St. Thomas' CE

Primary School

Maths Policy

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What is Maths?

Maths 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. Maths is a core subject in the National Curriculum. 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.

Aims

Our Maths curriculum follows the Programme of Study and Aims of the National Curriculum.

The National Curriculum for mathematics aims to ensure that all pupils:

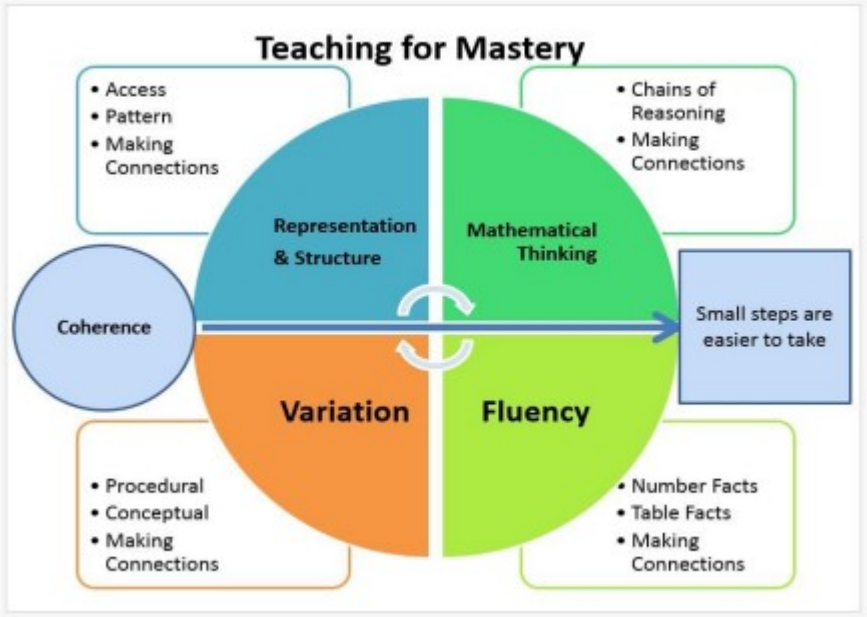
- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- can solve problems by applying their mathematics to a variety of routine and non- routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Our vision for Mathematics

- To promote a positive attitude towards Maths in all pupils.
- To ensure all pupils are engaged in and are enjoying exploring Maths.
- To enable all pupils to find links between Maths and other areas of the curriculum, including Science.

- To ensure all pupils progress in Maths and are challenged appropriately through an in-depth understanding.
- To use a wide range of concrete, pictorial and abstract representations to develop all pupils' relational understanding of Maths.
- To ensure all pupils are confident using mathematical vocabulary when reasoning about Maths.
- To promote a growth mindset in all pupils, particularly when Problem Solving.

Learning & Teaching of Maths - a 'Mastery' Approach



What is Fluency?

Fluency comes from deep knowledge and practice. This is the first stage of pupils understanding. In addition to a daily 60-minute Maths lesson, all children also take part in a daily 10-minute Mental Maths activity to develop their fluency.

Fluency includes:

- Conceptual understanding, accuracy, rapid recall, retention and practice.
- Accuracy – Pupils carefully completing calculations with no or few careless errors.
- Pace – Pupils are able to quickly recall the appropriate strategy to solve the calculation and progress through a number of questions at an age appropriate pace.
- Retention – Pupils will be able to retain their knowledge and understanding on a separate occasion to when the concept was first introduced.

The key to fluency is deep knowledge and practice and making connections at the right time for a child.

What is Reasoning?

Verbal reasoning demonstrates that pupils understand Maths. Talk is an integral part of mastery as it encourages students to reason, justify and explain their thinking. To encourage talk in Maths, teachers may introduce concepts by including sentence structures (stem sentences). Pupils should be able to say not just what the answer is, but how they know it's right. This is key to building mathematical language and reasoning skills. This gives pupils the confidence to communicate their ideas clearly, before writing them down. Example Stem Sentences: The denominator is 5 because the whole has been divided into 5 equal parts. The numerator is 3 because 3 equal parts have been shaded/circled.

Teachers then maintain a high expectation upon pupils to repeat and use the correct mathematical vocabulary to explain their understanding verbally and in their reflection comments. By also displaying the vocabulary during the lesson, pupils will be able to use this independently. When questioning and encouraging mathematical talk, teachers should provide regular, purposeful opportunities. For example: - Show me how to complete the calculation - Teach your friend how to complete the calculation - How do you know which operation to use? - Why have you chosen this method? - How else can you represent this number? - What have you learnt today? - True or False - Odd one out.

What is Problem Solving?

Mathematical problem solving is at the heart of the Mastery Approach. Pupils are encouraged to identify, understand and apply relevant mathematical principles and make connections between different ideas. This builds the skills needed to tackle new problems, rather than simply repeating routines without a secure understanding. Mathematical concepts are explored in a variety of representations and problem-solving contexts to give pupils a richer and deeper learning experience. Pupils combine different concepts to solve complex problems, and apply knowledge to real-life situations. Through problem solving, pupils are required to select their mathematical knowledge and apply this to a new concept.
Problem solving is more than just word problems but the RUCSAC approach can be applied to this style of question: 1) Read the problem 2) Understand the problem by underlining or discussing: What is the problem about? 3) Choose the operation required, the number facts or the approach. 4) Solve the problem by completing jottings on the page 5) Answer the problem 6) Check – have I correctly answered the given problem or is there another step?

Lesson Structure

All mathematics lessons follow the following structure:

- A 10-minute 'pre-teach' where possible for a small number of children who are considered to require a confidence boost.
- Starter Activity – to promote fluency of arithmetic.
- Introduce New Learning using the Mastery Approach.
- 'Hot Marking' (marking WITH the children DURING the lesson) occurs regularly. A pupil should leave each lesson feeling successful and any misconceptions or concerns to be addressed immediately
- Reflective Plenary - Key Stage 2 children may use Purple Pen to mark their own work where Hot Marking has not taken place.

Planning

Within EYFS, staff plan lessons around 'The Big Ideas' in Mathematics linked to Composition, Counting and Cardinality, Pattern, Shape and Measures, all are linked to the Developmental Bands within the EYFS Curriculum. In addition, in Reception they use White Rose Maths to ensure coverage of all mathematical concepts. All children have Math's input daily, whole class and small group sessions. They also extend their knowledge and understanding through carefully structured activities which are provided within the continuous provision. Teachers in Reception to Year 6 use the White Rose Scheme of Work as an aid to support their planning and delivery of Maths. White Rose provides the yearly overview and Medium Term planning for each year group. Teachers develop their own Short Term Planning which incorporates: precision teaching, modeling, use of manipulatives/resources to scaffold learning, addressing misconceptions and the use of targeted key questions.

Number: A large proportion of time is spent reinforcing Number to build competency and fluency. Number is at the heart of the White Rose 'Mastery' scheme of learning, with more time devoted to this than other areas of Maths. It is important that pupils secure these key foundations of Maths before being introduced to more difficult concepts. This increased focus on Number will allow pupils to explore the concepts in more detail and secure a deeper understanding. Key number skills are fed through the rest of the scheme so that children become increasingly fluent. Planning should aim for all pupils to master the age group expectations of the National Curriculum by including rich, deep activities. Teachers also ensure that they prioritise the objectives set out in the Ready To Progress materials, ensuring nothing seen as absolutely crucial is missed throughout each year group.

Assessment

Formative Assessment – Is regarded as an integral part of teaching and learning and is a continuous process. It is the responsibility of the class teacher to assess all pupils in their class. It involves identifying each child's progress in each aspect of the subject, determining what each child has learned and what should be the next step in his or her learning. This is mostly carried out informally by teachers in the course of their teaching.
Summative Assessment - This includes End of Block White Rose Assessments Review activities to check progress and identify gaps in knowledge and understanding as well as White Rose End of Term Assessments (Arithmetic and Reasoning and Problem Solving Paper) for each year group from 1-5. Year 6 complete Practice SATs Papers each on a termly basis.
The White Rose Assessment results are recorded each term. There are no official grade boundaries for the White Rose Assessments. However, in line with the KS1 and KS2 SATs, the following is a guideline:
Year 1 - a consistent score of approximately 60% (15/25) would indicate 'Expected' and 85% (21/25) would indicate 'Greater Depth'.
Year 2 - a consistent score of approximately 60% (21/35) would indicate 'Expected' and 85% (30/35) would indicate 'Greater Depth'.

Years 3-6 - a consistent score of approximately 55% (28/50) would indicate ‘Expected’ and 86% (43/50) would indicate ‘Greater Depth’.
These tests should be used to inform teacher assessment.

Homework

There are many ways in which parents can support their children in this journey. Research shows the critical importance of helping children to develop a positive mindset towards Maths.

Homework is used to support Mathematics through weekly tasks such as:

- Learning of tables.
- Consolidation of objectives covered in class.
- tasks set by teachers on the Homework Grids.

Cross-Curricular Links

Maths is a core subject within the National Curriculum. As such, Maths is not just taught in a single Maths lesson; opportunities to extend children’s learning through the wider curriculum are consistently planned for and maximised. At St Thomas’ we strive to help children see and apply Maths in as wide a variety of contexts as possible. Cross Curricular opportunities for Maths learning include data handling in Science, coordinate work in Geography, measuring in DT and shape in Art.