MathsHUBS

Bespoke

Winter 2019/20 | Issue No. 18 NEWS from the Maths Hubs Programme

Welcome to the latest issue of Bespoke, as we explore the NCETM's Primary and Secondary Mastery Professional Development Materials and find out how they are being used in schools. We also let you know about a new video summarising the work of the Maths Hubs Programme and share a helpful infographic which explains exactly what is involved in participating in a Work Group.

NEW REPORT EVALUATES FIRST FOUR YEARS OF TEACHING FOR MASTERY PROGRAMME

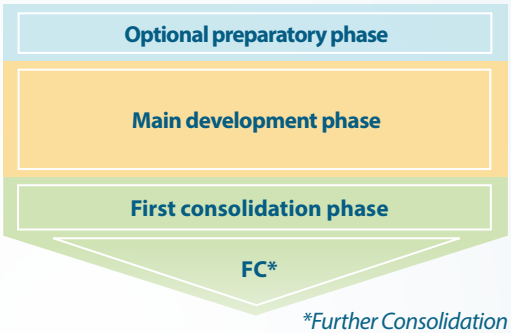
The impact of the NCETM/Maths Hubs Primary Teaching for Mastery Programme since 2015 has been evaluated in a new report, finding that it is having a 'significant, positive impact at a number of levels'. With evidence from classroom visits, conversations with school leaders, teaching staff and children, and from examination of Ofsted reports following inspections at schools in the programme, the report explores the growth of the programme from its outset, as well as looking at the ongoing challenges and what is planned to take teaching for mastery to the next level.

Here are some of the report's key findings:

> *"Participating in the programme has made teachers think deeply about mathematical structures and about connections between topics. This has prompted deep thought about how to teach maths."*

> *"Leaders of schools on the programme recognise that a whole-school commitment is necessary for teaching for mastery to take root."*

> *"Continued support for Mastery Specialists and participant schools [is important] to ensure they can embed teaching for mastery practices to bring about sustained whole-school change."*



*Further Consolidation

Read the report at ncetm.org.uk/masteryreport.

NEW MATHS HUBS PROGRAMME VIDEO

Want to learn about the work of the Maths Hubs Programme during the last five years in just five minutes? A new video summarises what the programme has achieved and what's next, as well as looking at exactly what participating in a Work Group involves and hearing from those involved in leading the Maths Hubs.

Watch the video at mathshubs.org.uk.

ENGLAND-SHANGHAI EXCHANGE 2019/20

During November, primary and secondary teachers representing all 37 Maths Hubs visited Shanghai as part of the Maths Hubs Programme annual exchange to observe how maths is taught in Shanghai schools. All the teachers received a very warm welcome and enjoyed watching their Chinese counterparts teaching a wide variety of mathematical topics. They then had chance to plan and teach their own lessons before receiving feedback from the Chinese teachers. As ever, the visit enabled highly effective exchange of professional pedagogy.

The Shanghai teachers will be returning to England in March 2020. During their visit, they will be teaching demonstration 'showcase' lessons in classrooms across the country. These showcase events are open to any teachers who want to come and see teaching for mastery in action and learn more about this approach to maths teaching.

To find a school near you where you can watch a lesson, get in touch with your local Maths Hub by visiting mathshubs.org.uk/find-your-hub.

National Centre for Excellence in the Teaching of Mathematics

PRIMARY AND SECONDARY
MASTERY PROFESSIONAL DEVELOPMENT MATERIALS

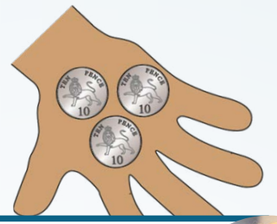
Teachers from KS1 to KS3 are using the NCETM's Professional Development Materials to collaborate, plan and deliver high quality maths lessons.

All the materials are available at ncetm.org.uk/mastery. Here we find out what primary teachers love about the materials, and explore some of the core concepts.

PRIMARY

USING THE PRIMARY MATERIALS

The interactive PowerPoints are just beautiful […] that work is all done for you.
– Sally Barker



We looked at the materials and the images within the materials and thought really carefully about the stem sentences and the progression […] to make sure the children fully understand the concept and then can apply it.
– Jonathan East

Because the small steps of learning are there and the children are keeping up […] the children are much more confident at being able to explain their thinking.
– Kathryn McGregor

To have something there and for it to be explained, how it takes children's learning deeper and how it links to the previous concept, has been really powerful.
– Kate Henshall

We've used them in staff meetings and one-to-one with teachers. […] They found those planning materials really invaluable.
– Jennie Forde

They are incredible materials that will give teachers the subject knowledge that they need to design really high quality maths lessons.
– Kate Mole

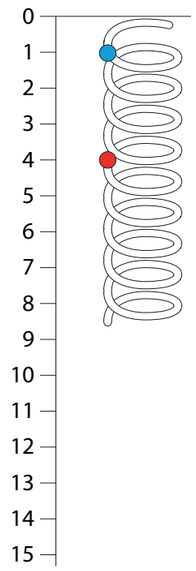
SECONDARY

UNDERSTANDING MULTIPLICATIVE RELATIONSHIPS

One of the 17 core concepts contained in the secondary materials is **Understanding multiplicative relationships**. This means understanding that any two numbers can always be linked by a multiplication of a third number. For example, 2 and 10 are linked by the number 5 since 2 x 5 = 10. But, more important, the third number is always directly related to, and can be created by, the first two numbers (10 ÷ 2 = 5).

Here's an example where the third number is not a whole number. The two numbers 5 and 13 are linked by 2.6, or $2\frac{3}{5}$ because 5 x 2.6 = 13, and 13 ÷ 5 = 2.6.

To give you a flavour of how the materials help teachers think through how students can develop this understanding, here are two illustrations used in the section on multiplicative relationships.



a) The spring is stretched so that the blue dot aligns with the 2cm mark. Where is the red dot?

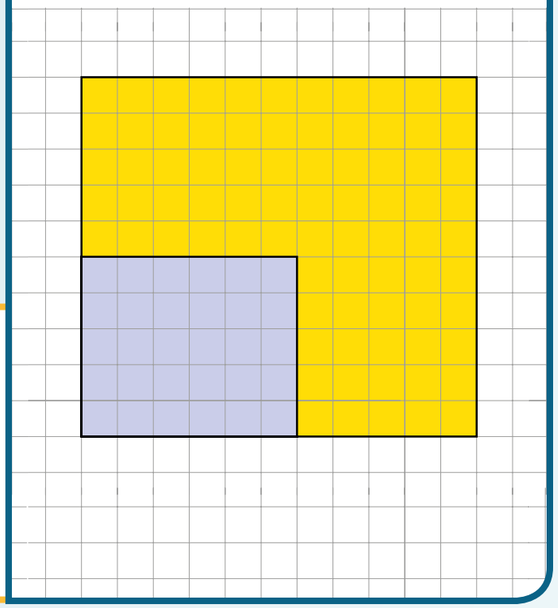
b) The spring is stretched so that the red dot is on 6cm. Where is the blue dot?

c) The spring is compressed so that the red do is on 3cm. Where is the blue dot?

d) At the moment the two dots are 3cm apart. Where is each dot if they are 12cm apart?

This question illustrates the link between scaling (up or down) and multiplication. The commentary in the materials suggests that, before students attempt to answer the questions, teachers encourage thought and discussion about whether the two dots will stay the same distance apart when the spring is stretched.

Are these rectangles similar shapes? How do you know?

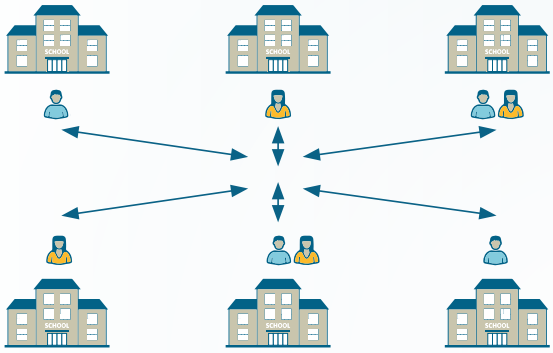


The materials also link the ideas of enlargement and proportion. A common misconception from students faced with this question is that, because both dimensions of the smaller square have been increased by **adding** five units, then the two rectangles are similar. They are, of course, not similar because each dimension has not been increased by the same **multiplier**. Try drawing a diagonal line through the grey rectangle!

WHAT IS A **WORK GROUP** AND HOW DOES IT WORK?

The Work Group is the model of professional and school development used in most Maths Hubs projects.

1. One or two **lead participant teachers**, representing a small group of schools or maths departments, form the Work Group.



2. The Work Group **meets several times** over the course of a school year. In between, participants keep in touch with each other, comparing notes about what they're trying out in their own schools. Work Group aims are linked to:

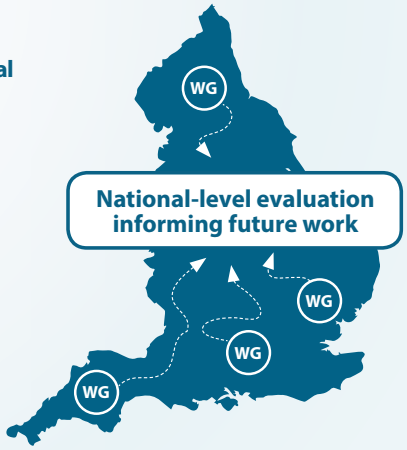
- teachers' professional learning
- teachers' practice development
- improving student learning

and

- **improving maths teaching across a whole school or department.**

3. The **Work Group Lead** is a teacher or former teacher, expert in both the area of maths teaching in question and in leading teacher professional development.

4. Each Work Group is part of a **national project**.



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.

SCHOOLS IN EVERY MATHS HUB **WORK GROUP**

- work towards outcomes linked to teachers' professional learning, their practice development, the learning of the pupils they teach, and new approaches and policies in maths teaching across their school or department
- maintain a focus on the classroom, often planning, observing and refining lessons together
- evaluate the outcomes of the Work Group's activity, with collated findings being fed into the national picture and used to inform future work.

In some teaching for mastery projects, the Work Group is sometimes referred to as a Teacher Research Group (TRG). The characteristics of a TRG are exactly the same as a Work Group.

The Maths Hubs Programme is funded by the DfE and coordinated by the National Centre for Excellence in the Teaching of Mathematics

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