MATHSHUBS
BUCKS, BERKS AND OXON

Summer Term 2021

Newsletter 6 June 2021

All of our Work Groups are free

News from our Maths Hub Lead, Abha Miller:

Dear All,

I hope you had a wonderful May half-term. As thoughts now finally turn to planning for the next academic year, I hope you have had some time to catch up on research findings. The latest Ofsted Mathematics research review can be read here :

Research review series: mathematics - GOV.UK (www.gov.uk)

'This research has been informed by the evidence and principles underpinning the EIF (education inspection framework), which include:

- *scope, content and sequencing of the curriculum*
- *specification and ordering of component parts that make up composite skills*
- *the value of teachers' subject knowledge*
- *promotion of a range of quality interactions with pupils*
- *quality and pacing of instruction*
- *how to avoid overloading working memory*
- *the value of deliberate practice, interleaving and regular low-stakes testing'*

I hope that this packed bulletin inspires you to get involved and maybe do your own research!

I am certainly looking forward to 'seeing' you on the 25 June at our virtual conference.

Best wishes *Abha Miller*

BBO Maths Hub Conference 2021 : 25 June 12pm—4pm

After a very unusual year we are taking the chance to look ahead and think about the future and we hope that you will find the sessions we have on offer fulfil this vision. Our Key Note Speaker this year is **Anne Watson** who will be looking at '**Creativity in and with Mathematics**' and we also have **Dr Debbie Morgan** who will be looking at '**Moving forward from the pandemic**'.

To add to this we have a wide range of experienced speakers who will be speaking on the broad range of topics including 'Mathematical Oracy', 'How the principles of Mastery can support all learners', 'Students with Maths Anxiety – how can teachers help? Building Resilience', 'Choosing representations to reveal mathematical structure', 'Purpose of Assessment' and many more.

Attendance is open to any maths teacher who is teaching in the BBO or neighbouring Hub area and is not in the private sector.

Book here to secure your place at this virtual event. We look forward to seeing you on the **25th June.**

Primary Recruitment Opportunities for 2021/22

Primary Teaching for Mastery Development 2021-22

In 2021/22, all Maths Hubs will be running primary maths Teaching for Mastery Development Work Groups led by Mastery Specialists. This programme is for schools who have a commitment to developing a teaching for mastery approach. Although the school's participation involves two teachers attending events outside of the school and online, it is expected that these two teachers lead development across the whole school. Each Maths Hub is now seeking to recruit schools for these Work Groups, each involving six or seven schools.

Participation in a Work Group enables a school to start, continue or embed teaching for mastery in maths across the school. Work Groups are fully funded so there is no cost for participation. Thousands of primary schools in England have already become part of this popular programme.

If you would like to know more about the Teaching for Mastery programme please visit https://www.ncetm.org.uk/maths-hubs-projects/primary-teaching-for-mastery-development/ or see this flyer produced by the NCETM.

If you are ready to apply for the programme then download the information and application form here.

Mastering Number

Supporting pupils in Reception, Year 1 and Year 2 to develop good number sense

Mastering Number is a new programme offered in 2021/22 by the National Centre for Excellence in the Teaching of Mathematics (NCETM) and the Maths Hubs Network. It aims to develop solid number sense, including fluency and flexibility with number facts, which will have a lasting impact on future learning for all children. It also involves high quality professional development for teachers.

The aim over time is that children will leave KS1 with fluency in calculation and a confidence and flexibility with number. Attention will be given to key knowledge and understanding needed in Reception classes, and progression through KS1 to support success in the future.

Lead participants from Work Group schools will be three teachers, one each from Reception, Year 1 and Year 2, with some support given to subject leaders and headteachers.

This programme is open to all state-funded primary schools in England. If oversubscribed, priority for places will be given to schools with a high proportion of disadvantaged children.

Mastering Number is fully funded by the Maths Hubs Programme, so is **free** to participating schools.

The NCETM have also produced a flyer summarising the programme. Please feel free to download it to share with colleagues in your own and other schools. For further information about this programme and details on how to apply, please visit our website : Mastering Number Programme > BBO Maths Hub

Primary Recruitment Opportunities for 2021/22

Mastery Readiness

Since 2014, the NCETM/Maths Hubs Teaching for Mastery Programme has trained hundreds of primary teachers as Mastery Specialists. Thousands of schools have been helped by these specialists to start introducing mastery approaches in their maths lessons. The programme is set to continue for several more years.

But not all schools, for a variety of reasons, are able to move into a formal development programme in one leap. That is why the Mastery Readiness Programme has been developed: collaborative training and bespoke support, available in 2021/22, which provides a stepping stone to take schools into the Teaching for Mastery Programme in 2022/23 and beyond.

The Mastery Readiness Programme is for primary schools that want to adopt teaching for mastery in maths, but would benefit from a staged approach.

If you would like to know more about the Mastery Readiness programme and find out if it would be the right next step for your school, please visit https://www.ncetm.org.uk/maths-hubs-projects/mastery-readiness/ or see our information sheet.

If you are ready to apply for the programme then download the application form here.

Primary Work Groups

Below are details of all the Work Groups we are going to be running in 2021/22. We are currently asking for those interested in participating to fill in an expression of interest form on our website so that we can keep in touch with dates and booking details once these are released and made available.

COVID 19 UPDATE : As the impact of the pandemic hopefully recedes, the result for Maths Hubs' work will be a blend of face-to-face activities and frequent online collaboration. We will have more specific information nearer the time on individual Work Groups but will always work within the latest Government guidelines to build on the positive lessons that were learnt from online collaboration during lockdown but also offer face-to face meetings where possible.

All of our Work Groups are free.

Specialist Knowledge for Teaching Maths - Early Years Teachers

Develop mathematical subject knowledge and understand the pedagogy that underpins the teaching of it.

The aim of this Work Group is to develop mathematical subject knowledge and understand the pedagogy that underpins the teaching of it. It is designed to support Early Years teachers in developing specialist knowledge for teaching mathematics, thus enabling them to understand, teach and support pupils in maths in the classroom.

Primary Work Groups

Specialist Knowledge for Teaching Maths - Early Years Teachers (cont.)

These programmes are designed for individuals who would like to develop their specialist knowledge for teaching maths to three to five years olds. This may be particularly relevant for NQTs, teachers that have moved phases, or teachers that have not received maths-specific training.

For more information about this programme, please visit Specialist Knowledge for Teaching Mathematics - Early Years Teachers | NCETM.

To express your interest in taking part in 2021/22, please fill out the form on our website and we will contact you with more details when booking becomes available.

Specialist Knowledge for Teaching Maths - Primary Teachers

Develop mathematical subject knowledge and understand the pedagogy that underpins the teaching of it.

The aim of this Work Group is to develop mathematical subject knowledge and understand the pedagogy that underpins the teaching of it. It is designed to support primary teachers in developing specialist knowledge for teaching mathematics, thus enabling them to understand, teach and support pupils in maths in the classroom.

This programme is designed for teachers who would like to further develop their specialist knowledge for teaching maths. It will be particularly relevant for teachers that have moved phases or teachers that have not received maths-specific training.

For more information about this programme, please visit Specialist Knowledge for Teaching Mathematics - Primary Teachers | NCETM.

To express your interest in taking part in 2021/22, please fill out the form on our website and we will contact you with more details when booking becomes available.

Primary Work Groups

Specialist Knowledge for Teaching Maths - Primary Teaching Assistants

Develop mathematical subject knowledge and understand the pedagogy that underpins the teaching of it.

The aim of this Work Group is to develop mathematical subject knowledge and understand the pedagogy that underpins the teaching of it. This project is designed to support primary teaching assistants in developing specialist knowledge for teaching mathematics, thus enabling them to understand, teach and support pupils in maths in the classroom.

This programme is designed for primary teaching assistants who are supporting maths, and who would like to develop their specialist knowledge for teaching maths. It will be particularly relevant for new TAs or TAs that have not received maths-specific training.

For more information about this programme, please visit Specialist Knowledge for Teaching Mathematics - Primary Teaching Assistants | NCETM.

To express your interest in taking part in 2021/22, please fill out the form on our website and we will

Specialist Knowledge for Teaching Maths - Primary Early Career Teachers

Develop mathematical subject knowledge and understand the pedagogy that underpins the teaching of it.

The aim of this Work Group is to develop mathematical subject knowledge and understand the pedagogy that underpins the teaching of it. This project is designed to support primary early career teachers (teachers in their first two years of teaching) in developing specialist knowledge for teaching mathematics, thus enabling them to understand, teach and support pupils in maths in the classroom.

The programme is designed for primary early career teachers (those in their first or second year of teaching).

For more information about this programme, please visit Specialist Knowledge for Teaching Mathematics - Primary Early Career Teachers | NCETM.

To express your interest in taking part in 2021/22, please fill out the form on our website and we will

COVID 19 UPDATE : As the impact of the pandemic hopefully recedes, the result for Maths Hubs' work will be a blend of face-to-face activities and frequent online collaboration. We will have more specific information nearer the time on individual Work Groups but will always work within the latest Government guidelines to build on the positive lessons that were learnt from online collaboration during lockdown but also offer face-to face meetings where possible.

All of our Work Groups are free.

Building Firm Mathematical Foundations in Reception

Catherine Perry, Primary Mastery Specialist

Burford School, Marlow

Appropriately applying the principles of the NCETM's Teaching for Mastery approach within the context of a Reception classroom is important in order to build firm mathematical foundations for children at the beginning of primary school. This year, myself as Maths Lead at my school, alongside one of our Reception teachers, have had the pleasure of participating in a series of four workgroups through the BBO Maths Hub, aimed to develop our mathematics teaching in the early years.

I was interested to see how we could continue to improve our current mastery approach within both our Nursery and Reception classes and how we could support children to transition from Early Years to Year 1. Despite the workgroup having to run 'virtually' due to the current pandemic, each workgroup session was extremely interactive, developed and challenged our current ways of thinking and working, allowed for significant discussion with other colleagues and enabled us to reflect on what we had discussed and apply it directly back in school.

The workgroups began by looking in-depth at the NCETM's Early Years Progression Charts. As a Maths lead, this was an invaluable experience for me, as it enabled me to develop my understanding of progression in early mathematics. Through analysing relevant research and resources, we were able to discuss the importance of direct teaching, alongside opportunities for continuous provision for younger children.

A particular aspect of early mathematics that one of the workgroup sessions focused on was 'subitising': the ability to quickly recognise how many objects are in a group without actually having to count them. During this session, we looked at both 'perceptual' (subitising up to five objects) and 'conceptual' subitising (subitising larger numbers of objects by 'seeing' them in groups of five or less and combining these). The impact of discussing subitising in such detail allowed us to reflect on the current teaching and opportunities we provide for children to develop the skill of subitising and to understand why this is such an important skill for children to grasp at a young age. Reflecting on this back in school, we were able to ensure that the opportunities provided for children during the early years allowed them to develop the skill of subitising and as a result develop their number sense. Activities to support this included playing a game involving hiding a small number of objects under plant pots or throwing a number of two-sided beanbags and seeing how many of each colour there were.

We have taken part in all of the workgroup sessions now and I would thoroughly recommend participation in this workgroup as a strategy for your school to either begin or continue to develop firm mathematical foundations within the Early Years.

Secondary Recruitment Opportunities for 2021/22

Secondary Teaching for Mastery Development 2021-22

In 2021/22, all Maths Hubs are participating in a Network Collaborative Project addressing secondary mathematics teaching for mastery. As part of this project, Secondary Mastery Specialists in each hub area will be offering support to schools interested in developing teaching for mastery approaches in their maths departments. Each specialist who has completed the second year of their support and development programme will work with two departments. Maths Hubs are therefore now looking to recruit schools and their maths departments to participate in this exciting and innovative project as members of these Work Groups.

The Secondary Teaching for Mastery – Development project is fully funded by the Maths Hubs Programme so is free to participating schools.

More information about secondary teaching for mastery Work Groups is available on the NCETM website or via this flyer.

If you are ready to apply for the programme then download the information and application form here .

Secondary Work Groups

Below are details of all the Work Groups we are going to be running in 2021/22. We are currently asking for those interested in participating to fill in an expression of interest form on our website so that we can keep in touch with dates and booking details once these are released and made available.

All of our Work Groups are free.

Secondary Subject Leadership - A project to support and develop secondary heads of maths

This new project offers focused support to secondary heads of department/subject leaders, to enable them to better understand and implement teaching for mastery approaches across their department, and to develop in their role as leaders of both student learning and teacher professional development.

It provides an opportunity for participants to deepen their understanding of teaching for mastery approaches, of their wider roles, and of their capacity with their colleagues to transform secondary maths learning.

The project is for secondary heads of department/subject leaders, and is open to heads of department in schools already involved with Maths Hubs and to those who are not yet involved. (Prospective HoDs/ subject leaders are not eligible to participate.)

For more information about this programme, please visit Secondary Subject Leadership| NCETM. To express your interest in taking part in 2021/22, please fill out the form on our website and we will contact you with more details when booking becomes available.

Secondary Work Groups

Secondary Maths MAT Leads

A project to support and develop those leading maths across multiple schools

This project offers focused support to those who lead mathematics across multiple schools within a MAT, to enable them to better understand and develop effective maths pedagogy approaches across those schools. It will also support participants to develop their role as a leader of system change, curriculum change, and teacher professional development.

Whilst those who lead maths across a MAT are often the subject lead for both primary and secondary, the key focus for this programme is their work with secondary teachers, although consideration will be given to transition and how the different phases relate to each other. Additionally, focusing on developing skills with one phase is likely to impact positively on work with other phases. Participants will engage with a centrally-led programme offered nationally, with the potential for regional provision dependent on numbers.

The project is for those who lead maths across multiple schools within a MAT, including at least one secondary school.

For more information about this programme, please visit Secondary Maths MAT Leads| NCETM. To express your interest in taking part in 2021/22, please fill out the form on our website and we will contact you with more details when booking becomes available.

Years 5-8 Continuity

A project to strengthen the transition from primary to secondary school

Work Groups in this project aim to strengthen the transition from primary to secondary school by focusing on curriculum and pedagogical continuity over Years 5 to 8. Following the disruption to education caused by the Covid crisis, this transition is more crucial than ever.

Central to the Work Group is the promotion of cross phase communication between teachers to address issues of maths curriculum and pedagogical transition as distinct from pastoral considerations. A key feature will be understanding how best to prioritise key aspects of the curriculum to help ensure pupils have mastered the fundamental understanding and skills they need to underpin their progression through upper Key Stage 2 and into Key Stage 3.

Participants should be teachers of Years 5 to 8 in primary, secondary, middle school and all-through schools who have some responsibility for curriculum development, e.g. primary school maths leads/ secondary heads of department. Linked ‘families’ of schools are encouraged to take part: ideally teachers from secondary schools and some of their associated primary schools will work together.

For more information about this programme, please visit Years 5-8 Continuity| NCETM. To express your interest in taking part in 2021/22, please fill out the form on our website and we will contact you with more details when booking becomes available.

Secondary Work Groups

Mathematical Thinking for GCSE

A project focusing on ways to help GCSE students improve their mathematical thinking

The Mathematical Thinking for GCSE project is for secondary maths teachers looking for practical and theoretical elements to address their students' GCSE attainment.

The stated aims of the KS4 Programme of Study are that, through working on the content, students should develop mathematical fluency, mathematical reasoning and problem solving. While mathematical thinking is a key feature of all of these, the focus of this Work Group is to support teachers in developing their understanding of mathematical thinking as it relates to problem-solving and reasoning, using practical task types to explore what it means for students to get better at mathematical thinking and what this looks like in the classroom.

This is for teachers of KS4 who want to further develop their pedagogical and theoretical understanding of developing mathematical thinking, and practical classroom strategies to explore these ideas. Lead participants will be expected to lead developments from the Work Group in their own department and so should have the opportunity and authority to do this effectively.

Departments that have already engaged with the Work Group have the opportunity to continue with the Work Group structure in order to explore further and think more deeply about supporting mathematical thinking in the classroom by participating in a second 'deepening' year.

For more information about this programme, please visit Mathematical Thinking for GCSE | NCETM. To express your interest in taking part in 2021/22, please fill out the form on our website and we will contact you with more details when booking becomes available.

Years 7-11 Coherence

A project designed to explore approaches to key topics

This project focuses on participant teachers working together to analyse, deconstruct and trace through the curriculum a selected key topic area, developing insight into effective teaching approaches, and considering the implications for longer term curriculum design. The project was previously known as Challenging Topics at GCSE, but its name has been amended to more accurately reflect the work undertaken as well as to convey the importance of curriculum coherence.

Participants should be secondary school teachers of GCSE Maths. Individuals or ideally pairs of teachers from a department participate, with an expectation that they will work with other members of their department at appropriate points. Schools that have participated in previous years may do so again, as developments often take place over time.

For more information about this programme, please visit Years 7-11 Coherence| NCETM. To express your interest in taking part in 2021/22, please fill out the form on our website and we will contact you with more details when booking becomes available.

Secondary Work Groups

Specialist Knowledge for Teaching Mathematics (Secondary Early Career Teachers Programme)

Develop mathematical subject knowledge and understand the pedagogy that underpins the teaching of it.

This project is designed to support secondary early career teachers (teachers in their first two years of teaching) in developing specialist knowledge for teaching mathematics, thus enabling them to understand, teach and support students in maths in the classroom.

This programme is designed for secondary early career teachers (those in their first or second year of teaching).

The SKTM Secondary Early Career Teachers Programme project is fully funded by the Maths Hubs Programme so is free to participating schools.

For more information about this programme, please visit Specialist Knowledge for Teaching Mathematics - Secondary Early Career Teachers | NCETM. To express your interest in taking part in 2021/22, please fill out the form on our website and we will contact you with more details when booking becomes available.

Specialist Knowledge for Teaching Mathematics (Secondary Non-specialist Teachers Communities)

Develop mathematical subject knowledge and understand the pedagogy that underpins the teaching of it.

This project is designed to support non-specialist teachers teaching maths in a secondary school in developing specialist knowledge for teaching mathematics, thus enabling them to understand, teach and support pupils in maths in the classroom.

This programme is for non-specialist teachers of maths in state-funded schools who fit the following definition:

A non-specialist teacher of mathematics is ‘a teacher that is currently teaching some mathematics who has not undertaken initial teacher training (ITT) in mathematics’.

If there is sufficient space in the cohort, other teachers of maths who do not fit this definition but would benefit from this support may also participate.

For more information about this programme, please visit Specialist Knowledge for Teaching Mathematics - Non Specialists | NCETM or see this flyer. To express your interest in taking part in 2021/22, please fill out the form on our website and we will contact you with more details when booking becomes available.

Variation at KS5

Anne Morgan, Mastery Specialist, Beechwood School, Slough

A-Level mathematics includes many difficult topics that are new to students. Students often succeed in securing the AS content well but find the move to year 2 topics significantly harder. After observing such struggles with students of different profiles and from several schools, I invested time on the use of mastery to promote deeper understanding at A-Level.

Case study: integrating rational functions that result in *logarithm* functions.

A-Level textbooks often provide 2 to 3 varied examples followed by pages of exercises, giving students practice by volume. Here is an example from Pearson's Edexcel A Level Mathematics. Such exercises give students the opportunity to achieve fluency by noticing the small changes in the question and then identifying the correct technique.

3 Integrate the following:

a $\frac{1}{2x+1}$	b $\frac{1}{(2x+1)^2}$	c $(2x+1)^2$	d $\frac{3}{4x-1}$
e $\frac{3}{1-4x}$	f $\frac{3}{(1-4x)^2}$	g $(3x+2)^5$	h $\frac{3}{(1-2x)^3}$

Pearson's Edexcel A Level Mathematics "Pure Mathematics Year 2" book (p. 297)

However, have students spent enough time mastering the integration of functions such as these before attempting such variety of questions? Have they *mastered* the concept? Have they practised it explicitly? Have they reached the deep understanding they need in order to do so fluently? I dedicate a lesson to develop such understanding, mostly by using variation and small step teaching.

Differentiate:

a. $y = \ln x$
b. $y = \ln 3x$
c. $y = \ln(x+2)$
d. $y = \ln(3x+2)$
e. $y = \ln x^2$
f. $y = \ln(x+2)^2$

Step 1: From Known to Unknown

The lesson starts with some variation around differentiating logarithm. Even though students benefit from explicitly looking at such a sequence of questions, such activity can be awkward to place during the differentiation sequence of lessons because it overlaps 2 topics (differentiating logarithms / chain rule). Using it as a warm-up task allows students to think about which derivatives are the same, which ones are different and why, and therefore bringing patterns to the surface.

Step 2: Integration as the Reverse of Differentiation

Once the patterns have been identified, students can develop strategies to integrate rational functions by ensuring that the derivative of the denominator is present at the numerator: they complete the process in reverse.

Variation at KS5 (cont.)

Integrate:

a. $\frac{1}{x}$
b. $\frac{2}{x}$
c. $\frac{1}{2x}$
d. $\frac{1}{x+1}$
e. $\frac{2}{x+1}$
f. $\frac{2}{2x+1}$
g. $\frac{1}{2x+1}$
h. $\frac{5}{2x+1}$

Next step:

a. $\frac{2x}{x^2+3}$
b. $\frac{x}{x^2+3}$
c. $\frac{2x+3}{x^2+3x+4}$
d. $\frac{4x+6}{x^2+3x+4}$
e. $\frac{6x^5}{x^6+3}$
f. $\frac{7x^5}{x^6+3}$
g. $\frac{\cos x}{\sin x}$
h. $\tan x$

Step 3: Route to Fluency

Some non-standard variation will support students when integrating more complex rational functions. However, at this stage, I would continue to choose functions that integrate to logarithm functions.

Step 4: Final Practice

By then, students should know what to look for when they integrate such types of rational functions. So I finish the lesson with

1] some non-standard variation where the same approach can be used after re-arranging the rational fraction;

2] some non-example to ensure students realise that they have looked at 1 type of rational function, but that there are others where different techniques will be applied.

Example of non-standard example:
Integrate $\frac{x+2}{x+1}$ (rearranged as $\frac{x+1}{x+1}+\frac{1}{x+1}$)
Example of non-example:
Integrate $\frac{1}{(x+1)^2}$

Why does it matter?

Teaching for mastery takes time, and time is NOT a sparse resource when teaching the A-Level course. Would the time be better spent elsewhere, especially when students can achieve the same result by using integration by substitution?

Integration of rationale functions is a recurring theme in the course (application of the use of partial fractions, frequent feature when solving differential equations, etc). I can think of at least 3 reasons to develop such fluency :

1) the exam papers are long, and mastery of such technique saves students time;

2) it increases students' self confidence, the benefit of which should not be underestimated;

3) fluency reduces the demand on working memory : because working memory is very limited, such gain is valuable as it can then be used elsewhere.

So I believe that such a lesson deserves an hour in the scheme of learning. Obviously this is a matter of opinion.

Level 3 Work Groups

Below are details of all the Work Groups we are going to be running in 2021/22. We are currently asking for those interested in participating to fill in an expression of interest form on our website so that we can keep in touch with dates and booking details once these are released and made available.

COVID 19 UPDATE : As the impact of the pandemic hopefully recedes, the result for Maths Hubs' work will be a blend of face-to-face activities and frequent online collaboration. We will have more specific information nearer the time on individual Work Groups but will always work within the latest Government guidelines to build on the positive lessons that were learnt from online collaboration during lockdown but also offer face-to face meetings where possible.

All of our Work Groups are free.

New to Teaching Core Maths

A project to support those new to teaching Core Maths

Principal focus for 2021/22: Core Maths pedagogy

The purpose of this programme is to support teachers who are new to teaching Core Maths in developing specialist knowledge for teaching Core Maths and to increase their confidence in teaching the course.

The programme has a primary focus on Core Maths subject knowledge and pedagogy and will be based on these six key themes which are common to all the Core Maths specifications:

- Using contextualised problem-solving
- Applying Fermi estimation and modelling
- Developing critical analysis
- Making sense of finance
- Using the pre-release materials
- Exploring statistics.

Advanced Mathematics Support Programme

Technology and online teaching will be underlying themes throughout the programme.

This project involves a direct working partnership between the Maths Hubs Network and the Advanced Mathematics Support Programme (AMSP).

This programme is for teachers who are new to teaching Core Maths for the first time and are teaching a Core Maths class during the Autumn and Spring terms of 2021 and 2022.

For more information about this programme, please visit New to Teaching Core Maths |NCETM. To express your interest in taking part in 2021/22, please fill out the form on our website and we will contact you with more details when booking becomes available.

Level 3 Work Groups

Developing Core Maths Pedagogy

A project to develop improved teaching approaches in Core Maths

Principal focus for 2021/22: Core Maths pedagogy to support Covid recovery

These Work Groups give teachers opportunities, through collaboration and experimentation, to develop improved teaching approaches that support the open-ended problem-solving skills Core Maths students need to develop, and to share these with departmental colleagues. Participant departments will support the role of Core Maths in promoting contextualised problem-solving and links to teaching in other subject areas.

The project involves a direct working partnership between the Maths Hubs Network and the Advanced Mathematics Support Programme (AMSP).

For more information about this programme, please visit Developing Core Maths Pedagogy |NCETM. To express your interest in taking part in 2021/22, please fill out the form on our website and we will contact you with more details when booking becomes available.

Developing A Level Pedagogy

A project to develop national support for the effective development of pedagogy in the teaching of A level Mathematics

The focus for 2021/22 is on A level pedagogy to support Covid recovery

This project provides national support for the effective development of pedagogy in the teaching of A level Mathematics to support Covid recovery, to enhance the quality of teaching and the conceptual understanding of students, and the development of participants as leaders of A level teaching professional development in their own school or college. It aims to develop and sustain local communities of practice involving collaboration between teachers in developing pedagogy in their teaching of A level Maths.

The project involves a direct working partnership between the Maths Hubs Network and the Advanced Mathematics Support Programme (AMSP).

For more information about this programme, please visit Developing A Level Pedagogy |NCETM. To express your interest in taking part in 2021/22, please fill out the form on our website and we will contact you with more details when booking becomes available.

Working with NCETM NATIONAL CENTRE FOR EXCELLENCE IN THE TEACHING OF MATHEMATICS

Advanced Mathematics Support Programme

Cross Phase Work Groups

Strengthening Partnerships with ITT Providers Work Groups

A project to further develop the ongoing liaison between ITT providers and their local Maths Hub

Now in its fourth year, this project provides opportunities to explore and share current mathematical developments and consider their implications for ITT providers and Maths Hubs in order to help trainees transition into teaching mathematics effectively.

Who can take part?

Lead participants in this programme will be from the ITT community; they should be directly involved in ITT with a responsibility for maths. It is expected that these participants will represent the various ITT providers across the hub region so may include HEI, SCITT and School Direct, and represent different phases of ITT including EYTS, QTS (primary and secondary), and post-16.

For more information about this programme, please visit Strengthening Partnerships with ITT Providers | NCETM. To express your interest in taking part in 2021/22, please fill out the form on our website and we will contact you with more details when booking becomes available.

Cross Phase Events

Maths Ofsted Report Discussion

The findings of this report and the implications for the ongoing development of mathematics teaching is currently an area of discussion in many places. We are therefore organising **a meeting for maths leads from both primary and secondary schools** in the BBO area to come together to share ideas and viewpoints with each other.

The meeting will be on **Tuesday 13th July 4 to 5 pm** and run by Jennie Forde who is the BBO Maths Hub Primary Lead and Jo Walker, the Secondary Lead and Assistant Maths Hub Lead.

Here is a link to the report :
https://www.gov.uk/government/publications/research-review-series-mathematics/research-review-series-mathematics

More information and links to further reading can be found on the event booking page where you can also reserve your place at the meeting.

Events / Network Meetings

NETWORK MEETINGS (IN ASSOCIATION WITH THE AMSP)

What's happening in June? (apart from the BBO Conference on 25 June of course!)

Problem solving and mathematical writing, online conference

We are delighted to advertise the following event on the afternoon of 24th June 2021, 2.30pm to 4pm. This **joint student-teacher** event is an opportunity to **develop mathematical writing and problem-solving skills** for A level and beyond. There is also an additional focus on university admission tests for STEM degrees.

This is a **90-minute online** event, including live presentations and problems to solve. We hope that students and teachers will enjoy working on the materials together in their schools. There will be a Q&A feature to allow students and teachers to ask questions, and the panel will respond to these during the course of the event. The three presentations are : 'Thinking about university', 'Writing like a mathematician' and 'Solving problems'.

Please find the full event details and registration form here: https://amsp.org.uk/events/details/8534

Do I know everything I need to know about **UNIVERSITY ADMISSIONS TESTS? Alexandra Hewitt** (AMSP) has a wealth of knowledge on this topic built up over many years. The meeting is on **Thursday 24th June** at 4.30pm and you can sign up now https://amsp.org.uk/events/details/8482

AQA Level 2 Certificate in Further Maths Tuesday 29th June and Thursday 8th July, 4.30pm to 6pm. The first session is an introduction to the course including strategies for running it in your school, plus the pedagogy of Graphs and Functions. The second session is on the topic of Matrices.

For more information and to apply https://amsp.org.uk/events/details/8467 and / or https://amsp.org.uk/events/details/8468

Topics from Year 13 Compulsory Further Pure Wednesdays 30th June, 7th July and 14th July 4.30pm to 6.30pm. Topics covered:

Session 1: Series, Complex Numbers, and Polar Coordinates,

Session 2: Further Calculus and Hyperbolic Functions,

Session 3: Differential Equations.

For more information and to book each of the sessions, go to :

https://amsp.org.uk/events/details/7249

https://amsp.org.uk/events/details/8464

https://amsp.org.uk/events/details/8465

Advanced Mathematics Support Programme