# MATHEMATICS POLICY

**September 2024**

Imagine, Believe, Achieve

***"Let us run the race before us and never give up"***
***Hebrews 12:1***

1. Curriculum Statement

Intent

The 2014 National Curriculum for Mathematics aims to ensure that all children:

- Become fluent in the fundamentals of Mathematics
- Are able to reason mathematically
- Can solve problems by applying their Mathematics

At Matlock Bath Holy Trinty, these skills are embedded within Mathematics lessons and developed consistently over time. We are committed to ensuring that children are able to recognise the importance of Mathematics in the wider world and that they are able to use their mathematical skills and knowledge confidently in their lives in a range of different contexts

We want all children to enjoy Mathematics and to experience success in the subject, with the ability to reason mathematically. We are committed to developing children's curiosity about the subject, as well as an appreciation of the beauty and power of Mathematics.

Implementation

The content and principles underpinning the 2014 Mathematics curriculum and the Mathematics curriculum at William Patten reflect those found in high-performing education systems internationally, particularly those of east and Southeast Asian countries such as Singapore, Japan, South Korea and China. These principles and features characterise this approach and convey how our curriculum is implemented:

- Teachers reinforce an expectation that all children are capable of achieving high standards in Mathematics.
- The large majority of children progress through the curriculum content at the same pace. Differentiation is achieved by emphasising deep knowledge and through adaptation, individual support and intervention.
- Teaching is underpinned by methodical curriculum design and supported by carefully crafted lessons and resources to foster deep conceptual and procedural knowledge.
- Practice and consolidation play a central role. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts.
- Teachers use precise questioning in class to test conceptual and procedural knowledge and assess children regularly to identify those requiring intervention, so that all children keep up.

To ensure consistency and progression, the school uses the White Rose Mathematics Scheme. New concepts are shared within the context of an initial related problem, which children are able to discuss in partners. This initial problem-solving activity prompts discussion and reasoning. In KS1, these problems are often presented with objects (concrete manipulatives) for children to use. Children may also use manipulatives in KS2. Teachers use careful questions to draw out children's discussions and their reasoning. The class teacher then leads children through strategies for solving the problem, including those already discussed. Independent work provides the means for all children to develop their fluency further, before progressing to more complex related problems. Mathematical topics are taught in blocks, to enable the achievement of 'mastery' over time. Each lesson phase provides the means to achieve greater depth, with more able children being offered rich and sophisticated problems, as well as exploratory, investigative tasks, within the lesson as appropriate.

Impact

The school has a supportive ethos, and our approaches support the children in developing their collaborative and independent skills, as well as empathy and the need to recognise the achievement of others. Students can underperform in Mathematics because they think they are unable to do it. The White Rose Scheme addresses these preconceptions by ensuring that all children experience challenges and success in

Mathematics by developing a growth mind set. Regular and ongoing assessment informs teaching, as well as intervention, to support and enable the success of each child.

1. Teaching and Learning

A typical lesson using White Rose Mathematics lasts approximately 1 hour. Children begin with a short activity, which supports fluency and recall of number facts. Following this, the main lesson begins with a task in which a contextual problem is shared for the children to discuss in partners. This helps promote discussion and ensures that mathematical ideas are introduced in a logical way to support conceptual understanding. In KS1, these problems are presented with objects (concrete manipulatives) for children to use. Children may also use manipulatives in KS2. Teachers use careful questions to draw out children's discussions and their reasoning and the children learn from misconceptions through whole class reasoning. Following this, the children are presented with similar problems, which they might discuss with a partner or within a small group. At this point, scaffolding is carefully reduced to prepare children for independent practice. This is the 'Think together' part of the lesson and the children might record some of their working out in their Mathematics books or on a mini whiteboard. The teacher uses this part of the lesson to address any initial errors and confirm the different methods and strategies that can be used. The children are then shown a 'challenge' which promotes a greater depth of thinking. The class then progress to the practice part of the lesson, which is designed to be completed independently. This practice uses conceptual and procedural variation to build fluency and develop greater understanding of underlying mathematical concepts. A challenge question and links to other areas of Mathematics encourages children to take their understanding to a greater level of depth. The final part of the sequence is an opportunity for children to review, reason and reflect on learning and enables the teacher to gauge their depth of understanding.

2. Assessment

2.1 Assessment for Learning:

-Children receive effective feedback through teacher assessment, both orally and through written feedback in line with the success criteria.

-Success criteria are shared with the children prior to independent work. The process based success criteria in Mathematics is linked directly to skills and knowledge required to complete the 'think together' part of the lesson and the independent practice tasks.

-At the end of the lesson, the children review their work against the success criteria as a means to identifying target areas and areas of weakness.

-The teacher, who also assesses the outcome against these criteria during marking, then verifies the children's judgements.

2.2 Formative Assessment:

Short-term assessments are part of each lesson.
Observations and careful questioning enable teachers to adjust lessons and brief other adults in the class if necessary.
The lesson structure of White Rose Mathematics is designed to support this process and the reflect task at the end of the each lesson also allows misconceptions to be addressed.
At the end of each blocked unit of work, the children complete a short end of unit check. This consists of five varied questions and an opportunity to demonstrate greater depth. There is a subsequent related task which allows for more open ended outcomes to give further indication of the depth of each child's understanding. The outcome of this mini assessment is in the children's Mathematics books. Marking and verbal feedback ensure that gaps in understanding can be addressed before the next unit is taught.

2.3Summative Assessment

Teachers administer a termly assessment paper (PUMA). These standardised test papers identify children's ongoing target areas. They contribute to inform the whole school tracking of attainment and progress for each child.

3. Planning and Resources

The use of Mathematics resources is integral to the concrete – pictorial – abstract (CPA) approach and thus planned into teaching and learning. The school has a wide variety of good quality equipment and resources, both tangible and ICT based, to support our learning and teaching. These resources are used to:

-Demonstrate or model an idea, an operation or method of calculation. Resources for this purpose would include: a number line; place value cards; dienes; money or coins; measuring equipment for capacity, mass and length; bead strings; the interactive whiteboards and related software; 3D shapes and/or nets; Numicon and related resources and software; multilink cubes; clocks; protractors; calculators; dice; number and fractions' fans; individual whiteboards and pens; and 2D shapes and pattern blocks, amongst other things

-Enable children to use a calculation strategy or method independently, by using any of the above or other resources as required.

Standard resources, such as number lines, multi-link cubes, dienes, hundred squares and counters are located within individual classrooms. Resources within individual classes are accessible to all children who should be encouraged to be responsible for their use. Further resources (often-larger items shared by the whole school) are located in the Mathematics storage in the hall. Resources to support teachers' own professional development and understanding of new approaches as part of a mastery approach are available on the White Rose Mathematics Scheme platform. As well as overviews of learning, these include CPD, example videos, which demonstrate new methods to ensure accuracy. High quality worksheets and supplementary resources as part of the national approach to teaching for mastery are used in each year group and a digital resources allows these to be shared with the class, during the main teaching. Teachers are encouraged to use the school playgrounds as an outdoor classroom when possible, for example, when teaching length, area or perimeter.

4. Organisation

The school has implemented a blocked curriculum approach to the teaching of Mathematics. This ensures that children are able to focus for longer on each specific area of Mathematics and develop a more secure understanding over time. This approach is also designed to enable children to progress to a greater depth of understanding. Subsequent blocks continue to consolidate previous learning so that the children continually practise key skills and are able to recognise how different aspects of Mathematics are linked. For example, when children have completed a block which has enabled them to master the multiplication of two digit numbers, a subsequent block on area and shape might provide opportunities to use this understanding when calculating the area of shapes with 2 digit length and width dimensions.

5. EYFS

Children have a short daily Mathematics teaching session, during which time they begin to develop their understanding of simple mathematical concepts such as counting to 20, maintaining 1 to 1 correspondence, simple addition and subtraction facts, to recognise and describe simple 2d and 3d shapes. Children learn these concepts using physical resources, pictorial resources, songs, games and role-play. There is no focus activity linked to these sessions. In Reception, children will follow the online aspects of the White Rose Mathematics curriculum materials becoming familiar with the format and presentation of the White Rose Mathematic resources. They will get to know the White Rose Mathematic character, Tine and use models, representations and vocabulary which are built upon in key stage 1 and 2.

6. KS1 and KS2

As acknowledged by the National Centre for Excellence in the Teaching of Mathematics (NCETM) and the Mathematics Hub programme – 'The use of well designed and tested textbooks is critical for the successful implementation of teaching for mastery. A good textbook is both an aid for the teacher in planning lessons and for the children during lessons and working on their own.'
Through Years 1 to 6 we use a coherent programme of high-quality materials and exercises, which are structured with great care to build deep conceptual knowledge alongside developing procedural fluency.

Our KS1 and KS2 teachers use resources and worksheets from the White Rose Mathematics series. This scheme is based on the principles of how Mathematics is taught in many high performing jurisdictions and aligned with the 2014 National Curriculum.
The White Rose Mathematics resources are arranged in topics, so that over the course of the academic year, all units of the 2014 National Curriculum are covered

In KS1, the initial teaching takes place on the carpet, with the teacher referring to the online version of the resources (children might go to tables for the 'Think Together' task, or to practise using concrete resources prior to independent task time so they are not on the carpet for too long). In KS2, children can also refer to White Rose Mathematics resources, whilst the teacher explains using the online version, during the main teaching activity. In KS1 and KS2, children record their work in a Mathematics book.

7. Equal Opportunities

The school is committed to ensuring the active participation and progress of all children in their learning; All children will be given equal opportunities to achieve their best possible standard, whatever their current attainment and irrespective of gender, ethnic, social or cultural background, home language or any other aspect that could affect their participation or the progress of which they are capable.

8 Inclusion

Taking a mastery approach, differentiation occurs in the support and intervention provided to different children, not in the topics taught, particularly at earlier stages. The National Curriculum states: 'Children who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.'
There is little differentiation in the content taught but the questioning and scaffolding individual children receive in class as they work through problems will differ, with higher attainers challenged through more demanding problems, which deepen their knowledge of the same content before acceleration onto new content. Difficulties and misconceptions are identified through formative assessment and addressed with rapid intervention. This takes the form of individual or small group support later the same day. A range of inclusion strategies, are embedded in practice and teachers are aware of the special educational needs of the children in their class.
Although the expectation is that the majority of children will move through the programmes of study at broadly the same pace, the 2014 National Curriculum states: 'Decisions about when to progress should always be based on the security of children's understanding and their readiness to progress to the next stage.' If a child's needs are best met by following an alternative plan, including coverage of the content from a previous year, this will be overseen by the SENDCo, in collaboration with the class teacher and with the knowledge of SMT. Specific arrangements for the provision of children with SEND will be communicated to parents and carers during SEND reviews.

9 The role of the Mathematics co-ordinator:

- To raise the profile of Mathematics at Matlock Bath Holy Trinity CofE Primary through best practice.
- Ensure that all staff have access to professional development including observations of outstanding practice in the subject.
- Model lessons, as appropriate to new staff, NQTs and peers to support continued professional development.
- Ensure the high quality of Mathematics displays around the school, present certificates of achievement during end of term assemblies and involve the school in 'celebrations' of Mathematics, including participation in events such as STEM.
- Support staff in providing opportunities for learning outside the classroom through links with the Mathematics hub. To identify and organise opportunities which enable this, as appropriate.
- Monitor progression and continuity of Mathematics throughout the school through learning walks

and regular monitoring of outcomes of work in Mathematics exercise books.

- Ensure that all staff have access to year group plans and the relevant resources.
- Work alongside the SENDCo and other school leaders to monitor children's progress through the analysis of whole school data. They will use this data to detail how standards in the subject are to be maintained and developed further.
- Audit and purchase central and class based Mathematics resources.
- Keep up to date on current developments in Mathematics education and disseminate information to colleagues.
- Extend relationships and make contacts beyond the school.
- Develop opportunities for parents/carers to become more involved in Mathematics education.
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10. Parents

We recognise that parents and carers have a valuable role to play in supporting their child's mathematical learning. An overview of the Mathematics curriculum is available on the school's website, as well as guidance in the progression in calculation methods used by the school.

Activities, which link to each Mathematics topic, are suggested for parents and carers to try at home with their child in each Reception newsletter.

Parents are informed of their child's progress at Parent's Evenings and in the annual end of year report.

Parents and carers are encouraged to speak to their child's Mathematics teacher at any point during the year, either informally or by making a specific appointment; information about their child's standards, achievements and future targets in Mathematics is shared during parent/carer meetings, as well as ways that parents/carers may be able to assist with their child's learning.