

Respect, Motivation, Cooperation, Kindness, Pride, Perseverance

## Mastery approach at Bromesberrow St. Mary's C of E Primary School in Mathematics.

**Intent:** We believe that all children can deepen their understanding within mathematics across our school through motivated teachers, courage and perseverance. At Bromesberrow St Mary's Primary School, we are continuously developing the mindsets of both children and staff, building resilience and a 'can do' attitude to be well rounded, motivated and successful mathematicians. With high quality first teaching and expectations, intelligent practice, collaborative learning and intervention and support, all our children will be given every opportunity to develop their declarative and procedural knowledge within maths and explore mathematics deeply (conditional knowledge), being positively enabled to *Reach for the Stars* in their learning of mathematics.

**Our definition of Mastery:** At Bromesberrow St Mary's Primary school we believe that all children are capable of doing and understanding mathematics with the right teaching and support. Through building a 'can do' attitude, with high-quality teaching, resources and effort; all children can enjoy and achieve within maths. Throughout our school, we are driven to provide children with the key concepts and building blocks to be brilliant and aspirational mathematicians.

### **Implementation**

Mastery is the 'knowing' and 'understanding' of key concepts combined; it is not just about being able to answer questions quickly and accurately. Mastery is knowing why and how and being able to select the most appropriate methods for them. All our children are provided with these examples during their teacher input whilst following a sequence of concrete, pictorial and abstract questioning and learning appropriate to their learning need and to enhance their fluency, reasoning and problem solving learning. We aim to see our children being able to use their knowledge appropriately, flexibly and creatively; applying their knowledge to new and unfamiliar situations.

For all mathematical concepts, children are provided with the opportunities to be "challenged through being offered rich and sophisticated problems." After the children have developed fluency (Skill it), they need to be able to show that they can apply their knowledge in the form of reasoning (Apply it) in mathematics and be able to move further to demonstrate they have mastered (Deepen it – problem solving) the concepts in a range of different ways.

As a school we follow these definitions of fluency, reasoning and problem solving to support our mastery approach.

**Fluency:** the development of number sense and being able to use the most appropriate method with increasing speed – procedural knowledge/declarative knowledge. (Skill it)

**Reasoning:** the process of applying logical and critical thinking to a mathematical problem in order to work out the correct or incorrect strategy to use in reaching a solution. An important area that provides the foundations of problem-solving – declarative knowledge/conceptual knowledge. (Apply it)

**Problem Solving:** is deepening understanding through answering unfamiliar problems/questions and having the skills and knowledge to do so – conditional knowledge. (Deepen it)

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Our Mathematics in Mastery curriculum (see Maths Overview): From our Early Years to Year 6, our curriculum allows learners and teachers to be successful in Maths by achieving a secure and deep understanding of a Mathematical concept. We have designed our Mastery Curriculum to provide teachers with the opportunity to address key points individually, ensuring that the children have a secure understanding of those points before offering the opportunity to 'go deeper' within them. In Early Years and where appropriate in Year 1, the principles of EYFS will be followed, and there will be an opportunity to 'Explore Maths' and develop their understanding of Mathematical concepts through play and a range of scenarios throughout their continuous provision to be critical thinkers and actively involved in their learning. The curriculum has been designed in line with the National curriculum and Early Years Statutory Framework as progressive learning whilst our children learn and grown from us to continuously be building upon their already obtained knowledge from previous learning.

**Mastery teaching and learning:** In every Mathematics lesson across the whole school, you will see the following:

- Quality First Teaching; tailored to meet the needs of the learners in each class, and intervention being given to address any gaps in learning when necessary to,
- Resilient and motivated learners, with a learning environment that promotes a 'can do' attitude using 3B4ME,
- Teachers and Teaching Partners using high-quality questioning to explore children's understanding and develop understanding further,
- Teachers using misconceptions to further understanding of key concepts,
- Learners being provided with a range of opportunities to explore key mathematical concepts that appeal to the children's different learning styles – concrete/pictorial/abstract,
- Collaborative learning,
- Learners being provided with the opportunities, through careful planning, to explore for longer and go deeper in mathematical concepts,
- Development of fluency, reasoning and problem-solving.

### **Peer Mentors**

We encourage our children to be peer mentors within the classroom, which shows a deeper understanding of the concept they are learning as they will need to be able to adapt and explain/reason to support their peers. This not only shows our children *Reaching for the stars* in themselves, but supporting others to do the same.

### **Disadvantaged and SEND backgrounds**

Our mastery approach has been designed carefully to support all children in being able to develop a rich understanding of Maths including children with SEND and disadvantaged backgrounds. With opportunities to consolidate and revisit throughout our curriculum we believe we provide an ambitious curriculum that is accessible to all. Our teaching staff are able to use adaptive teaching and their judgement to ensure that those children who need it are being provided with the curriculum in a way that is accessible to them – enabling all our children to *Reach for the Stars in Aspiration and Hope*. Key resources such a number stacks and numicon are used to support learning through intervention but also as tools to use in the classroom.

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### **Number Masters:**

At Bromesberrow, teachers incorporate Number Master Sessions 4 times a week to consolidate previous years Maths objectives (throughout the Autumn Term) and revisiting current year's objectives once taught. This allows assessment to take place for teachers, focused intervention time and children to further secure their understanding and fluency of prior learning objectives. Number Master Sessions support the children in feeling 'more ready' to embark on new learning within a mathematical concept.

Suggested Number Master Timetable:

Monday	Place value/addition/subtraction
Tuesday	Multiplication/division (timestables)
Wednesday	Fractions/ Decimals/ Percentages
Thursday	Shape and measure
Friday	Consolidation

### **Non-negotiables:**

- Skill it, Apply it and Deepen it language to be used in Maths to show fluency, reasoning and deepened problem solving. All staff to be confident and conversant in this terminology.
- Terminology and language to be used and understood by children.
- All children to be exposed to Skill it, Apply it and Deepen it style questions during teacher input.
- All worksheets to be printed in blue.
- Fluent in 5 rule followed (no more than 5 fluency questions given, unless understanding not secure).
- Number masters 4 times a week revisiting previously learnt knowledge to improve fluency (Addition, Subtraction, multiplication, division, fractions, decimals, percentage, place value, shape and measure, times tables) where appropriate to age group.
- KS2 (Year 4 – 6) to draw a margin in their books for question numbers and/or quick workings out.
- Year 2 – Year 6 children to write short date into their books.
- Year 4 – Year 6 children to write Roman numeral date alongside numerical date.
- All work to have a clear Lesson Title.
- Maths toolboxes to be out for children every Maths lesson and incorporated into resilience 3B4Me poster shown in classroom.
- Maths working wall to clearly show current learning objective.

### **Suggested resources available within each classroom:**

Class 1 equipment available to the children: number line to 50, 100 square, counters to pv of 10, numicon, scales, objects for counting,

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Class 2 equipment available to the children: Yr 2: base ten tens ones, place value counters tens ones, coins and notes sterling, hundred square, number lines to 100, pv charts tens ones, money pv charts £ 10p 1p, straws/lolly sticks, pv frames, pv arrows (mainly teacher use) numicon, 10 frames and counters.

Yr 3: base ten hundreds, tens ones, place value counters hundreds tens ones, coins and notes sterling, Cuisenaire rods, hundred square, number lines to 100 and 1,000, pv charts hundreds tens ones, money £, 10p, 1p, scales, weights

Class 3 equipment available to the children:

Place value grids up to 1million, multiplication grids, fraction walls, place value counters up to 1 million and decimal counters, thermometers, money, scales, weights, compose, protractor.

In all classrooms children have access to: base ten, numicon, physical shapes.

### **Impact**

The impact of our mathematic curriculum is monitored through the use of our assessment tracker, Insight. This is also partnered with book looks, Lesson pop ins and pupil voice. Through the carefully designed curriculum, our children are in a position to continue to develop their mathematic understanding into their following years of education and be confident, conversant mathematicians. This curriculum design has shown an increase in positive attitudes towards math's and children who are not afraid to 'give maths a go'.