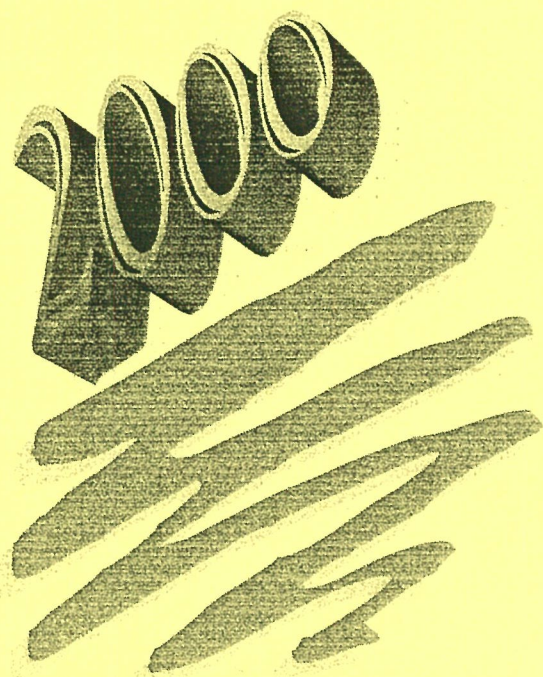


The Collection-II



The Collection-II

Editor: I. Sciriha

Department of Mathematics

Faculty of Science

University of Malta

irene@maths.um.edu.mt

Foreword

Most hobbies involve collections.
Here's one with different flavours
of what we enjoy in mathematics.

The hub of activity that followed the first two Collection workshops was very encouraging. It was interesting to note the feedback we received to questions posed during the workshops.

The conjecture posed on intersecting circles has been proved and we received three different solutions to the interesting question on equivalent sets. Reports on both are to be found in this issue. Also included in this issue is the discussion that a letter in the local press on divisibility triggered.

The contribution to mathematical ideas during the second meeting varied from balancing of dominoes to reconstructing graphs, music, divisibility and infinite sets. We look forward to our February 2001 meeting.

Dr. Irene Sciriha.
Organiser.

Contents

| | |
|---|-----|
| The Collection-II | v |
| Announcement | vi |
| List of Figures | vii |
| Dominoes... John Aquilina | 1 |
| Intersecting Circles and Ellipses... Alastaire Farrugia | 3 |
| Two Simple Proofs... Alex Farrugia | 6 |
| Playing with Nines... Irene Sciriha | 10 |
| Appendix. Any Maths Wizards? | 13 |
| Divisibility Magic ... James Borg | 14 |
| A Homomorphism on Musical Notes | 19 |
| Equivalent Intervals ... Peter Borg | 25 |
| Infinite Sets ... Peter Borg | 26 |
| A Reconstruction Game ... Juanita Formosa | 27 |

The Collection-II

The Collection-II

Editor: I. Sciriha

Department of Mathematics

Faculty of Science

The University of Malta

November 2000

*Proceedings of Workshop
held on the 30th October 2000*

4th October, 2000

The Collection II

A workshop is being held on Monday, 30th October 2000 from 3.00 to 4. 00 p.m. to share some interesting mathematical ideas among people who find pleasure in the elegance and preciseness of mathematics.

Venue: University of Malta

Maths and Physics Building, Department of Mathematics, Room 316.

Speakers: Ms Juanita Formosa, Mr Peter Borg, Mr Alex Farrugia, Mr James Borg, Mr. David Suda.

We shall end with a brief session for spontaneous problem posing and/or solving. You are cordially invited to attend.

Abstracts of possible proofs or conjectures which you wish to share with us in this meeting, or in a future one, may be sent to Dr. I. Sciriha or Ms. A. Attard, Department of Mathematics, (marked The Collection), at any time of the year.

Dr. I. Sciriha.

(Organisator)

p.s. European Women in Mathematics 2001¹

10th International Meeting of **EWM**

24-30 August, 2001. Tartu, Estonia

<http://www.maths.ox.ac.uk/ewm01/>

Budding, amateur and professional mathematicians who wish to become members of the EWM can contact me.

¹Because of unforeseen difficulties, the EWM conference will not be held in Estonia but in MALTA.

List of Figures

| | | |
|-----|--------------------------------------|----|
| 0.1 | The Regular Pentagon. | 8 |
| 0.2 | Areas $9 \times 7 = 10 \times 6 + 3$ | 10 |
| 0.3 | Musical intervals on a dodecahedron. | 23 |
| 0.4 | A road map | 27 |
| 0.5 | The corresponding graph | 28 |
| 0.6 | The stolen property | 29 |
| 0.7 | Deck of cards | 29 |