



Support for Advanced Maths

The Smith Review of post-16 Mathematics in 2017 recommended that the government should continue to fund national support and professional development for AS/A level Maths, Further Maths and the new Core Maths qualifications. The review also recognised that many schools and colleges struggle to afford to deliver Further Maths and Core Maths courses economically. It recommended increasing funding for these subjects.

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The government's response has been to firstly announce £16m funding, over two years, for a national support programme for level 3 maths. MEI, which currently manages the FMSP, successfully bid for this new contract. The Advanced Maths Support Programme (AMSP) will continue the work of the FMSP, providing support for students and teachers for AS/A level Maths and Further Maths, as well as higher tier GCSE Maths and support for university mathematics entrance exams. In addition the new programme will provide support for schools and colleges to establish a Core Maths offer. The AMSP, starting in May 2018, will run for 2 years initially. FMSP support will transfer to the new programme during the summer term, see:

furthermaths.org.uk/amsp.

The DfE also recently provided more information about the Advanced Maths Premium. This extra funding will be paid to schools/colleges for each additional student studying level 3 maths. The aim is to help schools and colleges overcome some of the financial barriers to offering the full range of level 3 maths qualifications.

For many years the FMSP has supported schools and colleges to deliver Further Maths by providing professional development to increase teaching capacity, promoting to

students the benefits of studying maths, and by providing resources to enable Further Maths to be taught in a more cost effective way. However we know that in some institutions provision is threatened with being withdrawn as cohort sizes are small. Core Maths qualifications, designed for those students who pass GCSE Maths but decide not to take AS/A level Maths, are currently offered in relatively few schools and colleges. Post-16 funding currently provides no specific finance for this additional course, which is equivalent to an AS level and enables students to continue developing their quantitative and problem-solving skills alongside other A level subjects and so that they are better equipped mathematically for employment or university study. The potential growth in numbers of students taking Core Maths is huge.

The additional funding from the Advanced Maths Premium: furthermaths.org.uk/advanced-maths-premium together with support from the AMSP will help schools/ colleges to maintain or increase provision for AS/A Maths and Further Maths and encourage more schools/colleges to establish Core Maths.

Kevin Lord, Programme Leader.

Regional Events and Updates

Professional Development

Introduction to Teaching Further Pure

This one-day course ran at the George Spencer Academy in conjunction with the East Midlands West Maths Hub. The course focused on the new aspects of the 2017 AS specification and was ideal for those teaching further mathematics for the first time and for those looking to increase their knowledge, skill and confidence.

Some of the key areas that were covered were as follows:

- Matrices
- Proof
- Roots and Coefficients
- Modelling in the new A level
- Discrete Maths

The course was well attended with 14 delegates from across the East Midlands.



Teaching A level Pure Maths

In February, teachers who are part of the Diverse Academies Learning Project (DALP) in Nottinghamshire came together for a day of professional development. For the KS5 strand of PD teachers attended three sessions covering:

- Pure content in the new A level
- Statistics in the new A level
- Mechanics in the new A level

Teachers were given the opportunity to try out lots of activities suitable to use in the classroom including some practical mechanics experiments.

Teachers were asked about the most useful aspects of the course and here are some of their comments:

“Being able to do some maths and use some resources!”

“Practical activities and application in the classroom”

“The ability to allow for questions to be asked; to work through problems as a whole”

Teaching statistics in A level Maths

In March, in collaboration with the East Midlands South Maths Hub, an entire day was devoted to delivering PD in teaching A level Statistics at Wigston College in Leicestershire. Fourteen teachers spent the day learning from Paul Chillingworth of the FMSP’s Central Team how to use easily accessible technology such as Excel and GeoGebra to help students become familiar with the large data sets of the various exam boards. Teachers also spent a session seeing how Casio 911-fx Classwiz calculators could be used in very effective ways to tackle hypothesis-testing problems and problems in probability. A follow-up session will take place on 5th July.

If you would like to run a similar event please contact Chris Luke at chrisluke@furthermaths.org.uk.

Teaching mechanics and statistics in A level Maths

In December and January, Sir Christopher Hatton Academy in Wellingborough hosted two half-day PD events: one on teaching mechanics in A level Maths and the other on teaching statistics.

The mechanics event was aimed both at teachers who are relatively new to teaching mechanics as well as at more experienced teachers, who are looking for inexpensive and easy ways of bringing practical demonstrations of mechanical principles into their lessons.

At the statistics event eleven teachers were shown how to use technology such as Excel and GeoGebra to become familiar with the large data sets as well as to teach concepts in statistics. The delegates at the event also spent time familiarising themselves with features of the Casio fx-911 Classwiz calculators that are useful for tackling hypothesis-testing problems.

KS4 Extension and Enrichment

Prince William School in Oundle hosted a two-day course looking at extension and enrichment topics for GCSE students. This was attended by teachers from all over the area (and further afield) and covered many areas of mathematics accessible to GCSE students and how they could be delivered. A heavy emphasis was placed on problem-solving skills and how they could be developed.

Regional Events and Updates

Enrichment for Students

KS4 Problem-Solving Morning

A fun problem-solving event was ran at the Queen Elizabeth's' Grammar School in January for KS4 students. The event was attended by 80 pupils and 14 teachers from local Derbyshire and Nottinghamshire schools.

The event consisted of three rounds aimed at challenging the pupils by giving them the opportunity to practice using familiar techniques and processes in less familiar situations.

The activities were:

- **Murder Mystery:** 5 Mathematical clues covering the topics of angles/bearings, solving equations, percentages, logic, working with numbers
- **Packaging:** A problem-solving task looking at area, volume and algebra.
- **Practical:** A construction task looking at the Columbus Cube.

The event was well attended and so we will be running the event again in the summer term for any schools who missed out this time (the venue will be based in Derby city centre T.B.C).

Maths Feast

In March, Sir Christopher Hatton Academy in Wellingborough hosted a Maths Feast competition contested by thirteen teams from seven schools. The competition, which was comprised of four 'courses' of very inventive questions was hotly contested. Each round had its own winners so there was always something to play for, though eventually two teams, one from Wrenn Academy and one from Bedford Modern School (pictured below) won more rounds than other teams so were rewarded by receiving UKMT books.



UKMT Senior Maths Challenge

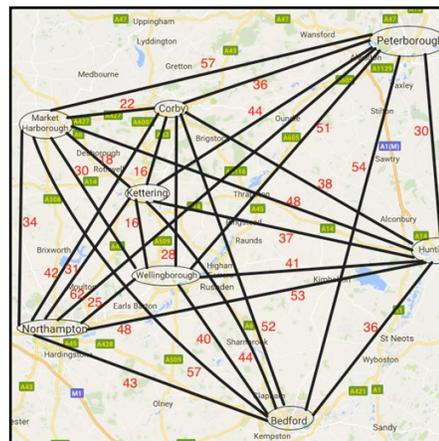
Thanks to Abbeyfield School in Northampton for hosting a regional heat of the UKMT Senior Maths Challenge. The heat, which was attended by eighteen teams, from Northamptonshire and neighbouring counties was well contested and eventually won by the team from Rugby School.



Pictured left to right: Northampton School for Boys, The Royal Latin School, Rugby School

In-School Enrichment

A number of in-school enrichment events have taken place in Northamptonshire. In one such event at Manor School in Raunds, Dr Luke, explained the links between the problem of completing the quickest tour of towns in Northamptonshire and the surrounding region and one of the most intriguing unsolved problems in mathematics and computer science which has far-reaching consequences, the 'P vs NP problem'.



Other News and Events

MAT/TMUA Day

In October, students from around the country who were entered for the MAT exam were given the opportunity to prepare for this challenge at the University of Northampton. The Area Coordinator for Northamptonshire, Dr Chris Luke, led the students through a series of questions highlighting common features on previous exams. Dr Luke also led a session on logic and writing mathematical proofs.

Year 12 Problem-Solving Lessons

At Brooke Weston Academy in Corby, Dr Luke is leading a group of Year 12 students through a course intended to develop their problem-solving skills. The students have been engaged in a series of topics as diverse as number theory, geometry and combinatorics with the aim of preparing them for exams such as MAT and TMUA in the autumn.

STEP Lessons

Since November, six students have been attending a 15-week course at the University of Northampton to prepare them for STEP exams used by several universities, notably Cambridge and Warwick. Several students on the course are entered for STEP 1, while

one student from Wrenn Academy, has an offer to read Maths at Cambridge; she is studying STEP 2 and STEP 3 very intensively.

MAT Preparation Sessions

At the beginning of the Autumn term many students were preparing to take the MAT exam required by Oxford University and UCL in order to study Mathematics at degree level.

Nottinghamshire hosted two events to help students prepare for the test or to give other enthusiastic maths students the chance to try out some more challenging maths problem solving.

The events were ran at the University of Nottingham and also at the Minster School, Southwell and the sessions saw a combined total of 30 pupils attend the classes.

The sessions were very well received by students, some of their comments can be seen below:

“Very enthusiastic teacher, presenting tricky questions well”

“Excellent advice and lots of tips”

“Very good and very enjoyable”

“More sessions if possible!”



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East Midlands Event Pages

For teachers:
www.furthermaths.org.uk/EM_CPD

For students:
www.furthermaths.org.uk/EM_enrichment

