

Spring Newsletter

North West Three Maths Hub



NCETM
NATIONAL CENTRE FOR EXCELLENCE
IN THE TEACHING OF MATHEMATICS

NW3 Maths Hub continues to serve ALL schools in Sefton, Liverpool, Knowsley, Wigan and St Helens.

The 40 Maths Hubs:

<https://www.ncetm.org.uk/mathshubs> which support all state-funded primary and secondary schools across England are continuing to offer support and online professional development.

All programmes are **FREE OF CHARGE**. The Work Groups and resources are all of high quality, based on research and are nationally accredited.



What is a Work Group?

The main model for professional learning is a **Work Group** (<https://bit.ly/34ORsE6>). Every hub runs a wide range of Work Groups and PD Programmes each year which enable teachers and teaching assistants to work collaboratively with the support of local leaders of maths education (LLMEs). The projects cover all phases of maths learning from Early Years to post 16.

A MATHS HUBS WORK GROUP IS

- comprised of a group of schools who work on something together, normally over the large part of a school year, typically with one or two teachers from each school acting as lead participants
- led by a teacher or former teacher, expert both in the area of maths education in question and in leading teacher professional development
- normally part of a national collaborative project, which supports the Work Group Leads and seeks to ensure lessons are learned from around the country.



Want to keep up with everything that's happening in North West 3 Maths Hub?

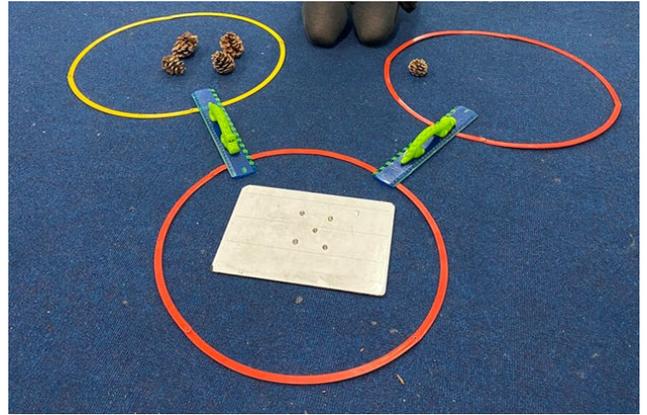
Sign up for our mailing list here:

<http://eepurl.com/du2lInn>

EYFS and Primary National Projects

Mastering Number

6000 primary schools across the country are now taking part in the Mastering Number Programme a large-scale national programme designed to ensure that pupils in Reception, Year 1 and Year 2 develop strong early 'number sense'. Participation in Mastering Number provides schools with resources for daily maths teaching and involve high quality professional development for teachers. North West Three Maths Hub has recruited 200+ schools across the region. NCETM and Maths Hubs are taking of 'expressions of interest' for a potential next wave of schools expected to start in the summer term.



If you're interested in finding out more please contact: Work

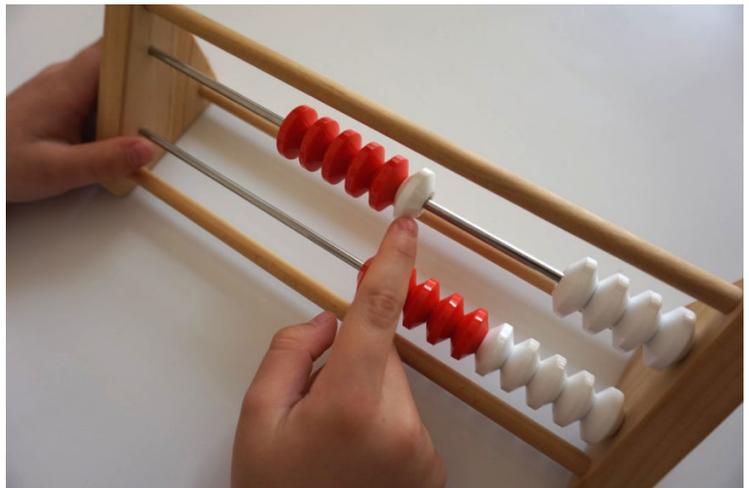
Group Lead - Gill Hood: gill.hood@three-saints.org.uk or Sarah Makin (Administrator): sarah.makin@three-saints.org.uk

What schools involved in the programme say

"I have spoken to our Head about the success of the programme so far and explained how this secure understanding of number at an early age will mean children are much more confident with calculations in KS2." **(Wigan school - Y2 teacher/Maths Subject leader)**

"We are finding that the children have a much deeper understanding of numbers so far and a subitising quickly compared to previous years." **(Sefton school - FS teacher)**

"I have noticed children are more excited to find out what we are going to be learning next and are more eager to show their mathematical skills in CP both indoors and out." **(Knowsley school - FS teacher)**



"The children's language has blossomed over the few weeks we have been using the programme. It also great to see how confident they have become. They are all keeping up with it." **(St Helens school - FS teacher)**

"The children are really engaged and I have seen a massive improvement in their understanding and manipulation of number compared to previous years. The children's mathematical vocabulary is really improving too. My children are also able to make links between numbers and notice patterns in numbers." **(Liverpool school - Y1 teacher)**

NW3 are also supporting 12 MOD (Ministry of Defence) schools to access the programme

'I've really noticed the children applying their subitising skills in their play this week. For example today some children were threading beads and they started talking about who had done the most. One child said "I've got five because I've got 2 and 1 and 1 and 1" the other said "I've got 2 and 2, four". I couldn't believe it!

TEACHING FOR MASTERY - A whole school approach

Where is your school on the 'Teaching for Mastery' pathway?

Why not join a Work Group to develop the Mastery approach and meet the needs of ALL learners in your school **These Work Groups are bespoke and FREE of Charge**

Pathway Overview - further details: <https://bit.ly/39ZFuzM>

1. Preparatory phase - Mastery Readiness Programme
2. Development phase
3. Building phase - Embedding Work Groups
4. Refinement phase - Sustaining Work Groups

Benefits of ALL the Programmes

- National focus and collaboration
- ALL Work Groups focus on the use of the Ready to Progress Criteria (supported by the National Curriculum)
- Free of Charge
- Regular Teacher Research Groups (TRGs) led by qualified Teaching for Mastery Specialists
- Teaching for Mastery lead practitioners allocated to ALL schools to ensure the programme remains bespoke and flexible to meet the needs of YOUR school, whilst supporting/encouraging collaboration with other local schools
- It is YOUR agenda - professional development to suit YOUR schools needs
- A blended PD approach - face to face and online provision to suit
- Textbook funding may be available in the 'Development' stage. This will be communicated directly with your schools from the DFE
- Leadership (at all levels) support to monitor and continue to review the Teaching for Mastery approach · Subject knowledge development for the WHOLE SCHOOL
- Progressional and pedagogical understanding developed with ALL staff

What the schools involved in the programme have to say

We've found our work with the maths hub invaluable. We feel very well supported – thank you all (St Helens Head Teacher- Development programme)

Thank you. I have loved everything we have done so far, and it's given me so much confidence. 'Less is more'! (Sefton school Maths Subject Leader- Development programme)

Maths leads and key teachers has been incredible. The support that they have provided and received even through a global pandemic has been nothing less than sensational and invaluable. The continued passion for Maths is infectious and has certainly kept us all going. (Knowsley Head Teacher- Development Programme)

The ideas provided as part of the programme to support staff with remote learning have been brilliant. Relevant, appropriate, and easy to implement immediately. (Liverpool School- Development Programme)

This Work group is high quality. The ongoing support provided by the Maths Hub has been well received and vital to ensure we are in a good place to move on after this pandemic. We feel we have been able to 'keep maths moving' to begin to fill the gaps that we perceive. The RTP criteria has hugely supported this but the PD we have received as part of the programme is key. (St Helens Head Teacher- Development Programme)

High quality, credible PD that is flexible and bespoke. Nothing is too much trouble and the support provided by the specialists has been superb! (Liverpool Head Teacher- Development Programme)

The quality of support that we have received throughout the programme so far has been superb. The Skill set and subject knowledge of the TFM Specialists is excellent. The quality of the resources is outstanding. We are thankful to be part of this programme. (Sefton Head Teacher - Development Programme)

The impact seen at my recent OFSTED visit was celebrated. This was encouraging and really boosted staff in assuring them what they are doing is working well. (Wigan - Embedding Programme)

The confidence of my newly appointed Maths Subject Leader has increased significantly due to the support and guidance of the specialist. They have continued to disseminate key messages across the school and delivered PD remotely. (St Helens - Embedding Programme)

We are very grateful for the support network that has continued via NW3. We have valued the flexibility and determination to 'carry on'! (Knowsley - Embedding Programme)

The specialists have provided high quality support on how to support ALL pupils on returning to school. Excellent guidance and advice given around prioritisation. This has provided my staff with confidence to carry on and assurance that they are doing the right thing. (Liverpool - Embedding Programme)

The culture in mathematics has changed in our schools for the children, staff and for me as a leader of learning. Despite the disruption we have experienced over the past few years the TFM journey has helped us to maintain momentum and keep on progressing. (Sefton - Embedding Programme)

"Please can I pass on my thanks to the team – last night Doug delivered STEM sentence training to all teachers which was excellent. Doug was fantastic at answering the many questions that we had and has been incredibly accommodating welcoming our teachers to his school." (Wigan school - Head Teacher Sustaining Programme)

"I would just like to pass on that the session we had with Doug Pitts in his school was fantastic. He spoke very confidently and passionately about Maths. I had a real buzz when I came away from the meeting. It gave me some next steps but also reassured me that we are on the right track on our Mastery Maths journey. I am really enjoying the TFM sessions and know what our next steps are as a school. Doug is an excellent lead teacher, very supportive." (Wigan school – Sustaining programme)

Overview of Primary Work Groups running this term

- **Primary Teachers SKTM** (Subject Knowledge Teaching of Mathematics) <https://bit.ly/3gbl3Nj>
- **Teaching Assistants SKTM** (Subject Knowledge Teaching of Mathematics) <https://bit.ly/34SILsl>
- **NEW - Primary Early Career Teachers** (Specialist Knowledge for Teaching Mathematics) <https://bit.ly/3wZRt43>
- **Excellent Maths Teacher Programme** - in association with NWLP

Primary Maths Subject Leader Meeting - Local networks available

Summer 2022 Date: Friday 17th June 2022 9.00am-3.30pm Mercure St Helens Hotel, Linkway West, St Helens, WA10 1NG

Focus: Context and real-life purpose including transitions between year groups and phases

To book on the Subject Leader sessions please contact Paula Foster - paula.foster@three-saints.org.uk

About our work

As a Maths Hub we provide support to all schools in the area and the NW, across all areas of maths education, including:

- Recruitment of maths specialists into teaching
 - Initial training of maths teachers and converting existing teachers into maths
 - Co-ordinating and delivering a wide range of maths continuing professional development (CPD) and school-to-school support
 - Ensuring maths leadership is developed, e.g. running a programme for aspiring heads of maths departments
 - Helping maths enrichment programmes to reach a large number of pupils from primary school onwards
-

Useful Primary Resources - Free and nationally accredited resources

EYFS Progression Charts There are six key areas of early mathematics learning, which collectively provide a platform for everything children will encounter as they progress through their maths learning at primary school, and beyond: <https://www.ncetm.org.uk/in-theclassroom/earlyyears/>

Number blocks Support Materials NCETM have been expanding their support materials for the CBeebies programme Number blocks, which now cover all of Series One. They've also added two documents giving an overview of each series, the storylines, and the mathematics addressed. To view the resources: <https://www.ncetm.org.uk/classroom-resources/eynumberblocks-support-materials/>

Ready to Progress Criteria This document is a well-researched, evidence based (John Hattie) resource for Primary teachers focusing on key concepts to aid recovery and build firm foundations for pupils in Years 1-6.

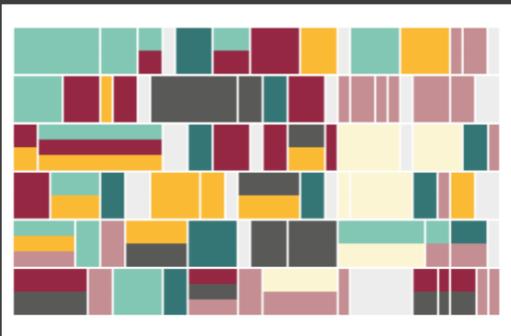
This document will help to level the playing field and provide very clear guidance on what and how to teach the most important concepts. <https://www.gov.uk/government/publications/teaching-mathematics-in-primary-schools> All Maths Hubs Work Groups continue to support teachers and leaders in using this document effectively to ensure the children continue to have a deep understanding of Mathematics whilst focusing on the key concepts. A suite of 79 Power point slides, each one focusing on one of the ready-to-progress criteria in the new DfE Primary mathematics national curriculum guidance for KS1 and KS2 are available at: <https://www.ncetm.org.uk/classroom-resources/exemplification-of-ready-to-progress-criteria/>

Exemplification of Ready-To-Progress Criteria: GET THE RESOURCES NOW! The NCETM have provided training materials to help primary teachers understand the new DfE Primary Mathematics Guidance. These are available now: <https://www.ncetm.org.uk/classroom-resources/training-materials-for-dfe-mathematics-guidance/> The PowerPoints provide ready-to-use training sessions ideal for Autumn term insets/staff PD. **Curriculum prioritisation materials**, mapping the whole year's primary maths curriculum term-by-term, are available to support teachers planning their maths teaching for 2021/22. <https://www.ncetm.org.uk/classroom-resources/cp-curriculum-prioritisation-in-primary-maths/>

COVID RECOVERY

CURRICULUM PRIORITISATION IN PRIMARY MATHS

A term-by-term framework to support planning and teaching in
2021/22



<https://www.ncetm.org.uk/classroom-resources/cp-curriculum-prioritisation-in-primary-maths/>



Follow us on Twitter [@NWmathshub3](https://twitter.com/NWmathshub3)

North West Three Maths Hub Primary Maths Conference



Tuesday 1st March 2022

8.30-3.30pm

Haydock Racecourse

Teaching for Mastery- sharing current thinking and updates, practice, and procedure in line with Government guidance and the bigger picture.

Presented by: Debbie Morgan CBE (NCETM Primary Director)

Using Ready to Progress Criteria to support SEND Provision

Presented by: Claire Christie (Current teacher in Bristol and Maths SLE)

What does research say about design, delivery and implementation for Professional Development of Mathematics?

Presented by: Simon Cox (Director of Blackpool Research School)

Providing Challenge for All

Presented by: Andrew Jeffery (Maths Consultant and author)

The art of teaching is the art of assisting discovery

Mark Van Doren

The Secondary Teaching for Mastery Programme – An Overview

There is a national target for half of the secondary schools in England to engage with the Teaching for Mastery Programme. To meet this target, it is vital, not only that individual teachers develop teaching for mastery approaches, but also that the department as a whole has systems, policies and ways of working which are compatible with teaching for mastery and allow for the collaborative professional development structures which are needed in order to develop and embed these approaches and to sustain them in the long term.

The **NCETM Teaching for Mastery Programme** aims to do this through two overlapping and connected programmes:

- The Secondary Mastery Specialist (SMS) Programme
- The 'Develop/Embed/Sustain' Programme

The Develop/Embed/Sustain Programme

In the 3rd year of the SMS programme, specialists support schools in the Teaching for Mastery Development Work Group to develop their own practice and systems. In subsequent years, these schools join the Embedding and Sustaining Work Groups.

All schools are committing to a programme which aims to:

- Support the construction of a coherent and ambitious departmental action plan focusing on the need of their pupils and teachers
- Put in place a structure for professional development based around collaborative working which supports sustainable and long-lasting development
- Further support departments by offering the opportunity to join a professional learning network of schools all working on their classroom and departmental practice

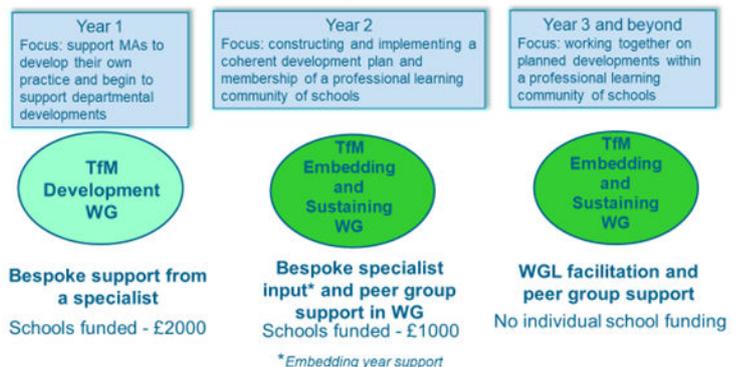
Year 1: Support for Mastery Advocates to develop their own thinking and practice and to help them begin to support departmental developments (Developing WG)

Year 2: Support for constructing and implementing a coherent development plan and an opportunity to share ideas and network through membership of a professional learning community (Embedding and Sustaining WG + Embedding Year support)

Year 3 (and beyond): working together in a professional community of schools to support sustained development (Embedding and Sustaining Work Group)

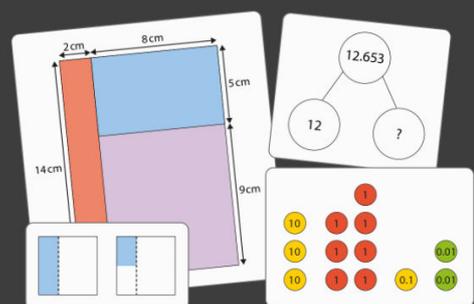
The Develop / Embed / Sustain programme

Aim: to develop secondary mathematics departments that are well-led, high-performing and provide high quality professional development through collaborative working.



SECONDARY MASTERY PROFESSIONAL DEVELOPMENT

Materials that will assist you in your professional development and support you in teaching for mastery with confidence



Secondary Early Career Teachers Programme – Back by popular demand!

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 pupils in maths in the classroom.

What is involved?

At a local level, Work Groups will explore one of the following themes:

- Designing effective learning and teaching in maths (structure of the number system)
- Designing effective learning and teaching in maths (operating on number)
- Designing effective learning and teaching in maths (multiplicative reasoning)
- Designing effective learning and teaching in maths (sequences and graphs)
- Designing effective learning and teaching in maths (statistics and probability)
- Designing effective learning and teaching in maths (geometry)

Participants will work deeply on one area of maths, drawing in the associated pedagogy, and activities will include lesson analysis and lesson design. This programme will take place across the equivalent of four days.

Who can take part?

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

Key dates: 03/03/22, 24/03/22, 04/05/22, 23/05/22, 14/06/22

Time: All session 4-5.30pm

Venue: Blended approach, both online and Mercure St Helens Hotel, Linkway West, St Helens, WA10 1NG

To express an interest, please contact [Lindsay Porter - lindsay.porter@three-saints.org.uk](mailto:lindsay.porter@three-saints.org.uk) or [Lisa Bradshaw - lisa.bradshaw@three-saints.org.uk](mailto:lisa.bradshaw@three-saints.org.uk) or [complete the form below:](#)

NCP21-29 Specialist Knowledge for the Teaching of Mathematics (Secondary Early Career Teachers) Communities
<https://forms.gle/nGrLzuzokKrvK6zt5>

For further details, download the flyer: <https://bit.ly/3inRLxt>

Secondary Subject Leadership Work Groups - NEW

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.

What is involved?

Local Work Group design will follow a workshop – school-based task cycle, consisting of several workshops followed in each case by school-based tasks planned to take account of the specific contexts of the subject leaders. Participants will support each other through the sharing of strategies and practice within the context of a vibrant professional learning community.

Participants will have opportunities for: networking and input on current issues; exploration of materials to use with their department; development of collaborative approaches; ongoing development in their subject leadership role. It will be important for all Work Group participants to benefit from the expertise and experiences of the group of departments represented.

This programme will take place across the equivalent of four days:

Dates: 24/03/22, 16/05/22

Time: All sessions 1 - 4pm

Venue: Byrchall High School, Warrington Rd, Ashton-in-Makerfield, Wigan WN4 9PQ

Who can take part?

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.)

To express an interest, please contact **Lindsay Porter** - lindsay.porter@three-saints.org.uk or **Lisa Bradshaw** - lisa.bradshaw@three-saints.org.uk

NCP21-15 Secondary Subject Leadership Work Groups: <https://forms.gle/qs95vaYCcDhbB8rA7>

Specialist Knowledge for Teaching Mathematics (Secondary non-specialist) - NEW

Do you have any teachers that will be teaching Maths next year that are non-specialists?

We are now recruiting for a second intake for our **SKTM (Specialist Knowledge for Teaching Maths)** programme for **NON-SPECIALIST TEACHERS**

This is a **full programme of PD** for **non-specialists** that will be **teaching maths in your department next year**

The programme involves 6 full days release time in the second half of the summer term

ALL SESSIONS WILL BE FACE TO FACE at the **St Helens Hotel, Mercure, Linkway West, St Helens**

09/06/22 9:30am – 3pm

17/06/22 9:30am – 3pm

23/06/22 9:30am – 3pm

01/07/22 9:30am – 3pm

08/07/22 9:30am – 3pm

14/07/22 9:30am – 3pm

This Work Group is FREE OF CHARGE, but places are limited and will be allocated on a first come first served basis

If you would like to reserve a place please complete the Google form at: <https://forms.gle/wMHZaz2DZj4g2kxUA>



Other Secondary Work Groups – SPACES AVAILABLE FOR SEPTEMBER 2022 START

NCP21-17 Mathematical Thinking for GCSE Work Groups: <https://forms.gle/BRbq27mMqHEJk8i29>

NCP21-18 Years 7-11 Coherence Work Groups: <https://forms.gle/mrnSnLRaRazsAQz7A>

Checkpoints activities



Checkpoints from NCETM are diagnostic activities that will help teachers assess the understanding students have brought with them from primary school, and suggest ways to address any gaps that become evident.

Look out for some examples throughout the newsletter.

<https://www.ncetm.org.uk/classroom-resources/checkpoints/>

Secondary CPD network - It's Back!

Whole Secondary Maths departments meet on a half termly basis to explore key mathematical themes. All themes have been selected based on need. Secondary Maths departments from across the NW have had the opportunity to engage in high quality CPD from experts in their field. It has provided an opportunity to network and share good practice. This network has been a huge success with over 25 secondary maths departments attending on a regular basis.

Date: Thursday 30th June 4 - 6pm

Venue: Rainford High School

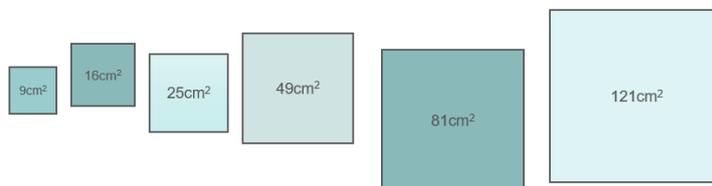
We are excited to welcome **Chris McGrane** who will be travelling from Scotland to deliver a twilight not to be missed.

Chris has been working in maths education for over 15 years and currently teaches in Scotland's largest school. Co-author of the excellent '*Mathematical Tasks: The Bridge between Teaching and Learning*', and creator of startingpointsmaths.com

Chris can be found at [@chrismcgrane84](https://twitter.com/chrismcgrane84)

Checkpoint 5: Squares and lines

Here are six squares.



a) Which of the squares would fit on the line below?



b) Can you create a square that would fit **exactly** on the line?

? I draw a 10cm line. Three different squares fit side-by-side on my line. What might the areas of my squares be? Is there more than one way to do this?



Heads of Department termly network meetings

Throughout 2021-22 we are pleased to be able to offer termly Head of Maths network meetings for schools across the NW3 region – St Helens, Wigan, Knowsley, Sefton and Liverpool. Lindsay Porter (Secondary Maths lead) will continue to deliver this network. This is an opportunity for all Heads of Department to come together to review and share approaches to current national and local initiatives.

Dates: 23/06/22 3.45-5pm

Venue: Online

Wigan & Leigh Schools Only:

Dates: 21/06/22 3.45-5pm

Venue: Online

An A3 electronic flyer is now available, summarising the CPD and resources available to secondary maths departments and organising the offer by departmental need.

This is useful to share with SLT/Maths Departments when deciding on the best source of professional development to meet the needs of your schools.

https://www.ncetm.org.uk/media/vrsgqlbj/ncetm_secondary_provision_overview.pdf

Useful Secondary Resources- Free and nationally accredited

Checkpoints diagnostic activities - <http://www.ncetm.org.uk/checkpoints> for teachers of Year 7 are now available to download from the NCETM. Associated professional development online seminars are also taking place regularly. **Checkpoints** are classroom activities that will help teachers assess the understanding students have brought with them from primary school, and suggest ways to address any gaps that become evident.

NEW KS3 Guidance from the DfE

We've worked with the DfE to produce guidance for teaching maths at KS3. For the first time, it offers a detailed ordering of the maths that students need to learn from Year 7 to Year 9.

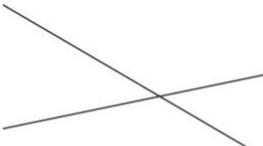
At the heart of the guidance, for each area of maths and for every year group, are sections exemplifying the significant key mathematical ideas that need to be taught, and learnt, in order for students to progress. The exemplification sections span the entire KS3 curriculum, so whatever area of maths is being taught, there is a section to support a teacher to plan and teach lessons. **Explore further** – <https://www.gov.uk/government/publications/teaching-mathematics-at-key-stage-3>

Teaching and curriculum guidance for secondary teachers - <https://www.ncetm.org.uk/in-the-classroom/support-for-schools-addressing-ongoing-coronavirus-impact/support-for-secondary-teachers/>

Secondary PD materials - <https://www.ncetm.org.uk/teaching-for-mastery/mastery-materials/secondary-mastery-professional-development/>

Secondary assessment materials - <https://www.ncetm.org.uk/classroom-resources/assessment-materials-secondary/>

NCETM link to Mastery section (Primary and Secondary - applications and resources) - <https://www.ncetm.org.uk/teachingfor-mastery/>

Mastery	Mastery with Greater Depth
<ol style="list-style-type: none">1. Draw a line 5cm long2. At one end of the line mark an angle of 108°3. Draw a line 5cm long from this end of the line, towards the 108° mark4. Repeat steps 2 and 3 until your lines join up <p>Which polygon have you drawn? How do you know?</p>	<p>Four children are practising using a protractor. They each measure a different angle in this diagram.</p>  <p>Aled says, "My angle is 42°" Ben says, "My angle is 40°" Cassidy says, "My angle is 107°" Dietmar says, "My angle is 140°"</p> <p>Without measuring, which one of these children do you think needs help with using a protractor? Explain how you know.</p>



NCETM KS3 Assessment materials

A well-educated mind will always have more questions than answers.

Helen Keller

Post-16 National Projects

We are pleased to introduce the newest addition to NW3 Maths Hub Leadership and Management team- Helen Geoghegan (Post 16 Lead)

Helen will take up her new post in February 2022. Helen has been teaching 17 years and is currently KS5 Curriculum Manager (Maths) at Rainford High School. She is a Professional Development lead and has had experience leading staff and networks beyond her setting. We look forward to working with Helen in the future as she grows into her new role.

For more information about any Post 16 Work Groups please contact Helen - helen.geoghegan@three-saints.org.uk or Lisa Bradshaw (NW3 Lead) lisa.bradshaw@three-saints.org.uk

Want a department-wide improvement in maths teaching?

Four projects are running in partnership with Maths Hubs and the Advanced Maths Support Programme (AMSP).

For those who teach maths at Level 3 and are an experienced teacher, you could take part in the project **Developing Pedagogy at A level**, to ensure you and your colleagues are delivering high-quality teaching which enhances your students' conceptual understanding of topics.

A project **Supporting Core Maths offers Work Groups** for teachers looking to develop effective teaching approaches and increase student numbers. A new programme is being offered in 2021-22; to develop teachers/institutions NEW to Core Maths.

For those who deliver **GCSE resit**, a project is available to support you too.

NCP21-20 Supporting Post-16 GCSE Resit Work Group: <https://forms.gle/s3PF8ohsaFD1sP4V9>

NCP21-22 Developing Core Maths Pedagogy Work Groups: <https://forms.gle/fePmXQZRco2NwbXE7>

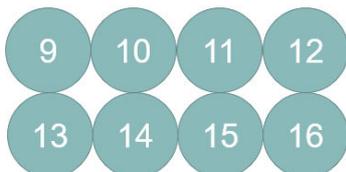
NCP21-23 A-level Pedagogy Work Group: <https://forms.gle/z4inCbpFjtMAYS19>

If you are interested in being part of the thriving **KS5 Network meetings in association with AMSP and in collaboration with North West Maths Hub 6 - Cheshire and Wirral**. These run on a termly basis at 5 different locations, across the North West Three region - St Helens, Knowsley, Sefton, Wigan and Liverpool. The networks provide a balance of sharing good practice, responding to local and national agendas. NW3 Maths Hub will facilitate the meetings and will invite local and national experts in their field. **This network and ALL Post 16 Work Groups are FREE of Charge.**

Checkpoint 11: Facts about 9–16

Use these numbers to complete the sentences on the right. Use each number only once.

Is there more than one way to do this?



Can you write a sentence that is:

- True for **all** of the numbers?
- True for **some** of the numbers?
- **Not** true for **any** of the numbers?

___ has an odd number of factors.

___ has exactly 2 factors.

___ has exactly 4 factors.

___ has 2 as a factor.

___ is prime.

___ is square.

___ has 2 pairs of factors.

___ has exactly 6 factors.

Research and Innovation (RIWG) Work Groups

Research and Innovation (RIWG) Work Groups available via North West Three Maths Hub include:

Understanding the characteristics of SEND to overcome barriers in mathematics learning

Work Group Lead: **Judy Hornigold**

Overview:

Session 1: full day face to face - **8th February 9am-3pm** at Mercure Hotel St Helens, Linkway W, Saint Helens WA10 1NG. Discussion of the most common barriers to learning maths, dyslexia and maths attainment and dyscalculia and maths attainment.

Session 2: half day online - **Thursday 3rd March 1-4pm** Maths anxiety, causes, identification and support

Session 3: full day face to face - **15th March 9am to 3pm** The effective use of a variety of manipulatives to support understanding in maths, principles behind the mastery approach to maths, the CPA approach and bar modelling.

Session 4: half day online - **29th March 1-4pm** Growth mindset in Maths and reflection on the impact of the sessions on teaching approaches, school policy and pupil outcome.

Cross-Curricular Maths and Science in association with STEM

Work Group Lead: **Amanda Sharples**

This will be an exciting opportunity to collaborate with colleagues within your school and with like-minded others to achieve the following outcomes:

- Gain a thorough appreciation of the mathematical content covered in the science curriculum
- Gain knowledge of the examples, models and methods that can support the delivery of this content in both subject areas
- Explore, develop and implement practical, sustainable models for the maths and science department to work together.
- Achieve a more cohesive learning journey for pupils within these two key subject areas.



Dates: Tue 25th Jan 1 – 4pm; Wed 2nd Feb 1 – 4pm; Fri 29th Apr 1 – 4pm; Tue 5th July 10 – 3pm

All sessions will be held at Up Holland High School, Sandbrook Road, Orrell, Wigan, WN5 7AL

A full commitment to participate is required by both the Head or Second in Science and the Head or Second in Maths



This Work Group is **FREE TO ATTEND**, however places are limited so please register your interests using the google form below:

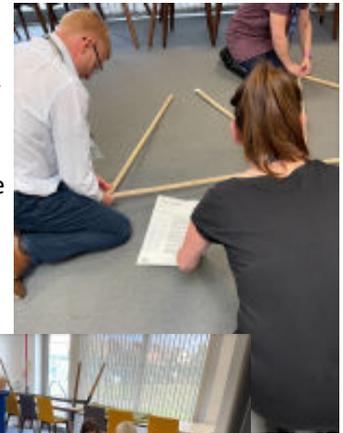
<https://forms.gle/dCeNoc7BzwVrPDRa6>

Teaching Maths for Mastery in the contexts of Special Schools and Alternative Provisions

Work Group Lead: John Wilkinson

This will be an exciting opportunity to collaborate with like-minded colleagues from similar settings to achieve the following outcomes:

- Support colleagues in understanding the key principles of teaching for mastery and how these can be introduced in within the special and AP settings
- Collaboratively plan activities, trial resources and reflect on together on their impact
- Support the use of reflective journaling to capture and evidence the impact of teaching for mastery
- Support learners in developing a deeper understanding of mathematics, encouraging more sustained engagement and enjoyment in the subject
- Changes in school policies and curriculum to include the key principles of the 5 big ideas in the teaching and learning of mathematics



Dates: Wed 9th Feb 1 – 4pm; Wed 27th Apr 1 – 4pm; Fri 17th June 1 – 4pm; Wed 6th July 10 – 3pm

All sessions will be held at Aspire, Long Lane, Hindley, Wigan, WN2 4XA

The Work Group is **FREE TO ATTEND**, however places are limited so please register your interest using the google form below:

<https://forms.gle/i6nk2n3tYW7TxxWe8>



TEACHING MATHS IN A SPECIAL SCHOOL

A maths lead tells how she teaches maths to pupils with varied needs, and supports her colleagues and other local teachers to do the same

Listen now: <https://bit.ly/3I87TNE>



How does Oracy deepen pupils' mathematical reasoning? In collaboration with SIL (School Improvement Liverpool)

Intended Outcomes:

- pupils demonstrate a positive attitude to maths
- pupils articulate their understanding effectively
- pupils show improved ability to reason using mathematically correct language
- Curriculum planning integrates talk and reasoning at every stage, helping pupils to recover from COVID disruption

All sessions will be online at 3:40-5pm

Session 1: Mon 14th Feb; Session 2: Wed 9th Mar; Session 3: Wed 27th Apr; Session 4: Wed 25th May;

Session 5: Wed 22nd June

Other Work Groups

Work Group to strengthen partnerships with ITT providers

North West 3 Maths Hub are delighted to be working in partnership with local ITT providers to support the effective recruitment, preparation and development of teachers of mathematics. The following universities are committed to being engaged in the work group in 2021-22: **Edge Hill University, Liverpool Hope University and Liverpool John Moores.**

We are looking to strengthen our links with local School Direct Providers and SCITTs within our region.

Professional learning linked to this work stream:

For ITT providers: an understanding of the work of their local Maths Hub and the National Maths Hubs Network, including Teaching for Mastery, and the potential impact on their trainees. **For Maths Hubs:** to ensure that there is the opportunity for collaboration and professional discussion of practices across ITT providers.

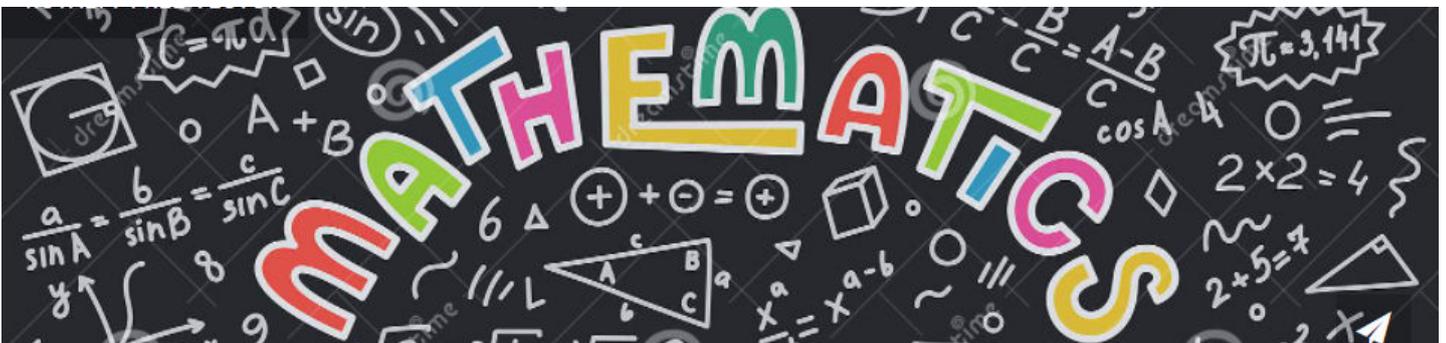
One of the main focuses for 2021-22 will be to work with providers to develop training for ITT mentors/associate tutors both school based and working with ITT setting.

For ITT trainees: some input on the principles of Teaching for Mastery will impact on their subject knowledge and understanding of the connections in mathematics. In particular, the application of the theory of variation to intelligent practice in the classroom and the importance of carefully crafting lessons based on small steps in key learning.

We plan to offer two conferences in 2021-22 focusing on lecturers of maths and mentors: anyone working in the ITT sector and one for trainees. Further details to follow.

For further information please contact Lisa Bradshaw - lisa.bradshaw@three-saints.org.uk

This Work Group is FREE of Charge



For further information in relation to National and Local work streams that North West Three Maths Hub is involved in, please visit:

<http://www.nwmathshub3.co.uk>

Alternatively, please don't hesitate to contact:

Lisa Bradshaw (Maths Hub Lead) lisa.bradshaw@three-saints.org.uk

Sarah McIlroy (Primary Mastery Lead) sarah.mcilroy@three-saints.org.uk

Lindsay Porter (Secondary Mastery Lead) lindsay.porter@three-saints.org.uk

Helen Geoghegan (Post-16 Lead) helen.geoghegan@three-saints.org.uk

Sarah Makin (Admin) sarah.makin@three-saints.org.uk

Paula Foster (Admin) paula.foster@three-saints.org.uk

Debs Ayerst (Online Services Admin) debsayerst@nwmathshub3.co.uk

Useful links include:

NCETM: <https://www.ncetm.org.uk/>

North West 3 Maths Hub website: <http://www.nwmathshub3.co.uk/>

Nrich: <http://nrich.maths.org>

Maths No Problem: <http://www.mathsnoproblem.co.uk/>

Maths Associations: <http://www.nwmathshub3.co.uk/associations.html>

CMSP: <http://www.core-maths.org>

MEI: <http://www.mei.org.uk/>

Power Maths: <http://bit.ly/3a8vldM>

AMSP: <http://furthermaths.org.uk/amsp>

STEM: <https://www.stem.org.uk/>

Teaching Schools Council: <https://www.tscouncil.org.uk/>

ACME: <http://www.acme-uk.org/home>

Ofsted: <http://www.ofsted.gov.uk>

Rainbow Education MAT: <http://rainboweducationmat.co.uk/teaching-school-hub/>

Inspire Learning Teaching School Hub: <https://inspirelearningtsh.co.uk/>

Generate Teaching Hub: <https://www.generateteachinghub.org/>

Education Endowment Foundation: <https://educationendowmentfoundation.org.uk/>



The Mathematical Association
Supporting Mathematics in Education



Teaching Schools Council
Every child is entitled to be in a great school



Education
Endowment
Foundation

Checkpoint 19: Wrong answers

Mary thinks that she has a good strategy for adding fractions:

$$\frac{1}{4} + \frac{1}{4} = \frac{2}{8}$$

a) Show why $\frac{2}{8}$ cannot be the answer to this addition.

Mary uses her strategy again:

$$\frac{1}{4} + \frac{2}{3} = \frac{3}{7}$$

b) What does she do wrong?

c) Show how you would add her fractions.



Write fraction additions or subtractions that have the answers $\frac{2}{8}$ or $\frac{3}{7}$.



Meet the Team



Lisa Bradshaw – Maths Hub Lead

Lisa is a former Deputy Head Teacher, Maths consultant and School Improvement advisor, who is the Director of the North West Learning Partnership and School Improvement at the Three Saints Academy Trust. As Maths Hub Lead, Lisa is responsible for all the strategic and operational aspects of the maths hub, which involves liaising with the wider leadership team and recruiting schools to join our projects. Lisa is responsible for planning, organising delivery, evaluating and quality assuring the hub's work. With the support of the strategic partners and assistant maths hub leads this leads to the development of the annual action plan, evaluation report, and individual Work Group Plans. Lisa represents the LWY region on National Maths Hub Council.



Kirsty Tennyson - Senior Maths Hub Link

Kirsty is the CEO of The Three Saints Academy Trust. She has been a Headteacher in 3 Primary Schools and has 16 years of headship experience. During this time, she has led 2 schools from special measures to outstanding Ofsted judgements and has 9 years experience as an Executive Headteacher. Kirsty is the strategic lead for North West Learning Partnership and the Senior Lead for North West Three Maths Hub. She also works as a National Leader in Education across the North West. As the Senior Lead of NW3 Kirsty is responsible for strategic aspects of the maths hubs work working closely with the Maths Hub Lead.



Sarah McIlroy – Primary Teaching for Mastery Lead / Assistant Maths Hub Lead

Sarah is a former Primary school teacher and mathematics consultant, with more than 18 years' experience of working to support schools in identifying and implementing strategies for raising standards and narrowing the gap in achievement and attainment. Sarah's role is to support the Maths Hub Lead and manage the Teaching for Mastery programmes. This involves working with colleagues, Headteachers and senior leaders from other schools to support them in embedding teaching for mastery practice in their own classrooms and their own schools. Sarah works closely with our Mastery Specialists to coordinate and develop teaching for mastery across the Hub.



Claire Martin – Primary Mastery Readiness Lead / SKTM Primary Teachers Work Group Lead / ECT Work Group Lead

Claire is an independent primary mathematics consultant based in the North West with over 23 years experience in primary education. She has taught across the primary age range at schools in Birmingham, Trafford, Chicago and Warrington, where she was deputy headteacher for four years. Claire is the Primary Mastery Readiness Lead for North West 3 Maths Hub and works with teachers, teaching assistants and subject leaders to support them in providing meaningful learning experiences to motivate and enthuse learners with the belief that all learners can succeed at mathematics. Claire has been mathematics subject leader, an accredited Every Child Counts Lead Trainer, has an MA in Early Mathematics Intervention and is an NCETM Accredited Professional Development Lead.



Linda Lavagna-Slater – Intervention Lead / SKTM Teaching Assistants Work Group Lead

Linda is a former primary school teacher, Primary Strategy Mathematics Consultant and National Adviser for Every Child Counts at Edge Hill University who is now an Independent Mathematics Consultant and Trainer. Her role as Master Readiness and Intervention Lead involves support schools to develop collaborative training and bespoke support providing a stepping stone to the Teaching for Mastery Programme.



Lindsay Porter - Secondary Lead / Assistant Maths Hub Lead

Lindsay is a former Head of Maths, a current maths SLE, GCSE examiner and PD Lead holder. Lindsay has substantial experience leading Maths Hub workgroups, facilitating our strong local networks and both writing and delivering CPD programmes for secondary maths teachers in the North West.



Helen Geoghegan - Level 3 Lead

Helen has been teaching 17 years and is currently KS5 Curriculum Manager (Maths) at Rainford High School. She is a Professional Development lead and has had experience leading staff and networks beyond her setting.



Sarah Makin - Senior Administrator

Sarah is a former marketing and finance officer from within the finance and industrial sector. Her role as Senior Administrator is to manage the finance systems for North West Learning Partnership. Sarah also manages the Maths Hub information systems by way of updating finance information and maintaining project information. She works closely with the Paula Foster in the administration team to ensure smooth running of all CPD events and Maths Hub projects.



Paula Foster - Teaching School / Maths Hub Administrator

Paula is a former HR Admin Manager from within the retail sector. Paula's role as administrator is predominantly to source suitable high quality venues, along with managing bookings for all of our conferences and training courses. Paula also provides administrative support to the Director of NWLP and Consultancy staff.



Debs Ayerst - Online Services Coordinator

Debs is a former primary school teacher who is now an education consultant and trainer. Her role as Online Services Coordinator is in supporting and developing the North West Learning Partnership's online presence, including the website, newsletters and mailing lists. Contact Debs if you need help or support with this.

**All students can learn and succeed, but not
in the same way and not in the same day.**

William G. Spady

The Essence of Teaching for Mastery

Maths teaching for mastery rejects the idea that a large proportion of people ‘just can’t do maths’.

All pupils are encouraged by the belief that by working hard at maths they can succeed.

Pupils are taught through whole-class interactive teaching, where the focus is on all pupils working together on the same lesson content at the same time, as happens in Shanghai and several other regions that teach maths successfully. This ensures that all can master concepts before moving to the next part of the curriculum sequence, allowing no pupil to be left behind.

If a pupil fails to grasp a concept or procedure, this is identified quickly and early intervention ensures the pupil is ready to move forward with the whole class in the next lesson.

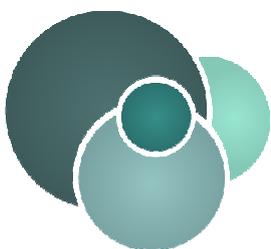
Lesson design identifies the new mathematics that is to be taught, the key points, the difficult points and a carefully sequenced journey through the learning. In a typical lesson pupils sit facing the teacher and the teacher leads back and forth interaction, including questioning, short tasks, explanation, demonstration, and discussion.

Procedural fluency and conceptual understanding are developed in tandem because each supports the development of the other.

It is recognised that practice is a vital part of learning, but the practice used is intelligent practice that both reinforces pupils’ procedural fluency and develops their conceptual understanding.

Significant time is spent developing deep knowledge of the key ideas that are needed to underpin future learning. The structure and connections within the mathematics are emphasised, so that pupils develop deep learning that can be sustained.

Key facts such as multiplication tables and addition facts within 10 are learnt to automaticity to avoid cognitive overload in the working memory and enable pupils to focus on new concepts.



NCETM
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IN THE TEACHING OF MATHEMATICS