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Education Notes bring mathematical and educational ideas forth to the CMS readership in a manner that promotes discussion of relevant topics including research, activities, issues, and noteworthy news items. Comments, suggestions, and submissions are welcome.

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The booklets in the series, A Taste of Mathematics (ATOM), are published by the Canadian Mathematical Society (CMS). They are designed to provide enrichment materials for pre-university students, and their teachers, who have an interest in mathematics. Some booklets in the series will cover materials useful for mathematical competitions at national and international levels, while other booklets may cover topics of broad interest to students and teachers such as puzzle collections, applications of mathematics, as well as treatises through a historical, social, or cultural lens.

The above description appears at <https://cms.math.ca/publications/atom-booklets/> where more can be found about the ATOM collection. Few hard copies of the booklets remain available for purchase though the booklets are readable in pdf formats that can be accessed by opening the respective volumes. The most recent publication, Volume XVII, *Mathematical Logic Puzzles on a Grid* appears in a freely accessible electronic format. This will be the case for any future volumes. The seventeen volumes span in publication dates from 1997 through 2022. Titles are listed here.

- ATOM Volume XVII: Mathematical Logic Puzzles on a Grid
- ATOM Volume XVI: Recurrence Relations
- ATOM Volume XV: Géométrie plane, avec des nombres
- ATOM Volume XIV: Sequences and Series
- ATOM Volume XIII: Quadratics and Complex Numbers
- ATOM Volume XII: Transformational Geometry
- ATOM Volume XI: Problems for Junior Mathematics Leagues
- ATOM Volume X: Modular Arithmetic
- ATOM Volume IX: The CAUT Problems
- ATOM Volume VIII: Problems for Mathematics Leagues III
- ATOM Volume VII: Problems of the Week
- ATOM Volume VI: Problems for Mathematics Leagues II
- ATOM Volume V: Combinatorial Explorations
- ATOM Volume IV: Inequalities
- ATOM Volume III: Problems for Mathematical Leagues
- ATOM Volume II: Algebra – Intermediate Methods
- ATOM Volume I: Mathematical Olympiads’ Correspondence Program (1995-1996)

Generally speaking the volumes fall into three broad categories: problem collections; specific mathematical topics; and recreational mathematics.

Several volumes are collections of problems whether from math leagues or correspondence programs, as suggested by the titles. Volumes III, VI and VII feature problems and solutions from the Newfoundland and Labrador Senior Math League. A description of the other math league collection appears here. Its content would be the most elementary of all volumes as it is geared to students in intermediate grades.

ATOM Volume XI: Problems for Junior Mathematics Leagues
Bruce L.R. Shawyer & Bruce B. Watson (both of Memorial University)

The problems in this volume were originally designed for mathematics competitions aimed at students in the junior high school levels (grade 7 to 9) and including those students who may have the talent, ambition and mathematical expertise to represent Canada internationally. The problems herein function as a source of “out of classroom” mathematical enrichment that teachers and parents/guardians of appropriate students may assign to their charges. To aid in this, answers and complete solutions are provided to all the problems (except the relays where there are answers only) and problems and solutions are presented in separate chapters. The authors have also deliberately avoided the temptation to discuss the various mathematical concepts or to intrude in any way with what is done in the school system. This volume is similar to previous publications on Problems for Mathematics Leagues in this series.

Further, *The CAUT Problems* volume draws upon contributions of Ed Barbeau to the CAUT publication, and *Problems of the Week* features 80 problems offered by Jim Totten as problem challenges to undergraduate students in Kamloops.

Many volumes focus attention on mathematical topics with an eye to developing knowledge in an area. These volumes incorporate a problem solving bent with problems drawing upon the topic at hand whether modular arithmetic, inequalities, sequences and series or any other. The lone French publication in the series falls into this group. The description follows.

ATOM Volume XV: Géométrie plane, avec des nombres
Michel Bataille (Rouen, France)

On constate actuellement un fort déclin de la géométrie dans les programmes de mathématiques de nombreux pays. Dans ces conditions, l'étudiant.e confronté à un problème de géométrie (d'une olympiade, par exemple) peut se sentir à court d'idées bien en peine, par manque de pratique et de connaissances, de découvrir une solution « par la géométrie pure ». La géométrie analytique pourra souvent lui apporter une aide appréciable, en l'emmenant rapidement sur le terrain plus familier de l'algèbre élémentaire. Ce tome de la série ATOM propose de nombreux problèmes, certains classiques, tous traités dans le cadre de la géométrie analytique. Dans les quatre premiers chapitres, après des rappels illustrés d'exemples entièrement traités, plusieurs problèmes sont proposés, tous résolus dans le cinquième chapitre. J'espère ainsi fournir à l'étudiant.e une méthode directe et simple de résolution et par là, renforcer son assurance et aviver son goût pour la géométrie.

Finally, a pair of volumes offers more of a recreational mathematical flavour. The most recent publication in the series is described and linked here.

ATOM Volume XVII : Mathematical Logic Puzzles on a Grid
Susan Milner (University of the Fraser Valley)

This book is intended to introduce secondary students to the joys of logical reasoning by way of puzzles. The four types of puzzles described herein have been successfully shared with people from ages 12 to 90. The hope is that students, teachers, and any curious puzzle enthusiasts will find the collection accessible, enjoyable, and a gateway to increasingly challenging puzzles. No prior mathematical knowledge is assumed aside from basic numeracy.

The other volume with a recreational mathematical slant blends investigations and challenges. *Combinatorial Explorations* (written by Richard Hoshino and John Grant McLoughlin) is built around three problems rather than four puzzles. An excerpt from the description appears here.

Combinatorial Explorations contains an introduction to Combinatorics through the analysis of three core problems: Handshakes, Routes, and Checkerboards. Each chapter features one of these problems as a springboard for mathematical problem solving. Problem sets, extensions, novel twists, and the inclusion of open-ended investigations offer means through which readers can delve deeper into the mathematics.

Concluding comments

The ATOM collection is a rich resource for students, teachers and armchair mathematical enthusiasts who enjoy dabbling with mathematical challenges. Engagement with the material will sharpen mathematical knowledge and problem-solving abilities. Enjoy the opportunity to browse the descriptions and immerse yourself with one or two of the titles that interest you. Readers are encouraged to make others aware of this resource. It is hoped that the exposition of ideas and descriptions in this feature will pique the curiosity of many to consider a resource drawn made available through the CMS itself.

An abbreviated adaptation of a problem posed by Ed Barbeau in *The CAUT Problems* is shared to close this piece. Perhaps you can solve it mentally or with some playful consideration.

The three hymn numbers for a church service each contain three digits. Together the hymn numbers use each of the digits 1 through 9 exactly once and the hymn numbers are in the ratio of 1:3:5. Determine the hymn numbers for the service.