



MATHEMATICAL EDUCATION ON MERSEYSIDE

# ORBITER

JAN  
2007

KEEPING MATHS EDUCATION PROFESSIONALS IN TOUCH

Registered Charity 517028

## Do you know which maths activities we can offer?

<p><b>Contact us</b></p> <p><u>Tel</u> 0151 794 4050</p> <p><u>Web</u> <a href="http://www.maths.liv.ac.uk/~mem">www.maths.liv.ac.uk/~mem</a></p> <p><u>Email</u> <a href="mailto:markohagan70@hotmail.com">markohagan70@hotmail.com</a></p> <p><u>Post</u> MEM, Department of Mathematical Sciences University Of Liverpool Peach Street Liverpool, L69 7ZL</p>	<p>Everyone at MEM would like to wish all our colleagues a happy new year.</p>	<p><u>Quick Calendar</u></p>  <p><u>Thursday 22nd February</u> 'Old Ideas in new clothes: from Euclid to dynamic geometry' Doug French</p> <p><u>Saturday 10th March</u> 6th Form pop quiz 10.00 am - 2.00pm LJM.</p>	<p><b>MEMuko</b></p> <table border="1"> <tr><td>1</td><td>7</td><td></td><td></td><td></td><td>3</td><td></td><td></td></tr> <tr><td>8</td><td></td><td></td><td>1</td><td>3</td><td>5</td><td>7</td><td>2</td></tr> <tr><td></td><td>2</td><td></td><td>7</td><td>4</td><td>6</td><td></td><td></td></tr> <tr><td></td><td></td><td>6</td><td></td><td>4</td><td>1</td><td></td><td></td></tr> <tr><td></td><td>1</td><td></td><td>5</td><td>8</td><td></td><td>9</td><td></td></tr> <tr><td></td><td></td><td>8</td><td>6</td><td></td><td></td><td>7</td><td></td></tr> <tr><td></td><td></td><td></td><td>1</td><td>3</td><td>9</td><td></td><td>5</td></tr> <tr><td>7</td><td>4</td><td>1</td><td>2</td><td>6</td><td></td><td></td><td>9</td></tr> <tr><td></td><td></td><td>5</td><td></td><td></td><td></td><td></td><td>1</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>6</td></tr> </table>	1	7				3			8			1	3	5	7	2		2		7	4	6					6		4	1				1		5	8		9				8	6			7					1	3	9		5	7	4	1	2	6			9			5					1								6
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<p><u>MEM President</u> Dr Ian R Porteous</p> <p><u>MEM Chairman</u> Mr Barry Grantham</p> <p><u>MEM Secretary</u> Mr Mark O'Hagan</p> <p><u>LMS President</u> Mrs Val Hanrahan</p> <p><u>LMS Secretary</u> Mr Phil Bamber</p>																																																																																			

### MEM CHALLENGE and SENIOR CHALLENGE

The MEM CHALLENGE for Years 7 and 8 is now in its 30th year. MEM SENIOR CHALLENGE for years 9 and 10 is only slightly younger. All have been most attractively illustrated by Peter Ackerley. They are take-home activities for the February half-term week. We will be sending copies of the new competitions to Heads of Maths in all secondary schools over a wide area in the NW, to be copied in the school and made available to the youngsters a day or two before the half-term holiday. If anyone else would like a copy please send me by e-mail the snail address to which it should be sent. Thanks for your cooperation in this matter. The youngsters who do well in CHALLENGE get first choice of places in next year's MEM Masterclasses. Those who do well in SENIOR CHALLENGE are encouraged to come along to the monthly University of Liverpool Maths Club. For information on the university maths club email David Lewis<d.m.lewis@liv.ac.uk> [porteous@liv.ac.uk](mailto:porteous@liv.ac.uk)

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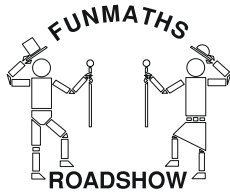
MEM is pleased to acknowledge generous financial help received during the past 12 months from:

### MERCER

Human Resource Consulting



The Holt Charitable Trust  
W.H.Smith Promotions Ltd  
Liverpool Hope University  
University of Liverpool



## Funmaths Roadshow Newsletter

January 2007

For general information about the Liverpool Mathematical Society's Funmaths Roadshow visit [www.maths.liv.ac.uk/lms/funmaths/](http://www.maths.liv.ac.uk/lms/funmaths/).

Chris Marchant has now joined me as Outreach Worker for Mathematics at the University of Liverpool, funded by EPSRC for two years. The development of the Funmaths Roadshow is part of his brief. He is no stranger to the Roadshow, having been in on it all at the very beginning, back in 1998/99.

It is hoped to have a new edition of the Roadshow CD by April 2007. There will be a slight upgrade of the existing material. What will be new will be a Spanish version of Boxes 1 to 8 and three new Boxes. Box 11 may serve to extend students taking the GCSE Functional mathematics strand in Year 11. Boxes 11 and 12 together can be presented to a range of students at sixth-form (or equivalent) level, broadening the experience of those studying mathematics and extending the experience of others, many of whom will be required to resume their study of mathematics (or quantitative methods, etc) as a support subject when they proceed to higher education. Box 0, with the activities labelled A to Z, is designed for use by School Years 1 to 3.

Some copies of the September '06 Newsletter gave the wrong address for Tarquin Books. The correct address is 99 Hatfield Road, St Albans, AL1 4JL. They should now be able to provide the Tangrams required for several puzzles in Boxes 1 and 2, and which have to be of the right size to fit. These are made by DISET of Barcelona. Tarquin may also be able to supply 1" wooden cubes required for 44, 70 and 174, as well as the 2x2x1 wooden blocks required for 70.

Events have been as varied as ever. The standard format is to have anything from one to three Boxes of the material set out on tables randomly arranged in a large hall. The alternative is to have anything from two to five large tables, each with four activities on a single theme. Our favourites are as follows, a \* indicating that the item may have been upgraded during the last two years:

Working in 3D: 20\*, 44\*, 70 and 94\*;  
A Mathematical Breakfast: 38\*, 63\*, 89\* and 101\*;  
Mathematical Games: 31, 55, 117 and 198;  
Getting the Hang of Things: 169, 182, 217 and 244;  
Identity Parades: 164, 189, 208 and 232.

In each case each of the four activities is on a base-board of a different colour.

The Roadshow was at the British Association meeting at Norwich on Friday, 8 September.

From 13<sup>th</sup> to 18<sup>th</sup> January, 2007, the Roadshow will be visiting several schools in and around Marseille, France, at the invitation of the British Council in Paris. Sometimes we will be using the French version, sometimes the English.

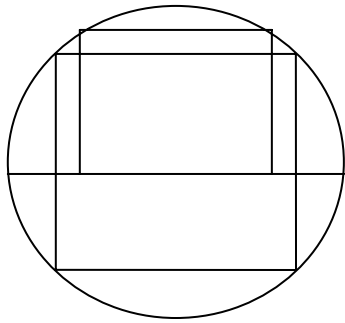
We like to insist that everyone succeeds at a Roadshow event, there being no special prize for the largest number of activities signed off. The other day, however, one school that we visited ran the occasion as a sponsorship event for the NSPCC. The whole of Year 7 took part before the break and the whole of Year 8 afterwards, with a number of older pupils assisting staff. There was great enthusiasm from the youngsters, and a substantial sum must have been raised for the charity!

Ian Porteous

[porteous@liv.ac.uk](mailto:porteous@liv.ac.uk)

Chris Marchant

[marchant@liv.ac.uk](mailto:marchant@liv.ac.uk)



You are given a circle of radius  $r$ . Let  $s$  be the area of the square inscribed in the upper semi-circle and  $c$  the area of the square inscribed in the complete circle.

What is the ratio  $c/s$  ?

Do your pupils enjoy maths which is slightly off-beat? They should know about the

### **University of Liverpool Maths Club**

The Club is aimed at school kids aged between 11-18 from the North-West area, who are interested in challenging mathematical ideas and problems. A selection of our previous activities and other information can be found on our website:

<http://www.maths.liv.ac.uk/~mathsclub/>

We meet on the morning of the last Saturday of each month during term time, at the University's Maths Department which is on Peach Street off Brownlow Hill in the city centre. **Membership is free.**

**And there's a free lunch!** So if you know pupils who would like the opportunity to get a whole new *angle* on mathematics, and *square the circle* with some new friends, why not tell them about us! For more information and membership forms, contact Dr D.M.Lewis, Dept of Mathematics, University of Liverpool, Mathematical Sciences Building, Peach Street, Liverpool, L69 7ZL. Tel: 0151 794 4014,

Email: [d.m.lewis@liverpool.ac.uk](mailto:d.m.lewis@liverpool.ac.uk),

## **The Merseyside Further Mathematics Centre**

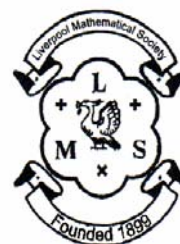
The Centre continues to bustle with activity and endeavour. We are now teaching Further Mathematics to around 35 students in the Greater Merseyside area. In addition, we have just held our first Revision Days (in M1 and D1) at the University, attended by nearly 80 students and teachers. The Centre is also offering Enrichment events in schools for students in Y10/11 to promote the study of Mathematics and Further Mathematics post-16.

For further information contact:

Martin Bamber (Centre Manager)  
0151 794 4054 [m.bamber@liv.ac.uk](mailto:m.bamber@liv.ac.uk)

Don't forget to REGISTER your school with the Further Mathematics Network ([www.fmnetwork.org.uk](http://www.fmnetwork.org.uk) and choose "Getting Involved" ) to receive FREE access to 1000's of pages of MEI resources for Applied and Further Mathematics.

# Liverpool Mathematical Society



## Secondary Programme

During the 2006 / 07 school year we are offering a series of 4 professional development opportunities, each with a different theme.

All will take place on Saturday mornings between 9.30am and 1.00pm at:



**Mathematics Education**  
**Liverpool Hope University**  
Hope Park  
Liverpool  
L16 9JD



**Saturday 27<sup>th</sup> January 2007**

'Electric Learning' (with an Interactive Whiteboard)  
**Dave Carden Closing date for applications 12 January 2007**

**Saturday 24<sup>th</sup> March 2007**

'Autograph for all'  
**Mary Stevenson & Martin Bamber Closing date for applications 9 March 2007**

**Saturday 24<sup>th</sup> March 2007**

'Spotlight' on 3 – D Maths  
Maths that is Different, Designed for the less able (Levels 2 – 4) and Differentiated for KS3 / 4 pupils

**Barbara Gregory & Anne Russell Closing date for applications 9 March 2007**

Programme  
9.30am *Arrival, registration and coffee*  
10.00am **Session 1**  
11.15am *Break (refreshments)*  
11.45am **Session 2**  
1.00pm *Close*

**Fee: £50 per person** (Refreshments included - coffee on arrival and at break)

Each additional delegate from same school: **£25 per person**

Payment is by cheque with application or by invoice to your school to be paid before the event.

Refund will only be made for cancellations received before the closing date. Cancellations after that date will be charged in full. Invoices and/or confirmations of bookings will be sent to you on receipt of application.

Places are limited so please complete and return the appropriate application form(s) as soon as possible to:

**Phil Bamber, Liverpool Hope University, Hope Park, Liverpool, L16 9JD**

: [bamberp@hope.ac.uk](mailto:bamberp@hope.ac.uk) ' 0151 291 3490 7 Fax 0151 291 3163

## LMS Secondary Programme and Workshops

### **STOP PRESS! More fantastic feedback for the LMS Secondary CPD Programme.....**

#### **'Using Microsoft Office in the Mathematics Classroom' – Saturday 25<sup>th</sup> November 2006 Chris Poole, Head of Maths THE GRANGE School, Runcorn.**

'Excellent CD with lots of great resources, lots to take back and use straight away'

'Just keep doing them – these sessions are always a source of inspiration!'

'Small groups with a hands on approach so it was very flexible. Lots of chances to ask about things of particular interest individually. Helpful and highly competent person delivering the course – actually in the classroom delivering day in day out!'

#### **'Electric Learning' – Saturday 27<sup>th</sup> January 2007**

Ideas and resources to engage, motivate and challenge your pupils through the effective use of the Interactive Whiteboard. Dave Carden will briefly assess which commercial software packages work best in the classroom and then demonstrate the potential of Mediator software through modelling and hands on activities.

Dave Carden has been teaching mathematics for more than 30 years. He is at present a Secondary Maths Consultant with Liverpool LA and designs software in collaboration with teachers, targeting pupils at all ages and abilities. Dave firmly believes in the potential of interactive whiteboard technology in impacting on behaviour and attainment. All the software he uses has been trialled robustly in the classroom, creating learning environments which are fun, activity based and totally focused.

#### **'Autograph for all' - Saturday 24<sup>th</sup> March 2007**

This is a two-tier course which aims to provide demonstration and hands-on experience for beginners and intermediate users of the "Autograph" software package. Autograph is fast-becoming an indispensable tool in mathematics education. Its capabilities are not limited to graph-plotting alone: matrices, vectors, transformations, statistics and many other topics can be given a vital visual dimension through its dynamic interface. Teachers and GCSE students will find Autograph extremely useful for data-handling projects.

**Mary Stevenson** is a mathematics education tutor at Liverpool Hope University, involved in a range of activities including PGCE, undergraduate teaching, and some INSET. Mary makes regular use of Autograph to enhance her subject teaching. **Martin Bamber** manages the Merseyside Further Mathematics Centre, providing tuition, support and INSET across the region. He has used Autograph extensively in the classroom and has held regular training sessions to demonstrate its benefits to teaching and learning.

#### **'Spotlight' on 3 – D Maths - Saturday 24<sup>th</sup> March 2007**

Maths that is **D**ifferent, **D**esigned for the less able and **D**ifferentiated for KS3 / 4 pupils.

Ideas and activities relating maths topics to original practical situations - using Wave 3 intervention materials. These resources have proved very successful in helping correct common mathematical misconceptions with pupils working at Levels 2 -4. Examples demonstrated will include interactive games, use of effective display work and computer software. Participants will receive copies of resources that can be photocopied.

**Barbra Gregory** is Senior Teacher for Social Inclusion at Woodchurch High School and Advanced Skills Teacher in working with Teaching Assistants in the maths classroom. She delivers training programmes for Wirral and Cheshire Local Authorities. Having presented at a number of regional conferences, her work with less able pupils was showcased recently in an NUT video. **Anne Russell** was a Head of Mathematics and now works as a KS3/4 maths consultant for Wirral Local Authority. Between them **Barbara** and **Anne** have nearly 50 years of teaching experience.

## **Secondary Mathematics teachers on LMS Secondary CPD:**

**'Brilliant throughout! Challenged, fed, and inspired in all aspects'**

**'The resources provided were excellent.  
Really useful ideas and the activities are really flexible and  
will be of great use to me in the classroom'**

### **Secondary Programme Application Forms**

#### **~ 27 / 01 / 07 ~ Electric Learning**

Name(s) of applicant(s) \_\_\_\_\_ Full Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Telephone No. \_\_\_\_\_

Cheque enclosed to the value of: £50 (1<sup>st</sup> applicant) £50

\_\_\_\_ additional applicants @£25 \_\_\_\_\_

Total \_\_\_\_\_

**OR** Please invoice the school for a total of \_\_\_\_\_

I understand that payment must be made **before** the meeting takes place, and that I will **not** be entitled to a refund should I cancel after 12 January 2007. Signed \_\_\_\_\_ (on behalf of the applicant(s) listed above)

#### **~ 24 / 03 / 07 ~ Autograph for all**

Name(s) of applicant(s) \_\_\_\_\_ Full Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Telephone No. \_\_\_\_\_

Cheque enclosed to the value of: £50 (1<sup>st</sup> applicant) £50

\_\_\_\_ additional applicants @£25 \_\_\_\_\_

Total \_\_\_\_\_

**OR** Please invoice the school for a total of \_\_\_\_\_

I understand that payment must be made **before** the meeting takes place, and that I will **not** be entitled to a refund should I cancel after 9 March 2007. Signed \_\_\_\_\_ (on behalf of the applicant(s) listed above)

#### **~ 24 / 03 / 07 ~ 'Spotlight' on 3 – D Maths**

Name(s) of applicant(s) \_\_\_\_\_ Full Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Telephone No. \_\_\_\_\_

Cheque enclosed to the value of: £50 (1<sup>st</sup> applicant) £50

\_\_\_\_ additional applicants @£25 \_\_\_\_\_

Total \_\_\_\_\_

**OR** Please invoice the school for a total of \_\_\_\_\_

I understand that payment must be made **before** the meeting takes place, and that I will **not** be entitled to a refund should I cancel after 9 March 2007. Signed \_\_\_\_\_ (on behalf of the applicant(s) listed above)



LIVERPOOL MATHEMATICAL SOCIETY  
(INCORPORATING THE LIVERPOOL BRANCH OF THE MATHEMATICAL ASSOCIATION)



FREE POPULAR MATHEMATICS LECTURES 2006/07

**Thursday 22<sup>nd</sup> February 2007**

5pm – 6.30pm,

Frances Mary Lescher Building,  
Liverpool Hope University

**“Old Ideas in New Clothes:  
from Euclid to Dynamic Geometry”**

**Doug French, M.A. President**

In recent years there has been a renewed interest in geometry which draws on the ideas of Euclid that used to have such a dominant place in the school curriculum. The possibilities of these ideas and the way they provide examples which can promote geometrical thinking are greatly enhanced by the availability of dynamic geometry software. In my talk I will explore a variety of familiar geometrical ideas and show how they can be developed in the classroom, particularly through the medium of simple but stimulating displays on a computer screen.

**Doug French is the President of the Mathematical Association for 2006/07. He very recently retired from his post as PGCE Secondary Mathematics Course Leader at the University of Hull. His popular books ‘Teaching and learning Geometry’ and ‘Teaching and learning Algebra’ are core texts for many students on Initial Teacher Education courses.**

To reserve places contact  
Phil Bamber on 0151 291 3490 or [bamberp@hope.ac.uk](mailto:bamberp@hope.ac.uk).



LIVERPOOL MATHEMATICAL SOCIETY  
(INCORPORATING THE LIVERPOOL BRANCH OF THE MATHEMATICAL ASSOCIATION)



### JOYCE HATTON MEMORIAL BURSARIES

The Society invites applications from Mathematics teachers and pupils for support to assist with mathematical activities such as events in schools or the local community, attending conferences or any other ideas that have a mathematical basis. Please use the form below initially to give some idea of what you want the support for. You will then be contacted for further details. The Society is expecting to be able to give bursaries from £50 up to £500 depending on the circumstances.

Name of applicant .....

Email address: .....

School (name, address and tel. no.) .....

.....

.....

Outline of reason for request. ....

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Date of application.....

Please return to Phil Bamber, Liverpool Hope University,  
Park, Liverpool. L16 9JD

Hope





LIVERPOOL MATHEMATICAL SOCIETY

(INCORPORATING THE LIVERPOOL BRANCH OF THE MATHEMATICAL ASSOCIATION)



**BARCLAYS SIXTH-FORM POP-MATHS QUIZ**  
**Saturday 10<sup>th</sup> March 2007**  
**Byrom St. Campus,**  
**Liverpool John Moores University.**

What is a Pop-Maths Quiz?

The 'pop-maths' quiz is a TEAM competition that runs like a Pub Quiz but without any alcohol. Teams consist of at most 5 students (under 19 years) who, during the Quiz, work as a team to attempt to solve a number (about 20) questions on a wide range of mathematical topics. Not all questions requires specific A-level maths knowledge.

All solutions are then submitted to a scrutinizer for checking.

Prizes (valuable) are awarded to the winner(s) on the day. All prizes are sponsored by Barclays Bank PLC.

When is it?

Saturday 10th March 2007, from 10.00am –2.00pm with the timetable

**10.15am – 12.00 Noon:** Quiz

**12.15pm – 12.45pm:** Lunch (please bring your own packed lunch)

**1pm – 1.45pm:** A brief look at the solutions to the questions and how they were obtained.

**1.45pm – 2.00pm:** Prize-Giving & Close

Pick up your prize (maybe) and a printed set of answers – and then ask your teacher if (s)he can do the ones you got wrong!!

The winning teams will have their names and school published on the Liverpool Maths Society web site for all the world to see and for you to revel in the glory!

This is the fourth such annual event in Merseyside, and we are delighted to announce that this year there will be even more prizes available!



LIVERPOOL MATHEMATICAL SOCIETY

(INCORPORATING THE LIVERPOOL BRANCH OF THE MATHEMATICAL ASSOCIATION)



**How to Enter**

Each school is invited to enter one or more teams for the pop-quiz, but as space is limited, you are asked to send in your reply slip overleaf as soon as possible to avoid disappointment and certainly before 16th February 2007 for planning purposes. Teams should be of 5 students from the same school/college where possible, but where the number of students is not equal to zero (mod 5) – (think about it!) – then a team with a smaller number will be allowed. No team can have more than 5 students in it.

What does it cost?

There is no entry charge for this event. Once we have received your completed reply slip then we will acknowledge your place by return (preferably by email) And send out maps and meeting instructions.

**ENTRY FORM FOR POP-MATHS QUIZ, Saturday 10th March 2007.**

**I would like to enter ..... team(s) for the pop-maths quiz on Saturday 10th March 2007.**

**The number of staff & students attending will be .....**

**Each team should consist of 5 students where possible, although one team from any given school or college may have fewer than 5 students. All students should be between 16 and 19 years of age.**

**Name of Teacher .....**

**School.....**

**Address.....**

**.....**

**Tel:.....Fax:.....**

**e-mail:.....**

**Please return this slip to: Dr. D. Pountney, School of Computing & Mathematical Sciences, Liverpool  
John Moores University, Byrom St. Liverpool. L3 3AF (e-mail address [d.c.pountney@ljmu.ac.uk](mailto:d.c.pountney@ljmu.ac.uk))  
no later than 16th February 2007.**

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**£1000 worth of prizes including sponsorship by Barclay's bank plc**