

Mathematical Thinking for GCSE Work Groups

Maths Hubs Network Collaborative Projects 2020/21

NCP20-16



Programme Details

Outline

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.

What is involved?

Exam boards often note that, when students come to GCSE exams, AO2 and AO3 are frequently poorly addressed. This Work Group is designed to:

- offer teachers support so that they are better equipped to help all students develop their mathematical thinking, ultimately preparing them for the challenges of the GCSE and beyond
- support teachers in understanding and using participation in a Work Group as the basis of collaborative continued professional development for themselves and within their department.

There will be four Work Group meetings with school-based tasks for participants to complete and reflect upon between each meeting. Days One and Four are full days (or equivalent), with Days Two and Three each taking 0.5 days.

What is the cost?

The Mathematical Thinking for GCSE project is fully funded by the Maths Hubs Programme so is free to participating schools.

Benefits

Participants and their schools will:

- increase their experience and understanding of the role of reasoning and problem-solving in the curriculum
- understand how these are tested at GCSE
- understand effective collaborative approaches to embed developments department-wide
- demonstrate improved confidence in planning and leading lessons that support deep mathematical thinking
- consider next steps for further deepening, developing and reviewing mathematical thinking

Covid Recovery

The school year 2020/21 will be substantially affected by the impact of the coronavirus outbreak. The knock-on effects on school life and teachers' working lives can't be predicted with any certainty. So, all Maths Hubs work will be flexible and adapt to changing realities. There's likely to be more live online collaboration, often including use of video, for example.

In addition, Work Group content will be adjusted to address schools' recovery from coronavirus-related disruption alongside work on the central maths subject matter.



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Additional Information

The wider context

The NCETM and the Maths Hub Programme aim to promote high quality, collaborative professional development for all teachers. This Work Group is designed to support teachers who wish to understand ways of developing mathematical thinking skills in their GCSE students, in order to address AO2 and AO3 effectively.

Mathematical thinking is one of the Five Big Ideas for teaching for mastery and this Work Group gives further opportunity to support teaching for mastery in secondary schools, while also supporting schools to address the challenges of teaching GCSE Mathematics, so that all students are prepared for progression to post-16 education.



Expectations of participants and their schools

Schools must be able to commit to the full academic year's programme.

This involves a total of three days of face-to-face support (spread across four days) across the academic year, as well as classroom and school-based activity.

Who can apply?

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. Participants will be expected to begin to lead developments from the Work Group in their own department and so should have the opportunity and authority to do this effectively. Teachers who have already engaged with the Work Group might like to continue with the structure to explore further and think more deeply about supporting mathematical thinking in the classroom.

How to apply

For further information or to express interest in the programme please contact laura.greener@churchillcc.org