

## SPECIAL SPRING CONFERENCE: BOOK YOUR PLACE NOW!

Welcome to the third newsletter of the Primary Teachers' Mathematics Association. The PTMA is proud to announce a special one-day spring mathematics event with Constance Kamii. The event will take place in Limerick on Saturday, March 22<sup>nd</sup> 2003 from 9:30 to 4:30. Constance Kamii is Professor of Early Childhood Education at the University of Alabama at Birmingham's School of Education. Constance Kamii studied under Jean Piaget for a dozen years, first as a postdoctoral research fellow and later as an adjunct professor at the University of Geneva. Kamii is the author of a number of books, including, *Young Children Reinvent Arithmetic*. An article about Constance Kamii appears in the January/February edition of *InTouch*. The venue for this event is Mary Immaculate College of Education in Limerick.

The programme for the day is as follows:



<b>9:30-9:55</b>	<b>Registration</b>
<b>9:55-10:00</b>	<b>Welcome and Introduction</b>
<b>10:00-11:15</b>	<b>Session I: The Harmful Effects of Algorithms</b>
<b>11:15-11:45</b>	<i>Tea/Coffee</i>
<b>11:45-12:15</b>	<b>Questions and Answers based on the presentation</b>
<b>12:15-1:00</b>	<b>Session II: Why The "length x width" Formula Is So Hard for Children to Understand</b>
<b>1:00-2:30</b>	<i>Lunch and Visit to Exhibitors' Stands</i>
<b>2:30-3:30</b>	<b>Session III: Why Is Subtraction So Much Harder than Addition?</b>
<b>3:30-4:30</b>	<b>Questions and Answers Based on the Day's Presentations</b>

### Booking Details

Complete the enclosed form and return with the appropriate payment to : Bríd Ní Chualáin, Primary Teachers Mathematics Association Coláiste Mhuire, Marino Institute of Education, Griffith Avenue, Dublin 9.

### DATES FOR YOUR DIARY

DATE	VENUE	TIME	TOPIC	FEE
Wednesday, February 26 <sup>th</sup> 2003	St. Patrick's College	8pm-10pm	Mental Maths and Calculators	€4 (€2 for members)
Saturday, March 22 <sup>nd</sup> 2003	Mary Immaculate College, Limerick	9:30am-4:30pm	Invented Algorithms, Area Formula and Addition v. Subtraction	€35 (Excluding lunch) (€20 for 2003 members who book before February 21 <sup>st</sup> )
Wednesday, May 7 <sup>th</sup> 2003	Marino Institute of Education,	8pm-10pm	Summer Maths	€4 (€2 for members)

## MEMBERSHIP: TIME TO RENEW FOR 2003

### New Membership Year

Membership of the Primary Teachers Mathematics Association (PTMA) runs for the calendar year. Members who joined the Association in 2002 are now invited to renew their subscription for 2003. The Association also encourages more teachers who are interested in the teaching of mathematics in primary schools to join the Association in 2003. The membership structure for 2003 is as follows:

**Individual** membership is open to all qualified primary school teachers. Membership includes receipt by post of newsletters produced by the Association, notification by e-mail of PTMA workshops and discounted rates for attendance at the workshops. A discounted fee to the conferences is offered to members who book their place by the priority booking date. The membership fee for 2003 is €15 per annum.

**Institutional** membership is open to schools and colleges of education. The membership entitles the school to receive a copy of the newsletter, notification by e-mail of PTMA workshops and discounted rates for attendance at the workshops. A discounted fee to the conferences is offered to all members of the institution who book their place by the priority booking date. The institutional membership fee for 2003 is €50.

To renew your membership (or to join for the first time) please complete the enclosed form. If you have any questions about the Primary Teachers Mathematics Association please e-mail [primarymaths@ireland.com](mailto:primarymaths@ireland.com) or phone 01 805 7722.



### NEW COMPETITION

Niamh, Aoife and John like playing with multilink cubes. Niamh arranged nine multilink cubes so that they formed a flat square ( $3 \times 3$ ). She then took one away and the remaining eight could no longer form a square but could be arranged either as a  $2 \times 4$  flat rectangle, or a  $2 \times 2 \times 2$  cube. The following questions also involve rearranging multilink cubes.

1. What is the least number of cubes that John can both spread out to form a flat (single row) square and stack to form a cube (3-D)?
2. When Aoife lost one of the cubes from her set, she found that she could only make one rectangular shape with the cubes she had left, whereas before she could make at least four different flat rectangles and at least two cuboids (which were two blocks high). How many cubes had she in the set at first?

Send your answer to [primarymaths@ireland.com](mailto:primarymaths@ireland.com) before February 28<sup>th</sup>. Include the class level, teacher's name and the school's name and address. One entry only per class.

Source: *Mathematics for All*, R Wesley (ed)

### COMPUTER SOFTWARE: ADVICE SOUGHT

We recently received the following e-mail from a member:  
As a member of PTMA I wonder if you could advise me - I have been asked by my school to purchase some computer software for Mathematics and I don't have much information about what's out there or where to purchase. We are looking for material for both Learning Support and mainstream classes at all levels. I don't wish you to go to any trouble - just thought you might be able to make some recommendations from your own knowledge. If you can't help - no problem. If you can it will be much appreciated.

Many Thanks,  
(Name with editor)

Some titles that seem to be popular in schools are:

*Maths Circus* (4mation); *Millie's Maths* (Iona); *The Crystal Rain Forest* and *Decimal Games* (Sherston); *Zoombini's*

### PREVIOUS COMPETITION RESULT

The winner of the competition in our last newsletter is Miss Amanda Ginty's 2<sup>nd</sup> class in St. Etchen's National School in Kinnegad, Co. Westmeath who correctly stated that the answer was LIGHTHOUSE. Well done! A book voucher for €25 is on its way to you.!

*Maths Journey* (Broderbund); *Numbershark*. MSWLogo can be downloaded from: [www.softronix.com](http://www.softronix.com).

If you have experience of using any of this computer software in the classroom or if you can recommend other software titles or uses of computers in teaching maths it would be great if you could e-mail your advice to [primarymaths@ireland.com](mailto:primarymaths@ireland.com) and we will publish the suggestions in the next newsletter.

### NEW PTMA COMMITTEE

Following the first annual conference in October a new Committee was elected. It is composed as follows:

**Chairperson:** Seán Delaney

**Secretary:** Mairéad Ryan

**Treasurer:** Thérèse Dooley

**P.R.O.:** Bernadette Dwyer

**Workshop Coordinator:** Florence Gavin

**Mathematical Adviser:** Seán Close

**Membership Secretary:** Heather Egan

**Assistant Workshop Coordinator:** Dolores Corcoran

**Assistant Treasurer:** Maurice O'Reilly

**Assistant Chairperson:** Mary O'Hanlon

**Assistant PRO:** June Hosford

Noreen O'Loughlin

Patsy Stafford

Carmel Burns is taking over work on the website. Many thanks to those who accepted the nominations for membership of the committee. A vibrant committee is essential for the Association to thrive. A special word of thanks to those committee members who have served us well in the past but who have now decided to take a break: Averil Courtney and Helen McNally

# WATCH THIS SPACE!

By Dolores Corcoran

The New Zealand Math web site <http://www.nzmaths.co.nz> (under Geometry Problems, level 3), identifies a worthwhile avenue of investigation into tessellations for children. Some shapes can be put together to form larger shapes similar to the constituent shapes. These shapes are called **copycats**. Squares are an example of copycats, since four similar squares can be placed together to make a bigger square.

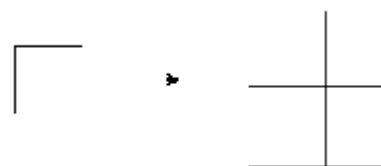


Figure 1 Squares are copycats

Copycats can be investigated both for their shape and space value and to find the numerical patterns involved.

- How many squares are required to make the second larger square, the third, fourth, fifth and so on?
- Arrange this series of numbers as counters in rectangular arrays. What kind of numbers are formed by this sequence?

Four equilateral triangles can also be put together to make a bigger, copycat, equilateral triangle.

- What is the sequence of numbers thrown up by forming increasingly larger equilateral triangles?
- Are these triangular numbers?

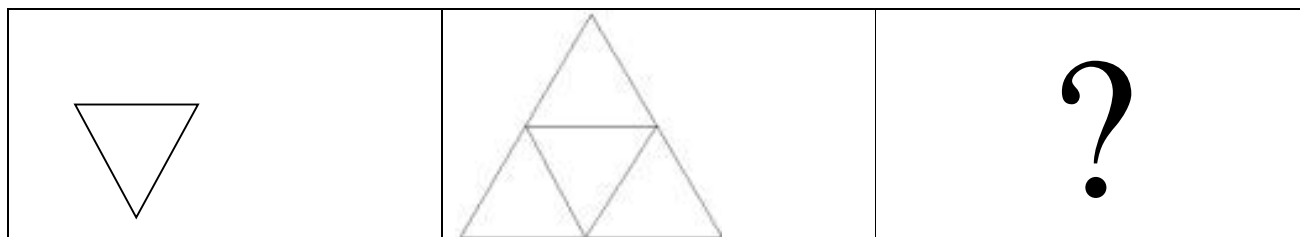
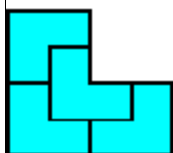


Figure 2 Equilateral triangles are copycats

Copycats are examples of mathematical enlargements (geometrical projections that produce images larger than but similar to the original shapes) and they give rise to much extension work.

- Three squares can be put together to make an L-shape. Is this a copycat?
- Are all triangles copycats?
- Are circles copy cats?
- Can you prove that your answer is correct by demonstration?
- What about rectangles?
- Are regular hexagons copycats and if not why not?
- See how many different copycat shapes your class can come up with. Cardboard cut outs of various shapes can help with this investigation.



Another form of tessellation, similar to copycats, is where shapes tessellate in reverse to form “reptiles”. A fairly simple example of this is filling a regular L-shape (three adjoining squares) with smaller figures similar in shape to the initial L. This exercise involves considerable spatial awareness and, with a certain degree of perseverance, many children will arrive at the necessary partitioning which replicates the original shape. Squared paper is very helpful for making these. By arriving at the solution four reptiles have been formed.

Figure 3 The L shape as a copycat. It is also a reptile.

In a more complex version of reptiles, shapes such as the “sphinx” composed of six equilateral triangles, can be subdivided into smaller similar sphinx-like shapes, or enlarged to replicate the original.

- How many of these shapes are needed to replicate the sphinx?

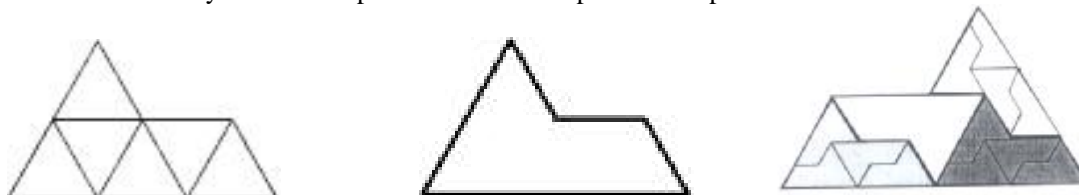


Figure 4 The “sphinx” composed of equilateral triangles

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Some studies into infinity have focused on reptiles, where the original shape can be divided and subdivided into increasingly smaller, but always similar, shapes. Children might try it with a large equilateral triangle. Place a series of smaller triangles inside the original by joining the midpoints of each of the sides and joining these. The inner triangle could be coloured. The process can be repeated with each of the other triangles, following the rule that one coloured triangle be put in the centre of every white one.

Eventually the paradox of having almost the whole triangle coloured, while there is still an ongoing possibility of further division emerges. Try this experiment with other regular shapes. Much fun, interesting artwork and challenging questions will emerge.

**Bibliography:**

Hemmings, Ray and Tahta, Dick (1984) *Images of Infinity*:Cambridge  
 Pappas, Theoni (1998) *The Children's Mathematics Calendar* :California  
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## REPORT ON FIRST ANNUAL CONFERENCE

*A Delegate's Report on the October Conference of the PTMA by Maura Egan*

Ms. Emer Egan, representing the Department of Education and Science, officially opened the first annual conference of the PTMA. Following this, the conference was addressed by Ed Silver, Professor of Education and Mathematics at the University of Michigan. A former classroom teacher, his presentation reflected some of the principles of the Revised Mathematics Curriculum, particularly in the area of problem solving. He reinforced the significance of problem posing, reasoning and problem solving at all class levels.

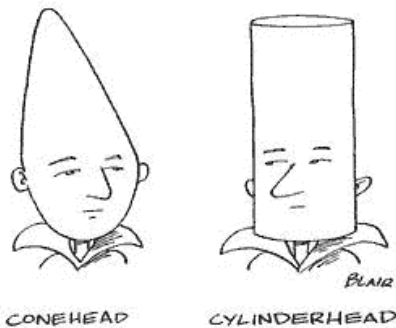
Following this address, delegates were treated to a variety of practical workshops including Mathematical Games, Use of Concrete Materials and Language in Teaching Mathematics, Excel as a Resource and Mathematics Recovery. A colleague attended an excellent 'hands on' maths games workshop, while I attended an absorbing presentation by Eunice Pitt on her 'Early Years Numeracy Project', which was conducted in Northern Ireland over a two-year period (1999-2001) with children in their first two years at primary school. Her 'target group' consisted of about 50 children who presented as a group needing a little more time and teaching than their peers to grasp mathematical concepts. She believes that this 'target group' and indeed all children need a broad range of teaching and learning approaches which are only achievable through structured group teaching, using activities that are carefully planned by the teacher and pitched at an appropriate level for children to experience success.

The afternoon workshops once again offered 'choice' including Maths Through Story, Problem Solving, Logo and Mathematical Games for Senior Classes. Intrigued by maths through the medium of story I attended a most informative session at which the facilitator Liz Dunphy, a lecturer in Early Childhood Education, outlined the mathematical potential of books already sitting on the library shelves in many junior classrooms. She provided a captive audience with endless possibilities for integrating mathematics and story – sequencing, pattern, counting, ordering to name but a few.

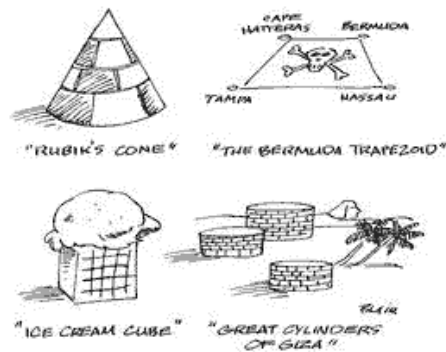
In conclusion, I believe, that the first Annual Conference was a dynamic success and I look forward to many future mathematical experiences. Congratulations again and well done to all involved.

**Maura Egan** teaches in St. Thomas's JNS, Esker, Lucan, Co. Dublin.

### CARTOONS (SHAPE AND SPACE)



KNOW YOUR ALIENS.



WHAT MIGHT HAVE BEEN ...

What aliens can your class draw and name?

Can you think of more?