

Mathematical Thinking for GCSE

Maths Hubs Network
Collaborative Projects
2021/22

NCP21-17

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.

Details

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.

The Work Group is structured around four workshops 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.

Who can take part?

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. Lead participants will be expected to lead developments from the Work Group in their own department and so should have the opportunity and authority to do this effectively.

Departments that have already engaged with the Work Group have the opportunity to continue with the Work Group structure in order to explore further and think more deeply about supporting mathematical thinking in the classroom by participating in a second 'deepening' year.

What are the 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.

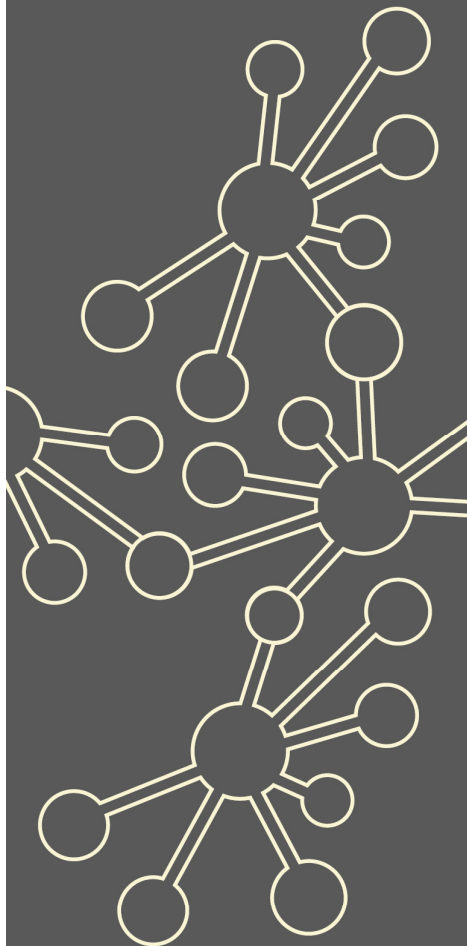
What is the cost?

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

Covid-19 Recovery

Many positive lessons were learnt from online collaboration during Maths Hubs activity in 2020/21. These will be built upon in 2021/22.

As the impact of the pandemic hopefully recedes, the result for Maths Hubs work will be a blend of face-to-face activities and frequent online collaboration.



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 (the equivalent of) three days of face-to-face support across the academic year, as well as classroom and school-based activity.

About the Hub

This Maths Hub Work Group will be led by one of North West Three Maths Hub's experienced PD Lead holders.

Full dates and venues are yet to be confirmed, further details will be shared with participants in due course.

To express an interest in participating in this Work Group, please email our Secondary Lead - Lindsay Porter at lindsay.porter@three-saints.org.uk

The deadline for expressions of interest is Friday 2nd July 2021.

