SYNOPSIS

193 Skoliad: No. 102 Robert Bilinski
   - Concours de Mathématique du secondaire de Colombie Britannique 2006, Ronde Finale Séniор partie B
   - solutions to the National Bank of New Zealand Competition 2000

200 Mathematical Mayhem Jeff Hooper
   200 Mayhem Problems: M294–M300
   203 Mayhem Solutions: M244–M250

209 Problem of the Month Ian VanderBurgh

211 Cyclical Diversions from Kirkman’s Schoolgirl Problem by Amar Sodhi

214 The Olympiad Corner: No. 262 R.E. Woodrow
   Featuring the 18th Korean Mathematical Olympiad, Final Round, 2004; the 21st Balkan Mathematical Olympiad, Pleven 2004; the 14th Japanese Mathematical Olympiad, Final Round 2004; and readers’ solutions to some of the problems from
   - the 8th Macedonian Mathematical Olympiad;
   - the British Mathematical Olympiad 2002–2003, Rounds 1 and 2;
   - the Kazakh National Mathematical Olympiad 2002–2003;
   - the Ukrainian Mathematical Olympiad 11th Round;

229 Book Reviews John Grant McLoughlin
   229 International Mathematics Tournament of the Towns 1997–2002 Book 5 by A.M. Storozhev
   Reviewed by Clint Lee

231 Tribute to a Mathemagician
   by Barry Cipra, Erik D. Demaine, Martin L. Demaine, & Tom Rodgers
   Reviewed by John Grant McLoughlin
232 The Locker Problem

by Bruce Torrence and Stan Wagon

The locker problem goes like this: A school corridor is lined with 1000 lockers, all closed. There are 1000 students who are sent marching down the hall in turn according to the following rules. The first student opens every locker. The second student closes every second locker, beginning with the second. The third student changes the state of every third locker, beginning with the third, closing it if it is open and opening it if it is closed. This continues, with the \( n \)th student changing the state of every \( n \)th locker, until all the students have walked the hallway. The problem is: Which lockers remain open after all the students have marched?

The answer is well known: The lockers whose numbers are perfect squares remain open, as only the squares have an odd number of divisors. (Note that this is true whether the corridor contains 1000 or any other number of lockers.)

In this note the authors present some simple techniques for dealing with an extension of this problem.

Enjoy!

237 Problems: 3239–3250

This month’s "free sample" is:


Soit \( a, b \) et \( c \) trois nombres réels arbitraires tels que \( a^2 + b^2 + c^2 = 9 \). Montrer que

\[
3 \cdot \min\{a, b, c\} \leq 1 + abc.
\]


Let \( a, b, c \) be any real numbers such that \( a^2 + b^2 + c^2 = 9 \). Prove that

\[
3 \cdot \min\{a, b, c\} \leq 1 + abc.
\]

241 Solutions: 3138–3150