



Advanced Mathematics  
Support Programme®

Continuing Professional  
Development  
Standard

National Centre  
for Excellence in the  
Teaching of Mathematics



# NW AMSP/Maths Hub Post-16 Conference

## Manchester

27th June 2022

### Overview

An opportunity for colleagues to attend a variety of post-16 professional development sessions led by AMSP, Maths Hub and MEI staff. The options for the workshops will be on the application form with session descriptions below.

Themes included are: Overarching themes, Core Maths, Technology, level 2 transition and Statistics. Teachers can choose sessions from different themes.

### Aims

- To allow teachers to share ideas for post-16 teaching
- To provide access to a wide variety of suitable resources
- To explore ways of embedding Technology and the overarching themes of Problem Solving and Modelling into the curriculum

### Who will benefit from attending?

All teachers involved in post-16 maths education.

### Content

#### Draft Programme:

We will ask all delegates to choose which workshops they'd like to attend so that we can keep an eye on numbers and to allocate rooms for the day. It might be possible to change on the day depending on capacity.

9:30 - 10:00: Keynote Speaker

10:00 - 11:20 Workshop 1

11:50 - 13:10 Workshop 2

14:10 - 15:30 Workshop 3

For a description of the workshops please see below.

## Other Information

**Session Descriptions:** Delegates will choose one session to attend from each of Workshop 1, Workshop 2 and Workshop 3.

### Workshop 1 10:00 - 11:20

#### 1.1 Developing Problem Solving Approaches for GCSE resit and beyond – Sue Hough

Problem solvers take time to think about a problem; they make false starts and that is ok; they have confidence to know that there are other things they can try.

In this session we will look at some strategies that can help any learner, even the most reluctant, recognise that they can say something about a problem; they can build on their informal ideas; they can make progress. This takes time. It is not a quick fix and we shall talk about how to embed these approaches in a short course such as GCSE resit.

#### 1.2 FULL Mathematical argument, language and proof in AS and A Level Maths & Further Maths – Prof Paul Glaister

The reformed Mathematics and Further Mathematics AS/A Level Content requires students to demonstrate a wide range of overarching knowledge and skills, and that these must be applied along with associated mathematical thinking and understanding, across the whole of the detailed Content, including the first Overarching Theme:

- OT1 Mathematical argument, language and proof

Aside from learning about different techniques of proof, and developing problem solving approaches, the main purpose of the reforms is to encourage students to develop logical thought, and to be able to provide clear mathematical arguments in support of a result, using the correct mathematical notation and language. This is the primary purpose of OT1.

In this session you will meet a range of examples involving different types of proof and mathematical argument, with the aim of supporting students taking their first steps into this vital overarching theme in mathematics and further mathematics, through developing a resilience when approaching proof in mathematics.

#### 1.3 An insight into what we've found, what we've learned, and how we can use it - Centres of Excellence for Maths

This session will explore some of the key findings coming from the national body of Action Research within the CfEM project; and explore in more detail the great work that has been happening across the Northwest of England, providing practical and useable ideas for supporting FE maths resit learners.

#### 1.4 New to A Level teaching – Mike Baxter

We will be looking at different approaches to teaching some key AS pure content, supported by a range of effective activities and resources. We will also see how these can help students with the latest style of exam questions.

#### 1.5 Data Science for A level/Core Maths students - Tom Button

Data has been described as 'the new oil', and Data Science is an exciting and rapidly growing area of work that has already made its way into a significant number of university courses across the country. MEI has two data science courses for A level/Core Maths students: a short self-study course and a longer taught course. We will explore activities from these courses and discuss how you can use them with your students.

Delegates will need to bring an internet-connected laptop or tablet.

#### 1.6 New to Teaching Core Maths

A snap shot of this exciting new programme designed to support teachers in their first two years of teaching Core Maths. This session will introduce the programme and what teachers say is different about teaching Core Maths from their other maths lessons. There will be plenty of opportunities to ask questions and get information about the other support around Core Maths. The content of this session may also be of interest to anyone looking to develop their teaching of mathematics in real life problem solving contexts.

### Workshop 2 11:50 - 13:10

## **2.1 FULL How to Build Mathematical Resilience - Adrian Hall**

How can you help build resilience in your maths students? In this session, we will look at why some pupils give up when tackling maths problems, explore which pedagogical approaches help with resilience, and learn how reinforcing a Growth Mindset can help build confidence in your classroom.

Do you have students...

- who are scared to put their hand up?
- who are anxious about starting a written question in case they can't finish it?
- who are afraid of their book looking "messy" if they get it wrong?

Then this session is for you!

THIS SESSION IS NOW FULL

## **2.2 Mathematical problem solving in AS and A level Maths & Further Maths – Prof Paul Glaister**

The reformed Mathematics AS/A Level Content requires students to demonstrate a wide range of overarching knowledge and skills, and that these must be applied along with associated mathematical thinking and understanding, across the whole of the detailed Content, including the second Overarching Theme:

- OT2 Mathematical problem solving

Throughout his career Paul has enjoyed posing and exploring a variety of mathematical problems that lend themselves to exploring mathematical problem solving in AS/A level Mathematics and Further Mathematics.

In this session you will meet a range of examples involving mathematical problem solving with the aim of supporting students taking their first steps into this vital overarching theme in mathematics and further mathematics, through developing a resilience when approaching problem-solving.

## **2.3 Ready Steady CORE MATHS!! – Martin Bamber and Andrew Birch**

All things Core Maths: Ideas, approaches, resources, what's worked, what hasn't!!

During this session, we will discuss what makes the Core Maths classroom such an exciting place and share some great sources of inspiration for lessons.

We will fit as much into this whirlwind of a session as we can, so make sure you're ready...steady...Core Maths!

## **2.4 Transition KS4-KS5 – Mike Thompson and Alex Jacques-Williams**

Transition from KS4 to KS5 maths can be a difficult one for students. This session looks at the work done by a group of local teachers this year to improve transition and participation through work done at both KS4 and KS5 to consider teaching approaches, schemes of learning and study skills.

## **2.5 Using Desmos for Statistics in A level Maths - Tom Button**

Desmos is a powerful and free graphing tool that has functions which allow you to analyse real data and visualise distributions. In this session we will demonstrate how to use Desmos to explore the large data sets and demonstrate the binomial and normal distributions. There will be an opportunity to try some activities as well as a discussion of how these can be used to support students developing their understanding.

Delegates will need to bring an internet-connected laptop or tablet.

## **2.6 A Level Maths Paper Review - Mike Baxter**

This session will give teachers the opportunity to discuss the A Level Maths papers sat by students in summer 2022.

**Workshop 3 14:10 - 15:20**

### **3.1 Hypothesis testing – Teaching and linking it to other A level Maths content - Alex Jacques-Williams**

This session explores the teaching of Hypothesis Testing, challenging misconceptions that many have, sharing some top tips and showing how and why it should be linked to the rest of the A level Mathematics content. As part of this session we will also explore wider overarching themes of the statistics content of the A level.

### **3.2 OFSTED – Dr Antony Edkins**

A brief introduction to the Ofsted Education Inspection Framework for mathematics teachers.

We will look at curriculum intent and delivery and how we know our curriculum is working.

We will look at techniques to shape mathematics tasks for pupils with special educational needs and those who struggle to read.

### **3.3 A Level Further Maths Paper Review – Dr James Groves and Abigail Bown**

This session will give teachers the opportunity to discuss the A Level Further Maths papers sat so far by students in summer 2022.

*There will also be three Maths Hub Work Group taster sessions:*

### **3.4 Developing Core Maths Pedagogy**

This work group enables teachers of Core Maths to collaborate with colleagues and develop their pedagogy relating to a focus of their choosing. Examples of previous foci are contextualised problem solving, cross-curricular collaboration, questioning techniques and supporting lower attainers. Another important aspect of the work group is the supportive community that it allows teachers to be a part of. Come along to hear about what projects the group worked on this year, as well as plans for 2022-23!

### **3.5 Supporting Post-16 GCSE Resit**

An insight into what it is to be part of a workgroup which explores effective ways of teaching key content to GCSE resit students through collaboration and experimentation. Participants deepen their knowledge of the curriculum demands and strengthen their awareness of pedagogical approaches that best support students taking GCSE for the second time. Come along to hear from current workgroup participants, share good practice and develop strategies to best support your pupils.

### **3.6 Developing A level Pedagogy**

The A-level Pedagogy Work Groups support teachers in collaboratively developing their practice of effective A-Level mathematics pedagogy.

This year we have focused on

- Covid recovery/students with gaps
- Enhancing the conceptual understanding of students
- The development of participants as leaders of A-level teaching professional development in their own school or college
- Maintaining a community of teachers collaborating in developing the pedagogy of their teaching of A-level Mathematics

The final session will further these aims as well as reflect on progress and review methods - all are welcome to come along for a taster!

### **Eligibility**

Post-16 teachers from state funded schools and colleges.

## Key Facts

|                               |   |
|-------------------------------|---|
| <b>Event ref:</b>             | #9768   |
| <b>Audience:</b>              | Teachers  |
| <b>Curriculum focus:</b>      | A level Mathematics, A level Further Mathematics, Core Maths, University admissions tests |
| <b>Mathematical focus:</b>    | Pure, Problem solving, Use of technology, Curriculum planning                             |
| <b>Event format:</b>          | Face-to-face Professional Development   |
| <b>Event length:</b>          | 1 day   |
| <b>Region:</b>                | North West  |
| <b>Venue:</b>                 | University of Manchester  |
| <b>Date:</b>                  | Mon 27th Jun 2022   |
| <b>Course times:</b>          | 09:30 - 15:30   |
| <b>Fee:</b>                   | FREE  |
| <b>State-sector subsidy:</b>  | Greater Manchester  |
| <b>Priority Area subsidy:</b> | £250 for priority institutions  |

## Registration

For more information, or to register for this event, please visit <https://amsp.org.uk/events/details/9768>