



Spring 2014

Yorkshire and the
Humber Regional

NEWSLETTER

The National Picture

The Department for Education is to provide Mathematics in Education and Industry with substantially enhanced funding for a further three years to continue and extend the work of the Further Mathematics Support Programme, working with the National Centre for Excellence in Teaching Mathematics and the Institute of Education.

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The FMSP will expand its work to improve access to Further Mathematics tuition, and to increase the numbers of students in England studying advanced mathematics post-16. The FMSP will continue to have a strong emphasis on teachers' professional development, to help meet the increasing demand from students to study Mathematics beyond GCSE level.

UKMT/FMSP Senior Team Mathematics Challenge Final

On February 4th at the Camden Centre, London, 59 teams competed in the 2013/14 STMC Final. The teams were all winners from the 55 regional heats involving 1146 schools and colleges.

The overall champions were the team from Hampton School. Alton College were in second place with Rainham Mark Grammar School taking third. The poster competition, on the theme of *Ruled Surfaces*, was won by The Grammar School at Leeds. The competition was again sponsored by Rolls-Royce plc. Dr Peter Neumann presented the prizes and congratulated all the participants on their achievements.

FMSP Wales

FMSP Wales has secured continued funding for the project from the Welsh Government for 2014-15 and 2015-16. For further information see the FMSP news announcement at:

www.furthermaths.org.uk

Extended professional development courses

The FMSP provides a range of professional development courses, such as for STEP/AEA and for Key Stage 4. It also has an extensive programme of online professional development.

For more details on the FMSP CPD provision, please see:

www.furthermaths.org.uk/teacher_area/cpd.php

There are also extended courses that are taking applications:

Teaching Further Mathematics

enables participants to study the content of Further Mathematics from a teaching and learning perspective. The course starts in July and applications are now being taken. For more information and an application form please see:

www.furthermaths.org.uk/teacher_area/tfm.php

Teaching Advanced Mathematics

is designed to give teachers the skills and confidence to teach A level Mathematics effectively, focusing on subject knowledge and pedagogy. The Masters-accredited course fees are £600 but *schools and colleges of participants are entitled to receive £1200 in March 2015*, in recognition of the support they provide to enable one of their teachers to take the course. For more information please see:

www.mei.org.uk/tam

Regional Events and Updates

Professional Development

Past Events

Statistics 2

Eleven teachers attended a course at The National STEM Centre, York University, on Topics from Statistics 2.

The topics covered on the day were Continuous Random Variables, The Poisson Distribution, The Normal Distribution, The Poisson Approximation to the Normal, The Normal Approximation to the Binomial and Poisson and Testing for the mean of the Normal Distribution.



Stella Dudzic presented the day and introduced the teachers to lots of ideas and resources, which could be used in the teaching of Statistics.

KS4 Problem solving

In February, Jean Smith and Betty Garfoot presented a day's course, KS4 Problem solving.

Seven teachers attended the course which covered:

- What is problem solving and why is it important
- A booklet of 20 Mathematical problems for students
- Other sources of problems
- Transition to A level

The low uptake on places for this course was quite disappointing, as this is a key improvement area for the teaching of GCSE Mathematics.

However, those teachers attending found the course extremely helpful:

- It gave me valuable time to discuss ideas with other teachers
- It made me realise the issues which affect pupils
- Thanks for all the excellent resources



Decision Maths

Eighteen teachers attended a course at Holdsworth House Hotel, Halifax, on Decision Mathematics. The teachers had the option of attending the morning only, afternoon only, or both sessions. In the morning the D1 topics Graphs and Networks, Linear Programming and Algorithms were covered and in the afternoon the D2 topics The Simplex Algorithm, Game Theory and Optimisation (Hungarian Algorithm and Dynamic Programming) were studied.

Sue De Pomerai shared many resources.

Some of the comments on the most useful aspects were:

- New ways to introduce topics.
- Enthusiastic trainer – inspiring.
- Loved the links with other subject areas.
- The history behind the topics.

Using Geogebra in the teaching of A level Mathematics

In November Tom Button presented a day's course on Geogebra at The Innovation Centre, Bradford.

The course included an introduction to using Geogebra and provided ideas for integrating Geogebra, into the teaching and learning of A level Maths and Further Maths. Tom also gave some suggestions for using Geogebra in Statistics and Mechanics.

Some teacher comments were:

- I really appreciated the input from the front alongside the opportunity to have a go and ask questions.
- The 'hands on' / workshop nature of the course was excellent. Great differentiation for those of us who haven't taught Further Pure.

Regional Events and Updates

Professional Development

Past Events

FP1/FP2 CPD

A 10 week long course with weekly sessions, 4.30-6.30 pm on a Wednesday, was held at the University of Sheffield between October and December 2013. The aims of the course were to present and discuss topics in a way that provided insights beyond syllabus requirements. In this way, participants were endowed with not only academic leadership for the Further Pure modules, but also with the ability to construct sound and exciting learning materials. Dennis Almeida (area coordinator) and Tom Button (MEI) presented.

KS4 Enrichment and Extension CPD

This was led and presented by Jean Smith (YH1 area coordinator) and Yvonne Croasdaile (FMSA Associate), at the Stables, High Melton. Day one was on October 2nd 2013 and Day two, on January 15th 2014.

On 17 October and 28 January, fourteen teachers attended a two day course on KS4 Enrichment and Extension presented by Sheila Eastwood and Betty Garfoot. This course explored strategies and resources designed to extend and enrich the mathematical experiences of Higher Tier GCSE pupils, and also considered ways of sharing the ideas with the rest of the department and integrating them into schemes of work.

Teachers' comments included:

- Some excellent resources which have worked well with students (feeding back at the start of day 2)
- This course has made me really think about how to stretch all my pupils



Teaching AS Mathematics

On 25 September, eleven teachers attended the second day, of a two day course on teaching AS Mathematics at Leeds University, presented by Sheila Eastwood, Jane West and Tom Button. The topics covered were sequences and series, arithmetic and geometric progressions, trigonometry from radians and graphs to identities and equations, logarithms and integration.

Some of the comments included:

- Excellent, I will definitely use the resources
- This has been the most useful course I have attended since I began teaching
- The presenters were really interesting and it was well planned.

AQA Level 2 Further Mathematics

On 27 November eighteen teachers attended a course on AQA Level 2 Further Mathematics, which took place at the Junction 25 Conference Venue in Brighouse, presented by Sheila Eastwood and Jane West. The day provided an opportunity to consider the structure and assessment of the course and to explore the areas of maths which will be unfamiliar to GCSE maths students, such as matrices, differentiation and further trigonometry and algebra.

Teachers' comments included:

- Really enjoyed the opportunity to try things
- A very informative day with lots of ideas shared
- Excellent relevant day – thank you
- Outstanding resources – really valuable

The Minefields of Mathematical Modelling

On 4 February twenty-five teachers attended an afternoon course in Bradford on 'The Minefields of Mathematical Modelling.' Delivered by Rob Eastaway, this course explored some ideas for making mathematics more relevant to GCSE and A Level students, from passing a rugby ball to tying shoelaces.

Comments included:

- Some excellent ideas
- I'm looking forward to using some of these with my students
- Inspirational

KS4 and KS5 Network

There are now KS4 and KS5 Networks set up in most regions and these allow teachers to discuss current issues, share resources and take part in CPD opportunities.

The first Leeds KS5 network meeting took place in January at Abbey Grange School and was attended by ten teachers. This meeting considered ideas for teaching topics from C2, and most of the teachers attending brought resources to share, including a murder mystery and a treasure hunt.

The most recent KS5 one, was a Bradford meeting with an introduction to using Geogebra.

Enrichment for Students

Past Events

STMC

The **Leeds** Heat of the Senior Team Mathematics Challenge, was held at Leeds University, on the 19th of November at Leeds University. Twenty-two teams took part in a very closely fought contest, with the Grammar School at Leeds, securing victory just one point ahead of runners-up Roundhay School.



The **Hull** heat of the STMC was held at Newland School.

The top three teams were:

Pocklington School,

Beverley Grammar School,

Wyke Sixth Form College.

The **York** heat of the STMC was held at Fulford School.

The top three teams were:

Harrogate Grammar School,

Heckmondwike Grammar School,

Queen Margaret's School.

The **Sheffield** heat of the STMC was held at All Saints Catholic High School on 12 November 2013.



Taking Maths Further

The Taking Maths Further event was held at The Lawns, Cottingham, on October 23rd 2013. This event was aimed at higher level year 11 pupils and offered workshops:

- Paths and Circuits
- Keeping Secrets
- Game Shows and Scams
- Fun Maths

The final lecture was Juggling: Theory and Practice by Colin Wright

Over 100 pupils and their teachers from seven schools attended this event

Comments from teachers included:

- Has given prompts to provide a variety of activities in lessons
- Provided inspiration and ideas for the classroom
- Got pupils involved and thinking
- Maths is fun- gave the students a sense of achievement



Think Maths

On the afternoon of December 11th Katie Steckles from Think Maths <http://www.think-maths.co.uk/> gave two talks to key stage 4 students. The venue was the University of Huddersfield. The first talk was 'The Number Matrix – the Hidden Mathematics of Technology' (how numbers are used to transmit and protect technology). The second talk was 'Maths in the Simpsons' (the hidden Maths jokes in The Simpsons and Futurama).

Year 10 advanced problem solving course.

Since October 2013 there have been fortnightly classes, 4.30-5.45 pm on a Wednesday, at the University of Sheffield. This course gives a systematic introduction to advanced problem solving skills based on the KS4 mathematics syllabus. Dr James Cranch presents.

STEP, AEA and MAT

Student Events:

Year 12 advanced problem solving course

Since October 2013 there have been fortnightly classes, 4.15-5.45 pm on a Wednesday, at the University of Sheffield. This course gives a systematic introduction to advanced problem solving skills based on the year 12 pure mathematics syllabus. This primary aim is improved preparation for the Oxford entrance (MAT), AEA and STEP examinations. Students are given regular feedback on their responses to assignment tasks. Dr James Cranch (FMSP associate) and Dennis Almeida present.

STEP preparation course

Since February 4 2013 there have been weekly classes, 4.30-6.30 pm on a Tuesday, at the University of Sheffield. This course, consisting of 15 classes over 12 weeks, provides participating students with a systematic introduction to the advanced problem solving skills required for STEP examinations. Classes are delivered by the area coordinator and Sheffield University School of Mathematics staff. Students are given regular feedback on their responses to assignment tasks.

In December 2013 one-to-one preparation tuition for interviews for admission to the Oxford and Cambridge colleges to study undergraduate mathematics was provided to students by Dr James Cranch.

MAT preparation

Between September and early November 2013 one-to one-face to face and/or email tuition was provided by the area coordinator to year 13 students preparing for the MAT examination.

STEP Support

An Oxbridge Mock Interview afternoon was held at The University of York on 6th November. This was organised by the FMSP with Niall MacKay and Michael Bate from the University's Mathematics Department running the afternoon.

STEP classes started in January at the University of York. There are monthly meetings and the use of the University's forum to help students prepare for the STEP exams. Miklos Hartmann from the University's Mathematics Department is running this course.

STEP classes also continue to be held every Wednesday 4.30 to 6.30 at the University of Leeds.

Teacher Events:

Supporting Your Students with STEP / AEA

In December Peter Mitchell (<http://meikleriggs.org.uk>) hosted a course on 'Supporting your students with STEP / AEA' at the University of Leeds. Information about STEP and AEA papers was given, advice on the problem solving mindset was shared and there were opportunities to try problems.

Comments from teachers were:

- An interesting day 'doing Maths'. Thanks.
- The lectures on the Philosophy / Psychology of problem solving and proof were useful aspects of the day.



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Yorkshire and the Humber Events Pages:

For teachers: www.furthermaths.org.uk/?section=regions&page=YH_CPD

For Students: www.furthermaths.org.uk/?section=regions&page=YH_enrichment

