. Many North American students will not learn multiplication until grade 3, but many Asian countries and areas learn times table at grade 2, so there is one year of difference of learning ahead in China. This workbook has brought its standard to meet the highest possible math curriculum in the world so four operations of computation appear in this workbook. The earlier the students could master the skills of four basic operations,

the more the students could explore many possibilities of word problem computation problems. With this in mind, how does the very popular Math Kangaroo Contest test the grade 1 and grade 2 students? How is it different from other math contests? The Math Kangaroo grades 1 and 2 Contest almost does not include the direct math computation problems which are very different from the math contests in China where direct computation problems could include skillful computation problems. I analyzed the most recent years of Canadian Math Kangaroo Contest grade 1 and 2 problems and they start to emerge some characteristics and categories, so I include here to help students prepare for it. The lower grade math contest tends to skew to the more visual operation type of problems. The problems could be classified as follows: Arrangement and sorting numbers Patterns of figures and numbers Counting figures or shapes or paths Cubes or cards math including rotation or folding Identifying parts of a figure or finding what part of a figure is missing Number puzzles including filling numbers into empty spaces Logic and reasoning problems Word problems

Including some Chinese model problems  
 All other problems which do not belong to the above. Many of the above problems are not typical problems appeared in the books where you can buy from a bookstore because the problems in the math contests are much more complicated and involve a lot of creativities. The above subjects are now included in this workbook. Our math contest books are suitable for preparing the following math contests or competitions. Worldwide Math Kangaroo Contests USA Mathcounts USA Math Olympiad Mathleague Math Contest Canada BC Elmacon Math Contest

Canadian Math Challengers Competition  
 Canadian Gauss & Pascal Mathematics  
 Mathematica Phythagoras, Euler, Langrange, Newton contests  
 Worldwide Caribou Mathematics Online Contest (USA Brock University)  
 Chinese math contests  
 Many countries' math competitions  
 Worldwide Math Kangaroo Contests  
*Mathematical Problems and Puzzles*  
 Elsevier  
 Math competition book is a developmental practice questions text for all students who are prepare math contest. It uses 1000 practice questions. thisbook to develop

and improve students practice skills. Math Competition Questions are challenge student in grade 4 and 5. Thisbook level is one. Variety of challenge problems that include easy, medium and hard math problem cover. In this book you see different questions. However math competition question book are great starting point to train students for math competition. This book is good for elementary school students who wants extra practice prepare for math contest. This book include 1000 is very much interested in doing the questions. I hope you have been enjoyed these book.