



Benthal Primary School

Maths Policy

Approved by:	Chair of Governors
Approval date:	Autumn 2022
Review date:	Autumn 2025

Maths Approach at Benthall

Aims of the Mathematics curriculum

Taken from National Curriculum (2014)

Mathematics is a creative and highly inter-connected 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.

Mastery Approach

At Benthall, we adhere to the National Curriculum (2014) expectations in Maths. By additionally following 'White Rose Maths' schemes of learning, we instil a mastery approach; every pupil should aim to 'master' their age-appropriate curriculum. Pupils are therefore expected to extend their understanding by applying concepts to a variety of complex and contextual problems. In line with a mastery approach, lessons are structured around three strands: fluency, reasoning and problem solving.

- **Fluency:** Showing secure understanding 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.
- **Mathematical Reasoning:** Following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- **Problem-Solving:** Applying 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.

Curriculum Planning

Maths in EYFS

In line with the National Curriculum (2014), Mathematics in EYFS *involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces, and measure.*

In EYFS, the curriculum is focused around two subject areas: Numbers and Shape, Space and Measures. Across Reception, teachers follow White Rose Guidance. This supports the teaching of Maths in small group activities, using real-life contexts as a basis for learning. Pupils are also encouraged to engage in more open-ended problem-solving through planned 'digging deeper' activities within the White Rose scheme of learning.

Across EYFS, pupils are taught the Five Counting Principles, which specify:

- The one-one principle
- The stable-order principle
- The cardinal principle
- The abstraction principle
- The order-irrelevance principle

There is a large focus in EYFS in using child-centred approaches to aid counting skills. Therefore, pupils are encouraged to develop counting with objects that are interesting and personal to them.

Maths in KS1 and KS2

Maths lessons across KS1 and KS2 are planned in line with White Rose Maths, whereby published schemes of learning are used to support content. In long-term planning, a White Rose year overview is employed in each year group, blocking topics over a series of weeks. The aim within these blocks is for pupils to develop a secure understanding, achieved by exposing pupils to all three strands: fluency, reasoning and problem-solving. Once pupils have built strong fluency of a concept, they should progress to solving increasingly complex problems.

In medium-term planning, each block is comprised of a number of 'small steps,' indicating key descriptors that every pupil should achieve within the given block. These small steps are employed by teachers to guide learning intentions for lessons and instil a clear progression across lessons. The White Rose schemes of learning provide a selection of activities to support all three strands of fluency, reasoning and problem solving.

Supporting a mastery approach, each lesson should include both fluency and reasoning and problem-solving tasks. Starters and plenaries are used to apply knowledge to new situations and problems.

Planning for Fluency

Fluency activities within the White Rose schemes of learning are used to support pupils' exposure to a variety of forms. The term 'varied fluency' is often employed to specify the need to alternative representations of a concept. For example, for the block of 'place value,' this may include written, as well as numerical, representations of four-digit numbers.

Planning for Reasoning

Reasoning activities within the White Rose schemes of learning are used to consolidate a concept and to encourage verbal justification of a method or solution. Many reasoning opportunities take the form of class discussion, whereby children discuss their ideas, using structured prompts. Some of these prompts include: true or false and always, sometimes, never questioning.

Planning for Problem Solving

Opportunities for problem solving should be present for each small step in the given block. Activities from the White Rose scheme of learning are used to support the development of problem solving skills, together with further enrichment tasks from resource banks such as 'NRich.' In problem-solving tasks, children should explore the following strategies. Pupils in KS2 should be taught these techniques explicitly and should be encouraged to refer to them when explaining how they worked through a particular problem.

- working systematically
- working backwards
- trial and improvement
- pattern-seeking
- logical reasoning
- visualising
- conjecturing

Calculation

Staff should refer to the separate Calculation Policy for guidance on appropriate formal methods. Across KS1 and KS2, pupils are taught specific methods when solving more complex calculations, which align with specifications in the National Curriculum. The calculation policy follows a 'Concrete, Pictorial, Abstract' sequence in order to secure understanding and is based on the White Rose calculation policy.

Resources

Concrete ‘manipulatives’ are used across the school to support a secure understanding of each concept, such as: dienes, place value counters and number lines. Pupils should have regular access to these resources in the classroom and should ultimately exercise choice in the manipulatives they use.

Each class is allocated a basic stock of manipulatives that reflects their year group’s curriculum. These resources should be accessible and used readily in the classroom to support day-to-day teaching, such as place value. More specific resources are kept centrally, whereby teachers can access the relevant manipulatives within a particular block.

Assessment

Teachers complete ongoing formal and summative assessment to identify and address ‘gaps’ in learning. In line with the government guidelines, pupils are assessed according to four measures: working below expected standard; working towards expected standard; working at expected standard and working at greater depth within expected standard.

Teachers in KS1 and KS2 administer summative assessments at three points during the academic year, corresponding with the Autumn, Spring and Summer terms. White Rose published assessments are used to identify and address misconceptions. During each assessment week, pupils complete two assessments: arithmetic and reasoning. Results from these assessments are entered into a gap-analysis and are used in conjunction with the teacher’s formative assessment to track attainment overall.

In addition to the termly assessments conducted by teachers, pupils in Year 2 (end of KS1) and 6 (end of KS2) take external statutory assessments (SATs) at the end of the academic year. As of June 2020, Year 4 pupils will also sit a multiplication table check (MTC) online.

Role of the Subject Leader

The Maths Subject Leader takes the lead in policy development and its impact on practice. The Maths Lead provides guidance and feedback on planning, teaching, marking, work in books and data outcomes in each year group.

The subject leader provides regular verbal and written (where required) reports to the SLT on the progress in Maths across the school and is responsible for reporting to governors about the subject.

In addition, the Subject Leader leads staff training, orders and manages resources and, crucially, champions the subject across the school, raising its profile and

ensuring that initiatives are shared with all staff and modelled to the highest of standards.

Homework

Maths homework is given by the class teacher on a weekly basis. At Benthal, each pupil is issued with a 'CGP Maths workbook' from which key concepts are set as further practice for homework. A maximum of four pages are set for a week period and pupils are expected to return their completed work by the deadline set by the class teacher. The work set should reflect current teaching in the class and should be treated as an opportunity for consolidation.

Additionally, children complete 'home learning projects' on a fortnightly basis, reflecting creativity and diverse thinking. Where possible, these projects should encompass Maths skills and encourage children to recognise a holistic and cross-curricular approach to learning Maths concepts.

Pupils are also encouraged to practise on an online platform in order to build fluency with particular concepts.