BOOK REVIEWS

Edited by ANDY LIU

Shaking Hands in Corner Brook and other Math Problems,
edited by Peter Booth, Bruce Shawyer and John Grant McLoughlin,
published by the Waterloo Mathematics Foundation, Waterloo, 1995,
153 pages, paperback, ISBN 0-921418-31-0.
Reviewed by **Robert Geretschläger** and **Gottfried Perz**.

- One representative from each of six regions met in Corner Brook, New-foundland, to discuss math problems. Each of these delegates shook hands with each other delegate. How many handshakes were there?

This is the first of many problems that can be found in this collection of problems from the Newfoundland and Labrador Teachers' Association (NLTA) Senior Mathematics League, which conveniently offers an explanation as to the whereabouts of Corner Brook.

The NLTA Math League was started in 1987, and has since developed into a very interesting competition at the regional level. A number of aspects make this competition different from most math competitions. First of all, it is purely a team competition, with four students from each participating school comprising a team. There is no individual ranking, and so students are motivated to work together at finding solutions. For each of ten questions posed, a team can receive five points for a correct team answer. If the members of a team cannot agree on the correct answer, they can submit individual answers, for which their team can get one point each, if correct. Finally, there is a relay question, made up of four parts. In the relay, each part yields an answer, which is necessary to be able to solve the next part (much as in the American Regions Mathematics League (ARML), which may be better known to many readers). The relay section can yield a maximum of 15 points (made up of five points for the solution and extra points for solving the problems in a short time), for a possible total of 65 points. If teams end up with the same point sum, a tie breaker question is posed.

The concept behind this competition is geared to fostering cooperative problem solving, something that is generally ignored in olympiad-style competitions. The level of difficulty of the problems posed is adequate to the time allowed (usually from 3 to 10 minutes per question) and the intentions of the competition, and ranges from fairly easy to pre-olympiad level. The book is divided into sections covering regular questions, relay questions, tie breakers and solutions. The problems are in a random order, and no indication is given of which questions were posed at which competition. Perhaps at least one example of ten specific questions posed at one competition, and the order they were posed in, might have been of interest.

Here are a few problems to whet your appetite:

- How many three digit numbers include at least one seven but have no zeros?

- Al, Betty, Charles, Darlene and Elaine play a game in which each is either a frog or a moose. A frog's statement is always false while a moose's statement is always true.

    Al says that Betty is a moose.
    Charles says that Darlene is a frog.
    Elaine says that Al is not a frog.
    Betty says that Charles is not a moose.
    Darlene says that Elaine and Al are different kinds of animals.

  How many frogs are there?

- Triangle ABC is isosceles, with $\angle ABC = \angle ACB$. There are points D, E and F on BC, CA and AB, respectively, that form an equilateral triangle. Given that $\angle AFE = x°$ and $\angle CED = y°$, calculate $\angle BDF$ in terms of x and y.

The book has a very pleasing layout, with the cover showing the densest packing of seven circles in an equilateral triangle. The solutions are nicely presented, and in several cases, alternate solutions are given, occasionally labeled the "routine way" and the "subtle" or "smart way".

Shaking Hands in Corner Brook should be of interest to anyone involved with high school mathematics, either in competitions, or simply seeking enrichment material for the interested student.

Copies of the above reviewed book may be obtained from:

Canadian Mathematics Competition
Faculty of Mathematics, University of Waterloo
Waterloo, Ontario, Canada. N2L 3G1

The cost is $12 in Canadian funds (plus 7% GST for shipping to Canadian addresses). Cheques or money orders in Canadian funds should be made payable to: Canadian Mathematics Competition. All profits from the sale of this book are for the Newfoundland Mathematics Prizes Fund.

Teachers interested in providing a lively and stimulating high school mathematics competition for their students may be interested in participating in a NLTA Senior Mathematics League in their own area. Shawn Godin, St. Joseph Scollard Hall, North Bay, Ontario, a regular contributor to **CRUX**, is already a participant. Meetings can be held within individual schools, or between teams from more than one school.

Sample games and other information on how the NLTA Senior Mathematics League is organised may be obtained free from:

> Dr. Peter Booth
> Department of Mathematics and Statistics
> Memorial University of Newfoundland
> St. John's, Newfoundland, Canada. A1C 5S7
>
> Tel: int+ 709–737–8786
> Fax: int+ 709–737–3010
> email: pbooth@fermat.math.mun.ca

Schools that participate on a regular basis will be sent questions and detailed solutions five times per year (October, November, February, March and May). There is an annual fee of $50 (Canadian funds) for each group of schools participating. Cheques or money orders should be made payable to Newfoundland Mathematics Prizes Fund.