

Eccleston Mere Primary School

Mathematics Policy



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At Eccleston Mere, our aim is for children to be active learners who feel confident and positive about their learning experience in Mathematics, and who develop independence, determination and perseverance. Through the delivery of a high-quality curriculum, and carefully planned lessons, we aim to equip our children with the key skills of fluency, reasoning and problem solving. We recognise and value the importance of Mathematics as an essential life skill which has a direct impact on children's future life chances. It is key to understanding the world and is an essential element of everyday life. Mathematics has its own inherent beauty; we aim to foster a sense of enjoyment and curiosity as children learn.

The Mathematics curriculum is organised into distinct topics. However, children should make rich connections across the different areas of study and make links between the different ideas. They should be taught how to apply their learning to solving mathematical problems and to solving problems in other subjects such as Science and Financial studies.

The key skills of fluency, reasoning and problem solving should be an integral part of children's learning.

Fluency encompasses the efficiency, accuracy and flexibility of skill and understanding. Efficient recall of fact and procedure enables a child to select effective strategies to problem solve. Accuracy depends on knowledge of number facts and number relationships. Flexibility enables movement between different contexts and representations, to recognise relationships and make connections.

Reasoning is about thinking mathematically; the action of thinking about something in a logical and sensible way. It involves making decisions and systematic thinking. Correct mathematical language is required to enable children to explain, convince, justify and prove their ideas and solutions.

Problem solving involves the application of understanding to a variety of routine and non-routine problems. This involves the direct teaching of problem solving skills such as breaking a problem into a series of smaller steps, trying different approaches and persevering.

We aim to develop a Mastery approach to the teaching and learning of mathematics. Mastering mathematics means children acquire a deep, long-term, secure and adaptable understanding of the subject. It enables children to have a solid conceptual understanding of the taught material which allows them to move on to more advanced skills and concepts. Teaching for mastery has 5 main ideas: coherence, fluency, representation and structure, variation and mathematical thinking. Central to a mastery approach are the core principles:

- Belief that all children can succeed in mathematics
- Children are taught through whole-class interactive teaching where the focus is on all children working on the same content. This ensures that all can master concepts before moving on.
- Misconceptions are identified quickly and addressed through early intervention.
- Lesson design identifies new content to be taught, key points for learning, the difficult points and a sequence of steps to build understanding.
- Procedural fluency and conceptual understanding are developed together with both supported by intelligent practice.

- Significant time is given to developing deep knowledge of the key ideas with emphasis on structure and connections.
- Key facts such as number bonds and multiplication facts are learnt for automatic recall.

In EYFS, learning in mathematics centres on practical activities and a rich variety of mathematical experiences to develop understanding, thinking and problem solving. Planned activities provide opportunities to practice, use and understand number. Numicon is used to develop number concept and skill. The use of manipulatives and practical equipment enhance the understanding of quantity, relationships and spatial awareness.

KS1 and KS2 have daily mathematics lessons. We use the White Rose Mathematics Scheme as a guide for small steps for learning and for the distribution of topics across the year. Teachers use their knowledge of the children to plan effective lessons that draw upon a range of teaching resources and approaches including questioning, short tasks, explaining, modelling, demonstrating and discussing. A concrete – pictorial - abstract approach is used to develop deep and sustainable understanding. Children are initially taught how to use manipulatives and visual representations to support their learning. They are then encouraged to use these tools independently as needed. Children have opportunities to work collaboratively with their peers in pairs or small groups. They are expected to record their learning in a neat and organised way, and to use correct mathematical language to explain their ideas.

At KS1, the key focus is on developing confidence and mental fluency with whole numbers, counting and place value. This includes calculating with the four operations. They should develop their ability to recognise, describe, sort and compare shapes using related vocabulary. Teaching should involve using a range of measures to describe and compare different quantities. By the end of the Key Stage, children should know number bonds to 20 and be precise in using and understanding place value.

At lower KS2, the key focus is on ensuring that children become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. They should develop efficient mental and written methods of calculation, and develop their ability to solve a range of problems, including with fractions and decimal place value. Children should be taught to draw shapes with increasing accuracy and use reasoning to analyse shapes and their properties. Teachers should ensure children measure with accuracy and make connections between measure and number. By the end of year 4, children should know their multiplication facts up to 12x and show precision and fluency in their work. Four additional 30-minute sessions per week are allocated for this purpose with Fast Maths used to aid the learning of multiplication facts.

For upper K2, the principal focus is to ensure that pupils extend their understanding of the number system and place value to include larger integers. They should develop the connections between multiplication and division with fractions, decimals, percentages and ratio. Children should develop their ability to solve a wider range of problems, including those that require efficient methods of written and mental calculation. The language of algebra is introduced to support the solving of problems. Teaching in geometry and measure should consolidate and extend knowledge developed in number. Children should classify shapes through their geometric properties and use the related vocabulary correctly. By the end of the KS, children should be fluent in written methods of calculation including long multiplication and division, and in working with fractions,

decimals and percentages. Four additional 30-minutes per week are allocated for the development of fluency.

Mathematical vocabulary is essential for children's learning and their ability to explain their ideas. It should be explicitly taught within each topic. Children are expected to read, spell and pronounce vocabulary with accuracy and precision, according to age.

Evidencing

Work is evidenced in mathematics books and folders. Books are monitored each term by the subject lead and the SLT. Staff are given feedback on strengths and areas for development. This in turn feeds into the Subject Action Plan and the development plans for the school. Termly data from teacher assessment and NFER tests provide further evidence for pupil progress along with end of key stage NC assessments. (pupil voice provides additional evidence for the learning of mathematics)

Assessment

In Mathematics, learning is assessed daily to identify misunderstandings which are then addressed individually or with the whole class to ensure children are ready to progress with the next lesson. This is through careful questioning during the lesson as well as through assessing completed work. Staff conduct a pre-learning assessment at the start of each topic to indicate focus areas which may take the form of a discussion or more formal task. A post-learning assessment is then used to identify progress made and any gaps that may need addressing.

Children are assessed termly using NFER (previous NC tests are used in Year 6). The results of these are entered into the school's assessment system (FFT) along with a teacher assessment judgement. Both of these are used to monitor progress and inform pupil progress meetings which identify children who need targeting for additional support within class or who need a more focused intervention. National Testing is carried out at the end of KS1 and KS2. The results of which are analysed and inform future develop plans.

Marking and Feedback

Work is marked according to the school marking policy. Where possible, this takes place during the lesson to give immediate feedback and to assess learning. All work should be marked as soon as possible after the lesson to identify any misconceptions that need addressing prior to the start of the next lesson. There should be opportunities for self and peer marking. Marking should include positive comments. If the lesson objective has been met, the 'I can' statement should be ticked. Where needed, teacher guidance should be given to address errors or misconceptions. These may be addressed at the start of the next lesson if appropriate. Children should be given opportunity to correct their work for small errors. A challenge or extension question should be given at least once each week. This can be to consolidate current learning or to challenge thinking.

SMSC/Cultural Capital/British Values

In mathematics, we promote a sense of enjoyment and a fascination in learning about the world around them. Children are encouraged to think creatively about problems and challenges. They have opportunities to discuss their thinking and ideas, and listen to the viewpoints of others. When working collaboratively, they learn to work as a team to solve problems in a cooperative way. Mathematics is a life skill in all cultures and it provides a rich range of experiences.

Learning Environment

Children have access to a range of learning support resources in each classroom. These are age and learning need appropriate and children are encouraged to use them independently. Each classroom should have a maths working wall which includes key vocabulary, examples of methods and skills, place value information and topic related information. Challenge questions add interest and engagement.