

PUBLICATIONS



FROM THE AUSTRALIAN MATHEMATICS TRUST
www.amt.edu.au

COMPETITION MATERIALS

AMC PRACTICE PACKS

Practice Packs of Australian Mathematics Competition papers are a valuable tool in preparing for the competition. Each pack contains five papers, one each from 2004–2008 and an answer key.

Middle Primary— Code: PPMP Price: \$21.00
Upper Primary— Code: PPUP Price: \$21.00
Junior— Code: PPJ Price: \$21.00
Intermediate— Code: PPI Price: \$21.00
Senior— Code: PPS Price: \$21.00

AMC SCHOOL SETS

Past Australian Mathematics Competition papers are available in sets of ten identical papers for each division of the Competition. Schools find these sets extremely valuable in setting their students miscellaneous exercises. Sets are available in the Junior, Intermediate and Senior divisions to 2008 (some older years may not be available) and in the Middle and Upper Primary divisions from 2004–2008. **Sets can be ordered by quoting the year and code eg. Middle Primary 2006 - Code: O6MP etc.**

Middle Primary set of 10 (2008)— Code: O8MP Price: \$13.50
Upper Primary set of 10 (2008)— Code: O8UP Price: \$13.50
Junior set of 10 (2008)— Code: O8J Price: \$13.50
Intermediate set of 10 (2008)— Code: O8I Price: \$13.50
Senior set of 10 (2008)— Code: O8S Price: \$13.50

AMC SOLUTIONS AND STATISTICS

WJ ATKINS & PJ TAYLOR

Published annually, this book provides a record of the AMC questions, answers and solutions, with details of medallists and prize winners. It also provides statistical data on levels of Australian response rates and other analytical information. From 2004 there is also a Primary version providing questions, answers, solutions and statistics for the Middle and Upper Primary papers. Editions from previous years are available.

Primary Divisions— Code: SS08P Price: \$35.00
Senior Divisions— Code: SS08 Price: \$35.00
Primary & Senior Divisions (2 books)— Code: SS08KIT Price: \$57.00
Previous Years
Primary Divisions— Code: e.g. SS07P Price: \$28.50
Senior Divisions— Code: e.g. SS07 Price: \$28.50
Both books— Code: e.g. SS07KIT Price: \$53.00

AUSTRALIAN MATHEMATICS COMPETITION BOOK 1 1978–1984, BOOK 2 1985–1991, BOOK 3 1992–1998 & BOOK 4 1999–2005

These books consist of questions, full solutions and statistics from past Junior, Intermediate and Senior AMC papers. The questions have been grouped by topic and ranked in order of difficulty. They are powerful tools for motivating and challenging students at the senior levels. Book 3 is also available on CD for Windows.

Book 1— Code: AB1 Price: \$40.00
Book 2— Code: AB2 Price: \$40.00
Book 3— Code: AB3 Price: \$40.00
Book 3 CD— Code: AB3CD Price: \$40.00
Book 4— Code: AB4 Price: \$40.00

AUSTRALIAN MATHEMATICS COMPETITION PRIMARY BOOK 1 2004–2008

This book consists of questions and full solutions from past AMC papers and is designed for use with students in Middle and Upper Primary. The

questions are arranged in papers of 10 and are presented ready to be photocopied for classroom use.

Book 1— Code: AP1 Price: \$50.00

MATHEMATICAL CONTESTS—AUSTRALIAN SCENE

PJ BROWN, A DI PASQUALE & K MCAVANEY

These books provide an annual record of the Australian Mathematical Olympiad Committee's program. The books consist of the questions, solutions, results and statistics for: Australian Intermediate Mathematics Olympiad (formerly AMOC Intermediate Contest), AMOC Senior Mathematics Contest, Australian Mathematical Olympiad, Asian Pacific Mathematics Olympiad, International Mathematical Olympiad and the Maths Challenge Stage of the Mathematical Challenge for Young Australians. **Editions from previous years are also available for \$28.50 each and can be ordered by specifying the code and year eg. 2006 - AS06.**

Code: AS08 Price: \$35.00
Previous Years— Code: e.g. AS07 Price: \$28.50

CHALLENGE! 1991 TO 1998 BOOK 1 CHALLENGE! 1999 TO 2006 BOOK 2

**JB HENRY, J DOWSEY, A EDWARDS, L MOTTERSHEAD,
A NAKOS, G VARDARO & PJ TAYLOR**

These books contain the problems and full solutions to all Junior and Intermediate problems set in the Mathematics Challenge for Young Australians, exactly as they were proposed at the time. They are highly recommended as a resource book for classes from Years 7 to 10 and also for students who wish to develop their problem solving skills. Most of the problems are graded within to allow students to access an easier idea before developing through a few levels. Book 1 is a major reprint of the original *Challenge! (1991–1995)* published by the Trust in 1997 but has been expanded to include the years up to 1998.

Code: CHAL1 Price: \$40.00
Code: CHAL2 Price: \$40.00

PROBLEMS TO SOLVE IN MIDDLE SCHOOL MATHEMATICS

**B HENRY, L MOTTERSHEAD, A EDWARDS, J MCINTOSH, A NAKOS,
K SIMS, A THOMAS & G VARDARO**

This collection of problems is designed for use with students in Years 5 to 8. Each of the 65 problems is presented ready to be photocopied for classroom use. With each problem there are teacher's notes and fully worked solutions. Some problems have extension problems presented with the teacher's notes. The problems are arranged in topics (Number, Counting, Space and Number, Space, Measurement, Time, Logic) and are roughly in order of difficulty within each topic. There is a chart suggesting which problem-solving strategies could be used with each problem.

Code: PMS Price: \$50.00

AUSTRALIAN MATHEMATICAL OLYMPIADS 1979–1995

H LAUSCH & PJ TAYLOR

This book is a collection of Australian Mathematical Olympiad papers from the first in 1979 to 1995. The solutions to all problems are included and in a number of cases, alternative solutions are also offered. The material is recommended for senior and advanced students.

Code: AMO Price: \$40.00

EXTENSION MATERIALS

ENRICHMENT STUDENT NOTES

The Student Notes are supplied to students enrolled in the program along with other materials provided to their teacher. We are making these Notes available as a text book to interested parties for whom the program is not available. The six stages offer extension material for students from year 5 to year 10, in that order.

NEWTON: Recommended for students of about Year 5 and 6, topics include polyominoes, arithmetricks, polyhedra, patterns and divisibility.

Code: **SNT00** Price: **\$40.00**

DIRICHLET: Recommended for students of Year 6 or 7, topics include problem-solving techniques, tessellations, base five arithmetic, pattern seeking, rates and number theory.

Code: **SD00** Price: **\$40.00**

EULER: Recommended for students of about Year 7, topics include elementary number theory and geometry, counting and pigeonhole principle.

Code: **SE00** Price: **\$40.00**

GAUSS: Recommended for students of about Year 8, topics include Pythagoras' theorem, Diophantine equations, counting and congruences.

Code: **SG00** Price: **\$40.00**

NOETHER: Recommended for students of about Year 9, topics include number theory, sequences, inequalities and circle geometry.

Code: **SN00** Price: **\$40.00**

PÓLYA: Recommended for students of about Year 10, topics include polynomials, algebra, inequalities and geometry.

Code: **SPO0** Price: **\$40.00**

SEEKING SOLUTIONS

JC BURNS

The author solves the problems of the 1988, 1989 and 1990 International Mathematical Olympiads. Unlike other books in which only complete solutions are given, John Burns describes the complete thought processes he went through when solving the problems from scratch. Written in an inimitable and sensitive style, this book is a must for a student planning on developing the ability to solve advanced mathematics problems.

Code: **SS** Price: **\$40.00**

PROBLEM SOLVING VIA THE AMC

WJ ATKINS

This 210-page book shows how to develop techniques for solving problems in the Australian Mathematics Competition. These problems

have been selected from topics such as geometry, motion, diophantine equations and counting techniques—areas that students consistently find difficult.

Code: **PSH** Price: **\$40.00**

MATHEMATICAL TOOLCHEST

AW PLANK & N WILLIAMS

This 120 page book is intended for talented or interested secondary school students who are keen to develop their mathematical knowledge. It contains a comprehensive collection of theorems and other results from many branches of mathematics.

Code: **MTC** Price: **\$40.00**

METHODS OF PROBLEM SOLVING, BOOKS 1 & 2

JB TABOV & PJ TAYLOR

These books introduce senior students aspiring to Olympiad competition to particular mathematical problem-solving techniques. The books contain formal treatments of methods which may be familiar or may introduce the student to new, sometimes powerful techniques.

Book 1— Code: **MP1** Price: **\$40.00**,

Book 2— Code: **MP2** Price: **\$40.00**

TEACHING AND ASSESSING WORKING MATHEMATICALLY BOOKS 1 & 2

E STOYANOVA

These books present ready-to-use materials that challenge students' understanding of mathematics. In exercises and short assessments, working mathematically is linked with curriculum content and problem-solving strategies. The books contain complete solutions and are suitable for mathematically able students in Years 3 to 4 (Book 1) and Years 5 to 8 (Book 2).

Book 1— Code: **TAW** Price: **\$40.00**,

Book 2— Code: **TAW2** Price: **\$40.00**

A MATHEMATICAL OLYMPIAD PRIMER

G SMITH

This accessible text will enable enthusiastic students to enter the world of secondary school mathematics competitions with confidence. This is an ideal book for senior high school students who aspire to advance from school mathematics to solving olympiad-style problems. The author is the leader of the British IMO team.

Code: **MOP** Price: **\$40.00**

INTERNATIONAL MATHEMATICS

USSR MATHEMATICAL OLYMPIADS 1989–1992

AM SLINKO

Arkadii Slinko, now at the University of Auckland, was one of the leading figures of the USSR Mathematical Olympiad Committee during the last years before democratisation. This book brings together the problems and solutions of the last four years of the All-Union Mathematics Olympiads. Not only are the problems and solutions highly expository but the book is worth reading alone for the fascinating history of mathematics competitions to be found in the introduction.

Code: **USR** Price: **\$40.00**

POLISH & AUSTRIAN MATHEMATICAL OLYMPIADS 1981–1995

ME KUCZMA & E WINDISCHBACHER

Poland and Austria have some of the strongest traditions of Mathematical Olympiads in Europe even holding a joint Olympiad of high quality. This book contains some of the best problems from the national Olympiads. All problems have two or more independent solutions, indicating their richness as mathematical problems.

Code: **PAO** Price: **\$40.00**

INTERNATIONAL MATHEMATICS

—TOURNAMENT OF TOWNS

BOOK 1 1980–1984, BOOK 2 1984–1989,

BOOK 3 1989–1993, BOOK 4 1993–1997

BOOK 5 1997–2002, BOOK 6 2002–2007

(Book 6 available mid 2009)

PJ TAYLOR

The International Mathematics Tournament of Towns is a problem-solving competition in which teams from different cities are handicapped according to the population of the city. Ranking only behind the International Mathematical Olympiad, this competition had its origins in Eastern Europe (as did the Olympiad) but is now open to cities throughout the world. These books contain all the problems and solutions of the Tournaments.

Book 1— Code: **TT1** Price: **\$40.00**

Book 2— Code: **TT2** Price: **\$40.00**

Book 3— Code: **TT3** Price: **\$40.00**

Book 4— Code: **TT4** Price: **\$40.00**

Book 5— Code: **TT5** Price: **\$40.00**

Book 6— Code: **TT6** Price: **\$40.00**

INTERNATIONAL MATHEMATICS CONT'D

CHINESE MATHEMATICS COMPETITIONS & OLYMPIADS

BOOK 1 1981-1993 & BOOK 2 1993-2001

A LIU

These books contain the papers of two contests, the Chinese National High School Competition and the Chinese Mathematical Olympiad. The problems are meticulously constructed, many with distinctive flavour and come in all levels of difficulty, from the relatively basic to the most challenging.

Book 1— Code: CMO Price: \$40.00

Book 2— Code: CMO2 Price: \$40.00

ASIAN PACIFIC MATHEMATICS OLYMPIADS 1989-2000

H LAUSCH & C BOSCH-GIRAL

With innovative regulations and procedures, the APMO has become a model for regional competitions around the world where costs and logistics are serious considerations. This 159-page book reports the first twelve years of this competition, including sections on its early history, problems, solutions and statistics.

Code: APO Price: \$40.00

101 PROBLEMS IN ALGEBRA

EDITED BY T ANDREESCU & Z FENG

This book contains one hundred and one highly rated problems used in training and testing the USA International Mathematical Olympiad (IMO) team. It gradually builds students algebraic skills and techniques and aims to broaden students' views of mathematics and better prepare them for possible participation in mathematical competitions. It provides

in-depth enrichment in important areas of algebra by reorganizing and enhancing students' problem-solving tactics, and stimulates interest for future study of mathematics.

Code: 101PA Price: \$40.00

HUNGARY ISRAEL MATHEMATICS COMPETITION

S GUERON

The Hungary Israel Mathematics Competition commenced in 1990 when diplomatic relations between the two countries were in their infancy. This 181-page book summarizes the first 12 years of the competition (1990 to 2001) and includes the problems and complete solutions. The book is directed at mathematics lovers, problem-solving enthusiasts and students who wish to improve their competition skills. No special or advanced knowledge is required beyond that of the typical IMO contestant and the book includes a glossary explaining non-standard terms and theorems that have been used in the book.

Code: HI Price: \$40.00

BULGARIAN MATHEMATICS COMPETITION 1992-2001

BJ LAZAROV, JB TABOV, PJ TAYLOR & A STOROZHEV

The Bulgarian Mathematics Competition has become one of the most difficult and interesting competitions in the world. It is unique in structure combining mathematics and informatics problems in a multi-choice format. This book covers the first ten years of the competition complete with answers and solutions. Students of average ability and with an interest in the subject should be able to access this book and find a challenge.

Code: BMC Price: \$40.00

OVERSEAS PUBLISHERS

(for Australian residents only) Stocks are limited

NUMBER THEORY

INVITATION TO NUMBER THEORY

O ORE

This book is a gentle introductory text to the fascinating properties of numbers. Capable junior high school students should find this book interesting and challenging.

Code: INT Price: \$40.00

NUMBERS: RATIONAL AND IRRATIONAL

I NIVEN

This book is concerned especially with ways of classifying numbers into categories. Most chapters should be within the grasp of capable junior high school students.

Code: NRI Price: \$20.00

CONTINUED FRACTIONS

C OLDS

The theory of continued fractions is a powerful tool in number theory and other mathematical disciplines. Capable junior high school students should be able to cope with this book.

Code: CF Price: \$20.00

COMBINATORICS

MATHEMATICS OF CHOICE... HOW TO COUNT WITHOUT COUNTING

I NIVEN

Combinatorial thinking enters most elegantly into proofs of many theorems in various branches of mathematics. Strongly recommended for all high school students.

Code: MC Price: \$40.00

GRAPHS AND THEIR USES

O ORE & R WILSON

This book is a classic introductory text to graph theory, and includes the travelling salesman problem, shortest route problems and colouring maps on surfaces.

Code: GU Price: \$40.00

OLYMPIAD MATERIAL

INTERNATIONAL MATHEMATICAL OLYMPIADS 1959-1977

S GREITZER

This book has all the IMO problems and their solutions for the first nineteen IMOs.

Code: I01 Price: \$35.00

INTERNATIONAL MATHEMATICAL OLYMPIADS 1978-1985

M KLAMKIN

This book has all the IMO problems and their solutions for the above period.

Code: I02 Price: \$35.00

USA MATHEMATICAL OLYMPIADS 1972-1986

M KLAMKIN

Problems and solutions from the USA Mathematical Olympiad are presented by one of the world's master problem creators.

Code: UMO Price: \$35.00

HUNGARIAN PROBLEM BOOK 1 (1894-1905)

TRANSLATED BY E RAPAPORT

This book is based on the 1894-1905 Eötvös Competitions in elementary mathematics.

Code: HP1 Price: \$20.00

INEQUALITIES

INTRODUCTION TO INEQUALITIES

E BECKENBACK & R BELLMAN

This book is an excellent introduction at an elementary level to the world of inequalities.

Code: **II** Price: **\$40.00**

GEOMETRIC INEQUALITIES

N KAZARINOFF

Many will enjoy the simply stated geometric problems about maximum and minimum lengths and areas in this book.

Code: **GI** Price: **\$20.00**

GEOMETRY

GEOMETRY REVISITED

H COXETER & S GREITZER

Among the many beautiful and non-trivial theorems in geometry found in this book are the theorems of Ceva, Menelaus, Pappus, Desargues, Pascal and Brianchon.

Code: **GR** Price: **\$40.00**

GEOMETRIC TRANSFORMATIONS I, II, III

I YAGLOM

These books introduce the reader to geometrical transformation techniques which can prove very powerful in problem solving when compared to traditional Euclidean methods.

Code: **GT1** Price: **\$35.00**

Code: **GT2** Price: **\$35.00**

Code: **GT3** Price: **\$35.00**

MISCELLANEOUS

INGENUITY IN MATHEMATICS

R HONSBERGER

This book consists of nineteen independent essays on topics including number theory, geometry, combinatorics, logic and probability.

Code: **IM** Price: **\$20.00**

OLD AND NEW UNSOLVED PROBLEMS IN PLANE GEOMETRY AND NUMBER THEORY

V KLEE & S WAGON

This book's presentation is organised around 24 central problems, many of which are accompanied by different, related problems, placed in historical context.

Code: **ONP** Price: **\$40.00**

JOURNALS

MATHEMATICS COMPETITIONS

This bi-annual journal is published on behalf of the World Federation of National Mathematics Competitions. It contains articles of interest to academics and teachers around the world who run mathematics competitions. It includes articles on actual competitions, results of competitions, and mathematical and historical articles, that may be of interest to those associated with competitions. Past issues are available via our website.

Code: **WFED** Price: **\$68.00 for one year subscription, postage included (2 issues)**

PARABOLA INCORPORATING FUNCTION

This tri-annual journal publishes articles on applied mathematics, mathematical modelling, statistics, pure mathematics and the history of mathematics, that can contribute to the teaching and learning of mathematics at the senior secondary school level. The journal's readership consists of mathematics students, teachers and researchers with interests in promoting excellence in senior secondary school mathematics education. Past issues are available via our website.

Code: **PARA** Price: **\$28.00 for one year subscription, postage included (3 issues)**

MATHEMATICAL GEMS II AND III

R HONSBERGER

These two books are collections of short, expository essays on elementary topics from number theory, combinatorics and geometry.

Code: **MG2** Price: **\$40.00**

Code: **MG3** Price: **\$40.00**

MORE MATHEMATICAL MORSELS

R HONSBERGER

This collection is concerned with elementary problems which are not too long or complicated.

Code: **MMM** Price: **\$40.00**

LET'S SOLVE SOME MATH PROBLEMS

D HOLTON

This book is a collection of the author's writings on problem solving. The style is engaging, the dialogue readable, and the tone conversational.

Code: **LMP** Price: **\$35.00**

PROBLEMS, PROBLEMS, PROBLEMS VOLUMES 1-5

Each book features over 300 maths problems from the Canadian Mathematics Competition and is aimed at high school students.

Code: **PP1** Price: **\$35.00**

Code: **PP2** Price: **\$35.00**

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Code: **PP4** Price: **\$35.00**

Code: **PP5** Price: **\$35.00**

HOW DOES ONE CUT A TRIANGLE?

A SOIFER

This book reads like an adventure story, complete with interesting characters, moments of exhilaration, examples of serendipity and unanswered questions. It conveys the spirit of mathematical discovery and it celebrates the event as have mathematicians throughout history.

Code: **HTC** Price: **\$35.00**

CENTURY 2 OF KÖMAL "1994-1997"

KöMaL, an abbreviation of the words in Hungarian for High School Mathematics and Physics Journal, is the eminent journal in its field in Hungary, a country of great achievement in mathematics in the last century. This journal was first published in 1894. This book gives the flavour of Hungarian mathematics culture, and essentially gives all the problems and many of the solutions to problems which have been posed in the journal during this period. The book also provides some incisive mathematical articles which have appeared in this time.

Code: **C2K** Price: **\$20.00**

T-SHIRTS

The T-shirts in this series are based on different mathematicians and one informatician depicting an outstanding area of their work in a brightly coloured cartoon representation. They are Leonhard Euler's famous Seven Bridges of Königsberg question, Emmy Noether's work on algebraic structures, George Pólya's Necklace Theorem, Peter Gustav Lejeune Dirichlet's Pigeonhole Principle and Alan Mathison Turing's computing machine. They are available in XL. The T-shirts are made of 100% cotton and are designed and printed in Australia.

Euler— Code: **TSE** Price: **\$25.30**

Noether— Code: **TSN** Price: **\$25.30**

Pólya— Code: **TSP** Price: **\$25.30**

Dirichlet— Code: **TSD** Price: **\$25.30**

Turing— Code: **TST** Price: **\$25.30**



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All Payments (Cheques/Bankdrafts) must be in Australian currency, made payable to Australian Mathematics Trust and sent to: Australian Mathematics Trust, University of Canberra ACT 2601, AUSTRALIA
 The AMT regrets that non-school orders cannot be accepted without payment. All prices are valid until 31 December 2009.

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