

Curriculum Statement for the Teaching and Learning of Mathematics at Godmanchester Community Academy

Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject. (National Curriculum 2014)

What we aim to achieve

When teaching mathematics at Godmanchester Community Academy, we provide a mastery curriculum following White Rose Maths - which caters for the needs of all individuals and sets them up with the **necessary skills and knowledge for them to become successful in their future adventures**. We aim to prepare them for a successful working life. We incorporate sustained levels of challenge through varied and high quality activities with a focus on **fluency, reasoning and problem solving**. All children are taught with the expectation that they will achieve the lesson outcome; they use appropriate **mathematical vocabulary to reason and explain their workings**. They are taught to **explain their choice of methods** and **develop their mathematical reasoning skills**. We **encourage resilience** and an acceptance that struggle is often a necessary step in learning. Mathematics is embedded in the wider school curriculum in many other subjects via curriculum booklets; this allows our students to see how mathematics applies to many different disciplines and how and why it is essential.

How we aim to achieve it

<u>PLANNING</u>	<u>REVIEWING MATERIAL</u>	<u>CHECK FOR UNDERSTANDING</u>
<p>USING WHITE ROSE AS A FRAMEWORK (EYFS-6) & ADDITIONAL RESOURCES TO SUPPORT:</p> <ul style="list-style-type: none"> - White Rose - Deepening Understanding - Master the Curriculum (EYFS) - Busy Ant Maths (fluency) - NCETM - NRICH - Maths Pack <p>Planning is shared across a year group but lessons are personalised to address the individual needs and requirements of a class. Coverage is maintained and monitored. The White Rose Frameworks ensure progression as well as recap and review, however, we follow our own long-term curriculum map. We ensure mathematics is embedded into the whole curriculum (e.g. science) through our use of curriculum booklets.</p>	<p><u>Morning quiz and regular arithmetic</u></p> <p>In tune with our whole-school approach on The Principles of Instruction (Rosenshine), we recap previous mathematical knowledge during the morning quiz (during the soft start/ registration time) and at the start of each mathematics lesson.</p> <p>In KS1 and KS2, children have a 10 minute focussed arithmetic session at least 3 times per week (e.g. 12 in 10).</p>	<p>During our Quality First Teaching, teachers and teaching assistants continuously monitor pupil progress against expected attainment, making formative assessment notes which we use to inform our teaching and catch-up groups/ tutoring sessions.</p>

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PRINCIPLES OF INSTRUCTION	SEQUENCING CONCEPTS AND MODELLING
<div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> <div style="width: 20%; text-align: center;"> <p style="font-size: 8px;">Barak Rosenshine's</p> <h3 style="margin: 0;">PRINCIPLES OF INSTRUCTION</h3> <p style="font-size: 8px;">A thematic interpretation for teachers by Tom Sherrington @TeacherToolbox</p> </div> <div style="width: 80%;"> <div style="border: 1px dashed black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; font-size: 8px; color: red;">REVIEWING MATERIAL</p> <div style="display: flex; justify-content: space-around; font-size: 8px;"> 1 Daily review 2 Weekly and monthly review </div> <div style="display: flex; justify-content: space-around; align-items: center;"> </div> <p style="font-size: 7px; margin-top: 5px;">Daily review is important in helping to reinforce prior learning from the last lesson. Let's not be surprised that students don't immediately remember everything. They won't if it's a powerful technique for building fluency and confidence and it's especially important if we're about to introduce new learning – to activate relevant prior learning in working memory.</p> </div> <div style="border: 1px dashed black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; font-size: 8px; color: red;">QUESTIONING</p> <div style="display: flex; justify-content: space-around; font-size: 8px;"> 1 Ask questions 2 Check for student understanding </div> <div style="display: flex; justify-content: space-around; align-items: center;"> </div> <p style="font-size: 7px; margin-top: 5px;">The main message I always stress is summarised in the matrix: ask more questions to move students to more depth. Rosenshine gives lots of great examples of the types of questions teachers can ask. He also reinforces the importance of process questions. We need ask how students worked things out, not just get answers. He is also really good on stressing that asking questions is about getting feedback for us as teachers about how well we've taught the material and about the need to check understanding to ensure misconceptions are flushed out and tackled.</p> </div> </div> </div> </div>	<div style="text-align: center; padding: 5px;"> <p style="margin: 0;">Concrete – Pictorial - Abstract</p> </div> <p style="margin-top: 10px;">We implement our approach through quality first teaching, delivering appropriately challenging work for all individuals. To support the childrens' understanding, we use a range of mathematical resources in classrooms including Continuous Provision in EYFS, Base10, bead strings, Cuisenaire Rods and place value counters (concrete equipment). Visualisers are used to support the use of equipment in the classroom.</p> <p>When children have grasped a concept using concrete equipment - or during a lesson to support their initial understanding - images and diagrams are used (pictorial), for example bar models and the part, part whole model.</p> <p>Concrete and pictorial approaches pave the way for an understanding of more abstract mathematics. This relies on the children understanding a concept thoroughly and being able to use their knowledge and understanding to answer and solve mathematics without equipment or images.</p> <p>We follow our whole school approach to modelling using I do – We do – You do to enable our pupils to be successful with new concepts. In certain year groups, this approach is signposted through the use of traffic light colours (Red – Amber – Green).</p>
<div style="border: 1px solid black; padding: 5px;"> <div style="text-align: center; font-size: 8px; color: red; margin-bottom: 5px;">SEQUENCING CONCEPTS & MODELLING</div> <div style="display: flex; justify-content: space-around; font-size: 8px;"> 1 Present new material using small steps 2 Provide models 3 Provide scaffolds for difficult tasks </div> <div style="display: flex; justify-content: space-around; align-items: center; margin: 5px 0;"> </div> <div style="font-size: 7px; margin-top: 5px;"> <p>Small steps – with practice at each stage. We need to break down our concepts and procedures (like multi-stage maths problems or writing) into small steps so that each can be practised.</p> <p>Models – including the importance of the worked-example effect to reduce cognitive load. We need to give many worked examples, too often teachers give too few.</p> <p>Scaffolding is needed to develop expertise – a form of mastery coaching, where cognitive supports are given – such as how to structure extended writing – but they are gradually withdrawn. The sequencing is key. Scaffolds on a like are really powerful aids to the learning and confidence building – but eventually they need to come off.</p> </div> </div>	<div style="text-align: center; padding: 5px;"> <p style="margin: 0;">ONLINE MATHEMATICS</p> </div> <p style="margin-top: 10px;">In order to advance individual children's mathematics skills in school and at home, we utilise Times Tables Rock Stars for multiplication practise, application and consolidation. In KS2, the children are encouraged to achieve 1000 Mathletics points a week. Tablets/ laptops are used in the classroom to support the children's understanding using programmes such as Maths Pack.</p>
<div style="border: 1px solid black; padding: 5px;"> <div style="text-align: center; font-size: 8px; color: red; margin-bottom: 5px;">STAGES OF PRACTICE</div> <div style="display: flex; justify-content: space-around; font-size: 8px;"> 1 Guide student practice 2 Obtain a high success rate 3 Independent practice </div> <div style="display: flex; justify-content: space-around; align-items: center; margin: 5px 0;"> </div> <div style="font-size: 7px; margin-top: 5px;"> <p>Teachers needs to be up close to students' initial attempts, making sure that they are building confidence and not making too many errors. This is a common weakness with 'less effective teachers'. Guided practice requires close supervision and feedback.</p> <p>High success rate – in questioning and practice – is important. Rosenshine suggests the optimum is 85%. i.e. high (not 95-100% (too easy)). He even suggests 75% is too low.</p> <p>Independent, monitored practice. Successful teachers make time for students to do the things they've been taught, by themselves... when they're ready. "Students need extensive, successful, independent practice in order for skills and knowledge to become automatic"</p> </div> </div>	

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How we know it is working		
CREATING MATHEMATICIANS	REVIEW AND FEEDFORWARD	OUTCOMES
<p><u>PUPIL VOICE</u> Through discussion and feedback, children talk enthusiastically about their maths lessons and speak about how they love learning about maths. They are keen to look through their books to evidence their progress. They can articulate the context in which maths is being taught and relate this to real life purposes. Children show confidence and believe they can learn about a new maths area and apply the knowledge and skills they already have.</p>	<p><u>STAFF WELLBEING AND DEVELOPMENT</u> We continuously strive to better ourselves and frequently share ideas and things that have been particularly effective. We take part in training opportunities and regional networking events, such as local Maths Hub work groups. We aim to feed this growth forward into our curriculum and planning to create opportunities for our pupils as well.</p> <p><u>STUDENT KNOWLEDGE</u> RAG rating grids feedforward into the next year and a detailed handover occurs between teachers. Where gaps in knowledge are found, these are addressed through careful re-teaching and retrieval practise.</p>	<p><u>EXPECTATIONS</u> At the end of each year, we expect the children to have achieved Age Related Expectations (ARE) for their year group. Some children will have progressed further and achieved greater depth (GD). Children who have gaps in their knowledge receive appropriate support.</p> <p>Summative assessments are completed at the end of each term; these results lead discussions in termly Pupil Progress Meetings from which focus children are identified and provision is detailed. The main purpose of all assessment is to always ensure that we are providing excellent provision for every child hence even summative assessments are used formatively.</p>