Editorial Message

A request from one of our readers led me into tracing the history of a 40-year old undertaking of our Society — the organisation of mathematical competitions for schools. The Society (then called the Malayan Mathematical Society) organised its first Interschool Mathematical Competition in 1957. Students from schools of the Federal States of Malaya and Singapore were invited to take part in the competition. 171 students entered the competition in the first year, and the number of participants increased steadily to over 200 within the next few years.

It seems that for some years in the sixties right into the seventies there were no records of competitions held. Following political changes in Singapore, the Society was renamed "Singapore Mathematical Society" in 1967. The annual mathematical competition was revived in 1975, in which only students from Singapore were invited to participate. The competition was open to secondary school students, who took part and competed for team and individual prizes irrespective of their level in schools. As years went by, the participants were mainly students from upper secondary and pre-university (junior college) level.

In response to feedback from school teachers and partly owing to the involvement since 1986 of the Society in the selection and training of the Singapore National Team to the International Mathematical Olympiad, the need to encourage more secondary school students from all levels to take part in mathematical competitions was felt. And to do so, the format of the competition had to be changed. In 1989, an Interschool Mathematical Competition as well as an Inter-secondary School Mathematical Competition were held. This new format attracted more than 400 participants that year and it continued for the next five years. The total number of entrants to the competitions in 1994 was over 800.

The Singapore Secondary School Mathematical Olympiads (SSSMO) and the Singapore Mathematical Olympiad (SMO) came into being as a fine tuning of the above format in 1995. The SSSMO consist of Junior and Senior sections, in which participants entered according to their level in schools, while SMO is open to all secondary school and junior college students. The response was overwhelming, more than 2,000 students entered the competitions in that year. And this year, the number swelled to over 4,000. Reports of the Singapore Mathematical Olympiads 1997 as well as the 38th International Mathematical Olympiad are included in the present issue of the Medley.

On reflection, we are especially pleased to note that one prime objective of the competition, namely to discover and encourage mathematical talents, has been successfully met. Many of our competition winners became professional mathematicians and the list of winners of the earlier years, who are now in their fifties, reads like a "Who's Who" list. Allow me to mention but one name among them at this juncture. Louis Chen Hsiao Yun, a participant and winner of the Interschool Mathematical Competitions in 1957, 1958 and 1960 (no competition was held in 1959), received an Excellence for Singapore Award in August this year. The Society was also honoured by his nomination as one of two organisations to share the donation of $10,000. An insight into his achievements can be found in an article in this issue.

It remains for me to remind readers that we will continue our efforts to present interesting mathematics, new and old, at a level which can be appreciated by school teachers, students and the layman. Your feedback will be most welcome.

Mathematical Medley

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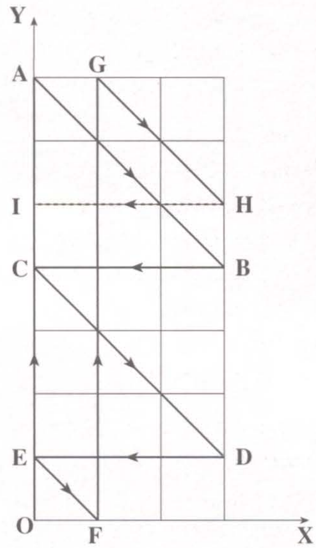
Letters to the Editor

Working Backwards

I have been sent a copy of the – as always! – interesting Mathematical Medley (March 97), and would like to make a comment arising from the article "Working Backwards", concerning the cup problem. Be it understood that not for a moment do I wish to criticize Mr Kwek's method, for which this problem is an apt candidate, but your readers might be interested (if they do not know of it already!) in the following graphical solution:

Call the cups C3 and C7. Consider the rectangle (see diagram) whose vertices are (0,0), (3,0), (0,7) and (3,7). Then any point (x,y) in or on the boundary of the rectangle can be taken to represent the state wherein C3 contains x ounces and C7 contains y ounces. We now make a tour of this rectangle, in 3 different ways: (a) to traverse a line parallel to the x–axis is equivalent to filling or emptying C3; (b) ditto for the y–axis and C7; (c) to traverse a line of slope –1 is equivalent to pouring water from one cup into the other. We now proceed as follows (I recommend sketching the diagram in pencil and tracing the routes in it): (1) from 0 to *A* (filling C7); (2) *A* to *B* (filling C3 from C7); (3) *B* to *C* (emptying C3); (4) *CD* (refilling C3 from C7); (5) *DE* (emptying C3); (6) *EF* (tipping the ounce remaining in C7 into C3); (7) *FG* (refilling C7); (8) *GH* (filling C3 from C7): as there is already 1 ounce in C3 this takes 2 ounces from C7, leaving 5 ounces in C7—Eureka! (to accord with the printed solution we could go *H* to *I* to empty C3). This method leads quickly and neatly to the solution of any problem of this type, without any trial and error.



The reader will find it interesting to work out the alternative solution in this way, in which one starts by filling C3 (it will be found that this takes 10 steps.)

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PS—thank you for printing my letter about Menelaus's Theorem!