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SYNOPSIS

Page Item

1 **Letter from the Editor / Lettre des rédacteurs.**

Some information on the change of editorship, change in subscription rates, and change in schedule for *CRUX*.

3 **CONGRATULATIONS** to Professor Ron Dunkley, Canadian Mathematics Competitions, on being elected as a Member of the Order of Canada.

3 **Guidelines for Articles.** by Denis Hanson.

4 **Unitary Divisor Problems**: K.R.S. Sastry.

Sastry introduces the unitary extension of super-abundant numbers, and proves some results:

Theorem 1: Let $n = \prod_{i=1}^{k} p_i^{\alpha_i}$ denote the prime decomposition of n and $D^* = \{d^* : d^*$ is a unitary divisor of $n\}$. Then

$$\sum \phi(d^*) = \prod_{i=1}^{k} [1 + \phi(p_i^{\alpha_i})] .$$

Theorem 2: Let p_k denote the k^{th} prime, $k = 1, 2, \cdots$. Then $n = p_1, p_2 \cdots p_k$ is a unitary super abundant number.

Theorem 3: The only unitary super abundant numbers are

$$n_k, \quad k = 1, 2, 3, \cdots .$$

That is

$$2, 6, 30, 210, 2310, \cdots .$$

10 **The Skoliad Corner:** No. 11 R.E. Woodrow.

Featuring the **SHARP** U.K. INTERMEDIATE MATH CHALLENGE and the "official" solutions to the Saskatchewan Senior Mathematics Contest 1994.

20 A **Historical Titbit**, featuring a problem taken from a 1894 Ontario Public School textbook.

21 **The Olympiad Corner:** No. 171 R.E. Woodrow.

Featuring the 29th Spanish Mathematical Olympiad National Round, six Klamkin Quickies, and solutions to problems from the 43rd Mathematical Olympiad (1991–1992) in Poland.

27 A short **Biography** of the new Editor-in-Chief.

28 **The Academy Corner:** No. 1 Bruce Shawyer.

Introducing a new Corner featuring University Undergraduate Mathematics Competitions, starting with the 1995 Memorial University Undergraduate Mathematics Competition.

29 **Mathematical Literacy:** some interesting questions about the history of mathematics.

30 **Book Reviews:** Andy Liu.

The Monkey and the Calculator (*Le singe et la calculatrice*),

Aladdin's Sword (*Le sabre d'Aladin*).

Both published in 1995 by Production et Organisation du Loisir Educatif (POLE) 31 avenue des Gobelins, 75013 Paris, France.

Both reviewed by *Claude Laflamme*, University of Calgary.

Tournament of the Towns, 1980-1984, Questions and Solutions,

Tournament of the Towns, 1989-1993, Questions and Solutions.

Both edited by Peter J. Taylor, Australian Mathematics Trust, University of Canberra, P.O. Box 1, Belconnen, A.C.T. 2616, Australia.

Both reviewed by *Murray S. Klamkin*, University of Alberta.

33 **Problems:** 2101-2113.

This month's "free sample" is:

2102. *Proposed by Toshio Seimiya, Kawasaki, Japan.*

ABC is a triangle with incentre I. Let P and Q be the feet of the perpendiculars from A to BI and CI respectively. Prove that

$$\frac{AP}{BI} + \frac{AQ}{CI} = \cot\frac{A}{2}\,.$$

36 **Solutions:** 1827, 2006-2010, 2012-2015.