**Mathematical Reasoning at KS3 National Collaborative Project**

**Cohort 2 (2016-17) – Information and Expression of Interest**

All Maths Hubs are currently recruiting schools to take part in the second year of the Maths Hubs National Collaborative Project on supporting mathematical reasoning at Key Stage 3 (KS3). This document provides details of the project and how to apply.

**Background**

Developing mathematical reasoning is one of the key aims of both the new National Curriculum and the new GCSE, and is currently a focus for the national Maths Hubs Network. It is essential that schools develop students who are able to think mathematically and solve problems in a range of contexts. Students need to be able to articulate their reasoning in order to deepen their understanding of the mathematics and develop solutions to problems.

In 2013-14, the NCETM led a successful pilot project that examined multiplicative reasoning at KS3. The professional development model used was commended by the external evaluators. In 2015-16, the Maths Hubs Network built upon this project by establishing a National Collaborative Project to support schools that wanted to develop their approaches to supporting mathematical reasoning across their KS3 teaching. The first cohort of over 180 schools across the 35 Maths Hubs took part in Work Groups and because of the positive impact of the first year, many of these schools are continuing to work together for a second year as they embed approaches.

Maths Hubs are now keen to widen the opportunity for more schools to participate in the project and so are establishing Work Groups for a second cohort of schools.

**What does the project involve?**

Each Maths Hub establishes a Work Group, normally involving 5-8 schools. A key feature of the leadership of each hub Work Group is the HEI partner bringing research expertise into the learning of mathematics and teacher professional development alongside that of a PD lead. The Work Group uses the *TIME* *(teachers improving maths education) team* professional development model which combines workshop and departmental activities.

Each school nominates two lead teachers to work with teachers from the other schools in four workshop sessions during the school year. The workshops will offer a small selection of reasoning tasks as the focus of the professional development. In between the workshops, the lead teachers then work with their departments to test and evaluate the impact of the reasoning activities using a lesson study approach. As the cycle of workshops and departmental work continues, each department identifies the approaches that they wish to embed as part of their ongoing practice.

**What are the benefits for participating schools?**

Participating in the Work Group is intended to provide the following benefits to participant schools:

* teachers will deepen their understanding of the subject knowledge and pedagogy related to the teaching and learning of mathematical reasoning
* teachers will plan more effectively to address the reasoning component within all lessons drawing on a wider repertoire of appropriate activities
* the lead teachers will develop their own PD leadership skills and the department will establish effective PD models to support ongoing improvements
* the department will identify resources and approaches that can be built into the schemes of work
* pupils will improve their confidence, fluency and logical precision when they engage in mathematical reasoning and appreciate more the centrality of reasoning when doing and learning mathematics

**Who can apply?**

The Work Group is intended for schools with maths departments that are fully committed to developing mathematical reasoning at Key Stage 3. In particular, departments should be committed to and have the capacity for engaging fully in this development work during 2016-17. The nominated lead teachers should be experienced KS3 teachers who are keen to develop their own practice and to support their colleagues as well. They would be expected to work closely with the head of department in leading change in the department. (Note: The head of department could be one of the nominated teachers.)

**What are the expectations of participating schools?**

Schools chosen to participate in the Work Group commit to the following expectations:

* The two nominated lead teachers will participate fully in all the workshops
* The head of department working with the lead teachers will ensure that the department carries out the gap tasks between the workshops including departmental discussion, collaborative planning and lesson study
* The school senior leadership will support the departmental leadership in participating fully in the project and in maximising the benefit to the department
* The project Work Group Lead and / or the HEI partner representative will be welcome to visit the school and observe mathematics lessons in which gap task activities are being used in the classroom.

**What is the funding or charging for the Work Group?**

There is no charge for schools that participate fully in the Work Group. The Maths Hub meets the cost of running the Work Group.

**How do schools apply to take part?**

Schools interested in applying to be part of a Work Group in 2016-17 should complete the expression of interest form below and submit to your Maths Hub by Friday 14th October. (Details of the Maths Hubs are given in the appendix.)

The Maths Hub will then make contact with you with more details about the selection process.

**Expression of interest to participate in Cohort 2 of the project**

Please complete and return this by **14th October** to your Maths Hub

|  |  |
| --- | --- |
| Name of school |  |
| School URN |  |
| Maths Hub |  |
| Nominated teachers for Work Group (name and e-mail) |  |
| Head of department (name and e-mail) |  |

|  |  |
| --- | --- |
| Please explain briefly (about 100 words) why the department wishes to participate in the project Work Group |  |

**Confirmation of school commitment (electronic signatures)**

If we are chosen to participate in the Work Group, we understand and commit to the following expectations:

* The two nominated lead teachers will participate fully in all the workshops
* The head of department, working with the lead teachers, will ensure that the department carries out the gap tasks between the workshops including departmental discussion, collaborative planning and lesson study
* The school senior leadership will support the departmental leadership in participating fully in the project and in maximising the benefit to the department
* The project Work Group Lead and / or the HEI partner representative will be welcome to visit the school and observe mathematics lessons in which gap task activities are being used in the classroom

|  |  |
| --- | --- |
| Head Teacher/Senior Leader  | *Signature of Head Teacher/Senior Leader* |
| Head of department  | *Signature of Head of Department* |
| Work Group teacher 1 | *Signature of Work Group Teacher 1* |
| Work Group teacher 2 | *Signature of Work Group Teacher 2* |

*(Note: When the form is e-mailed, please copy in all signatories as confirmation of their electronic signature)*

**Appendix: Names of Maths Hubs and lead schools/colleges**

Below is a list of the 35 Maths Hubs. Contact details for each Maths Hub can be found on the Maths Hubs Programme [website](http://www.mathshubs.org.uk/find-your-hub/).

**South West Region:**

Cornwall and West Devon Maths Hub (Truro and Penwith College)

Jurassic Maths Hub (The Woodroffe School, Lyme Regis)

Boolean Maths Hub (Cabot Learning Federation with Ashley Down Primary School, Bristol)

GLOW Maths Hub (Balcarras Teaching School, Cheltenham)

**West Midlands Region:**

Central Maths Hub (Bishop Challoner Catholic College, Birmingham) – email us mathshub@bishopchalloner.bham.sch.uk

Salop and Herefordshire Maths Hub (The Priory School, Shrewsbury)

North Mids and Peaks Maths Hub (Painsley Catholic College, Cheadle, Staffordshire)

**North West Region:**

North West One Maths Hub (Altrincham Grammar School for Girls)

North West Two Maths Hub (Ashton on Mersey School, Manchester)

North West Three Maths Hub (St Helen’s Teaching School Alliance)

North North West Maths Hub (Lancaster Royal Grammar School)

**North East Region:**

Great North Maths Hub (North Tyneside Learning Trust)

Archimedes NE Maths Hub (Carmel College, Darlington)

**Yorkshire and the Humber Region:**

Yorkshire Ridings Maths Hub (Harrogate Grammar School)

White Rose Maths Hub (Trinity Academy, Halifax)

Yorkshire and the Humber Maths Hub (Outwood Grange Academies Trust, Wakefield)

South Yorkshire Maths Hub (Notre Dame High School, Sheffield)

**East Midlands Region:**

East Midlands West Maths Hub (George Spencer Academy & Technology College, Stapleford, Nottinghamshire)

East Midlands East Maths Hub (The Minster School, Southwell, Nottinghamshire)

East Midlands South Maths Hub (Beauchamp College, Oadby, Leicestershire)

**East of England Region:**

Enigma Maths Hub (Denbigh School, Milton Keynes)

Cambridge Maths Hub (Comberton Village College, Cambridge)

Matrix Essex and Herts Maths Hub (The Hertfordshire and Essex High School & Science College, Bishop’s Stortford)

Norfolk and Suffolk Maths Hub (Sir Isaac Newton Sixth Form, Norwich with Kesgrave High School, Ipswich)

**South East Region:**

Bucks, Berks and Oxon Maths Hub (Wycombe High School, High Wycombe)

Surrey Plus Maths Hub (St John the Baptist Catholic Comprehensive School, Woking)

Solent Maths Hub (The Mary Rose Academy, Portsmouth)

Sussex Maths Hub (St Paul’s Catholic College, Burgess Hill)

Kent and Medway Maths Hub (Sir Joseph Williamson’s Mathematical School, Rochester)

**London Region:**

London North East Maths Hub (Elmhurst Primary School, Newham)

London Central and NW Maths Hub (The St. Marylebone CE School, Westminster)

London Central and West Maths Hub (Fox Primary School, Kensington & Chelsea)

London South West Maths Hub (Belleville Primary School with Chesterton Primary School, Wandsworth)

London Thames Maths Hub (Harris Federation, Croydon)

London South East Maths Hub (Redriff Primary School with City of London Academy, Southwark)