



## Preparing for the new mathematics A levels

Teaching of the new specifications for AS and A level Mathematics and Further Mathematics starts in September this year. As I write there are accredited specifications for AS and A level Mathematics for OCR A, OCR (MEI) and AQA.

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In the case of AS and A level Further Mathematics there are currently no accredited specifications and the awarding bodies are awaiting feedback on their submissions from Ofqual.

The FMSP has been running a programme of one day events for teachers to help with the preparation for the new courses. Most of these days took place in the autumn term and were attended by over 1100 teachers from around 850 state-funded schools/colleges. The days covered essential information about the new specifications, in particular the greater emphasis on problem solving, and other overarching themes. It is clear from these days and from other teacher feedback that there is need for further professional development to help colleagues prepare for teaching the new A levels, in areas such as using technology in mathematics, teaching use of a large data set, subject knowledge for mechanics teaching and developing problem solving skills at A level. The FMSP central team are developing a range of CPD opportunities including one day courses, online courses and extended courses, in order to address these areas. There is a section of the FMSP website devoted to the 2017 changes in which there are FMSP resources and links to information and other materials to support teachers, including a generic scheme of work for A level Mathematics produced by MEI.

[furthermaths.org.uk/2017](http://furthermaths.org.uk/2017).

During the autumn, Professor Sir Adrian Smith led a **Review of Post-16 Mathematics** in England and was asked by the DfE to consider the feasibility of everyone studying mathematics to the age of eighteen. The report has been completed and we are eagerly awaiting its publication to see the recommendations made. The review team focused on four areas:

- the pathways available to 16-19 years olds for continuing with mathematics, including functional skills, GCSE Mathematics, Core Maths, AS and A level Mathematics and Further Mathematics;
- factors that affect participation in mathematics post-16, including demand for mathematical skills by employers and higher education;
- attainment in mathematics at level 2 and level 3;
- school/college practices, including delivery, teacher expertise and availability, and the use of technology.

The review team also considered how recent curriculum changes and new funding models impact on provision and opportunities for students. The report is expected to highlight the differences in participation in level 3 mathematics between and within regions and make recommendations of how to address this variation.

*Kevin Lord, FMSP Programme Leader*

# Regional Events and Updates

## Professional Development

### Preparation for the 2017 AS and A levels

With the new 2017 A Level fast approaching much of the emphasis of the work in the East Midlands has been on professional development. The first of the FMSP's 'Preparing for the New A level' courses was held at Loughborough in September and proved to be a very vibrant opening session. The course looked at the overarching themes of the new A level, the use of technology and teaching using large data sets as well as the new content, styles of questions and some proposed schemes of work. There was a great deal of collaborative team work and plenty of discussion. Though accreditation of the specifications had not taken place by that time, delegates were able to look at the content and how they might introduce a teaching strategy. The course was repeated in the next few months in Northampton, Nottingham and Lincoln allowing teachers from across the whole region to have access to some support in their preparation for the new A levels.



### New A level network meetings

The new A level has also featured in several MathsHub networks across the region. These network meetings focused on the implications of the requirements of the new qualifications. More network meetings have been planned and details can be found in the other news and events section of this newsletter.

### STEP and AEA Professional

On 7th December the University of Nottingham was very pleased to host a STEP/AEA CPD day for local teachers. The day provided teachers with an opportunity to think about, discuss and hear others' experiences in supporting students to develop their own problem solving skills. Some teacher comments from the day:

*"Really impressed and very useful day" - Beckett School*

*"Phil Chaffé is a really great CPD lead - very knowledgeable and experienced/helpful" - Ashfield School*

*"This has been really useful to consolidate what I already thought and I will use the tips/resources" - Redhill Academy.*

If you require any help with preparing students for STEP then please contact your local Area Coordinator to obtain more information. There will be a similar event held next academic year.

### KS4 Extension and Enrichment

The recently revised Key Stage 4 Extension and Enrichment course has proved particularly popular. As well as the core course that concentrates on the curriculum as a whole, there are now courses that examine particular aspects of the 1-9 GCSE. In October delegates spent a whole day looking at ways to teach graphs and functions to Higher Tier students. The day featured the use of functions and graphs for kinematics as well as general calculator and GeoGebra use in lessons. Delegates had the opportunity to try, and take away a number of activities, problem books and posters. In November, delegates attending the course in Lincoln examined how they could develop their students' reasoning and proof skills. The one day 9 – 1 took place in November at the Minster School in Southwell. In early December, 10 delegates attended the first of the days of the two day course at Landau Forte College in Derby. The delegates looked at ways to integrate more extension work into lessons and the variety of extension and enrichment activities that are available .

# Regional Events and Updates

## Enrichment for Students

### Mechanics in Motion

December brought the first Mechanics in Motion enrichment event to Loughborough. This annual event is aimed at Year 10 students and looks at a variety of practical uses of mathematics. This year the focus was kinematics in the new GCSE, and there were three stimulating events to help students appreciate the 'real world' necessity for mechanics. They took part in workshops about graphing stories, vectors and planes and simple harmonic motion. The opening problem solving activity involved all of the attending schools and prizes were given for the best solutions.

### KS4 Problem Solving

In September the Queen Elizabeth's Grammar school in Ashbourne hosted a new Key Stage 4 problem solving enrichment event. 71 students from local schools attended this competition-style morning event designed to enrich their mathematical problem solving. Students worked in teams to explore various aspects of problem-solving via activities ranging from a fun Murder Mystery style activity to a hands on paper folding session. Teams were recognised for showing qualities of perseverance, engagement and good teamwork throughout the morning. Many thanks go to all the schools that took part and engaged so enthusiastically.



*A team working hard on the "Murder Mystery" activity*

### EMAT Preparation day

23 local students from the East Midlands region took part in this high level preparation session to improve their problem solving and increase their depth of mathematical knowledge for the EMAT in November. Students found the day very worthwhile and as such a number of students were offered interviews at Oxford University. Many congratulations to John Bamford from Bilborough College, who took part in the course, who has just recently received a conditional offer to study Mathematics at Oxford.

### The STMC in the East Midlands

The Loughborough University heat of the Senior Team Maths Challenge (STMC) was a very close run competition this year. The eventual winners were a very proud Wellbeck Sixth Form Defence College, seen here collecting their prizes.



A very deserving Robert Smyth Academy were the runners up. Well done to all 25 teams (our largest number so far) who really enjoyed an afternoon of challenging and stimulating mathematics.

The Nottingham heat was particularly exciting this year since the race for top spot was a very close call. We were delighted to see so many stated schools achieving high scores in this years competition and a special congratulations to the winning team Bilborough College who are invited to the Final in February. Congratulations also to George Spencer Academy who took 2nd place and Nottingham High School who took 3rd place.



# Regional Events and Updates

## Enrichment for Students (Continued)

### The STMC in the East Midlands

The Northampton heat of the STMC was ably hosted by Abbeyfield school. 16 teams attended with the team from Rugby School the deserved winners.



### Maths Challenge

We ran a very successful Maths Challenge in Lincoln in which 19 teams of 4 participated. Students and teachers reported that they had a very enjoyable day and that it was good to do some mathematics that is not on the GCSE syllabus.

### Sixth Form Problem Solving

We have been running 6 week courses for Year 12 students in Worksop and Grantham. These are designed for students who may be taking STEP, MAT or AEA papers next year or who are simply interested in maths. The focus is on problem solving techniques so students will meet mathematics that they are not previously familiar with and explore some new concepts and ideas with the teacher (rather than being 'taught' in the traditional sense). We have had very positive feedback from the students who have been involved in this and from the schools hosting the sessions.

### Professional Development

We held a well attended and useful CPD day at the University of Lincoln to discuss with teachers the changes taking place to the A-Level specifications. We looked at the core content and structural changes to the qualification and tried to explore with delegates future CPD requirements and potential changes they will need to make within their departments.

In addition, we have also run sessions for teachers on the specific content. So far we have focussed on Mechanics but will be running sessions on Statistics, Problem Solving, and Use of Technology in the near future.

We have also run CPD sessions on the use of GeoGebra in the classroom and a session on common errors students make in A2 Mathematics.

Finally, we have run both days of the GCSE Extension and Enrichment course. This was well received by participants and we had some useful discussions about ways to stretch more able students at Higher GCSE Level.

As well as the above, we have also been working closely with several schools to develop their Further Mathematics courses to ensure that all students who want to take the qualification are enabled to do so.



# Other News and Events

## STEP Preparation Sessions

The University of Nottingham will host four twilight workshops to help Year 13 students prepare for the June STEP exams.

**26th April, 10th May, 17th May, 24th May**

## 11-16 Enrichment

### Maths at Work Conference

This is a one-day event for Year 10 students to find out how maths is relevant to different careers. The day will consist of interactive workshop sessions with presenters from leading industries in and around the East Midlands.

**28th June - University of Nottingham**

### Codes and Coding

A day of practical activities related to code solving and coding.

**4th July - University of Loughborough**

## Future Events

### CPD days

The use of Technology in 2017 A Level maths - This course will explore the types of technology that will be most useful in the 2017 A level Maths

**31st March - University of Loughborough**

### KS5 Network Meetings

Exploring the New A Level

**28th June - Northampton School for Girls**

### LOPD

Spreadsheets and Large Data Sets 29/03/17 to 26/04/17 - Online

AS Pure Maths 27/04/17 to 6/7/17 - Online

AS and A Level Mechanics for 2017 3/5/17 to 12/7/17 - Online



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## East Midlands Event Pages

**For teachers:**

[furthermaths.org.uk/EM\\_CPD](http://furthermaths.org.uk/EM_CPD)

**For students:**

[furthermaths.org.uk/EM\\_enrichment](http://furthermaths.org.uk/EM_enrichment)

