

Shakespeare Primary School

Mathematics Policy



To be reviewed: Annually

To go to: Curriculum Committee

Approved by Governors: September 2025



Challenge

Communication

Critical Thinking

Curiosity

- 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.

Implementation

All teachers follow a termly overview plan and are encouraged to design lessons using a range of resources, including, but not limited to, the White Rose Mathematics Scheme of Learning from the White Rose Mathematics Hub. A typical Mathematics lesson provides the opportunity for all children, regardless of their ability, to become confident and capable learners. We are committed to building on prior learning and enabling our children to demonstrate a deep, conceptual understanding of each topic that they can develop over time.

To provide adequate time for developing key skills in fluency, reasoning and problem solving, each class teacher will provide at least five daily mathematics lessons per week. This may vary in length but will usually last for about 45 to 60 minutes. Additional mathematics may be taught within other subject lessons when appropriate. Class teachers provide high quality mathematics lessons ensuring that there is emphasis on direct whole-class teaching, groups/partner work and independent work. We use a range of approaches (concrete, pictorial and abstract methods) following the White Rose scheme of work, teaching mathematical concepts through small steps. Staff are expected to teach and model correct mathematical language, which scaffolds children's reasoning and explanation skills – sentence stems are used to develop this.

EYFS

Using the Early Learning Goals and White Rose Mathematics materials, we ensure that key mathematical facts are taught. These include fundamental concepts such as number recognition, counting, and basic shapes.

EYFS and Key Stage 1

The 'Mastering Number' program covers essential facts and supports automaticity and overlearning, allowing pupils to internalise core mathematical concepts. Over the year, the children will experience using a range of resources and representations, including a small abacus-like piece of equipment called a rekenrek.

In Years 1 and 2, the focus of Maths is to ensure the children develop confidence and mental fluency with whole numbers, counting and place value. This often involves working with numerals, words and the four operations (+ - x ÷). The children should be precise in using and understanding place value and know number bonds to 20. The children also develop their ability to recognise, describe, draw, compare and sort different shapes. The children will use a range of measures to describe and compare different quantities (such as length, mass, capacity/volume, time and money).

Key Stage 2

Key mental skills, such as multiplication tables, are broken down into year-specific objectives. Tools like 'Times Tables Rockstars' are used to improve pupils' efficiency and fluency in recalling number facts.

By the end of Year Four, pupils are expected to have memorised their multiplication table up to and including the 12 times table and be able to show precision and fluency in their work.

In Years 3 and 4, the focus is to ensure the children become increasingly fluent with whole numbers and the four operations (including number facts and place value). Pupils begin to develop efficient written and

mental calculations with increasingly large whole numbers. They begin to develop their ability to solve a range of problems, including simple fractions and decimal place value. The children develop mathematical reasoning to help them analyse shapes and their properties and confidently describe their relationships.

In Years 5 and 6, the focus of Maths is to ensure that children extend their understanding of the number system and place value to include larger integers. Pupils should be able to make connections between multiplication and division with fractions, decimals, percentages and ratio. Children should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems that demand the use of efficient written and mental methods of calculation. Children are introduced to algebra as a means for solving a variety of problems. The children's understanding and knowledge in geometry and measures consolidates and extends the knowledge they have developed in number; children should be able to classify shapes with increasingly complex geometric properties, using the vocabulary they need to describe them with accuracy and confidence.

Throughout our mathematics curriculum, we endeavour to establish threads that run through all lessons, whether that be individual lessons, topic blocks or year groups. Establishing threads enables learners to connect previous learning to their current learning and establish familiar patterns which leads to deeper mathematical knowledge. Throughout each mathematics topic, we establish three common concepts; declarative, procedural and conditional.

Declarative Mathematics

Declarative mathematics refers to the factual knowledge and basic concepts that form the foundation of mathematical understanding. This includes knowing number facts, mathematical terminology, symbols, and basic arithmetic operations. Declarative knowledge is crucial for quick recall and accuracy in problem-solving, enabling pupils to apply their knowledge effortlessly in various contexts.

Procedural Mathematics

Procedural mathematics involves the methods and algorithms used to solve mathematical problems. It encompasses the steps required to perform calculations, such as column addition and subtraction, and the procedures for solving equations or geometric constructions. Mastery of procedural knowledge allows pupils to tackle mathematical tasks systematically and efficiently, ensuring that they can apply their understanding in a wide range of situations.

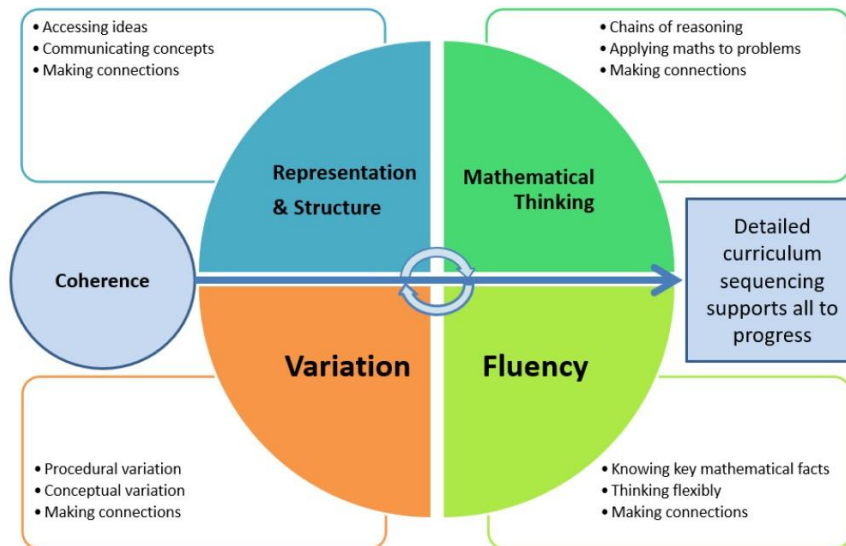
Conditional Mathematics

Conditional mathematics is the application of declarative and procedural knowledge in different contexts. It requires pupils to determine which mathematical procedures to use and how to adapt their approach based on the specific problem at hand. This aspect of mathematics is essential for higher-order thinking, problem-solving, and the ability to transfer mathematical skills to real-world scenarios.

Mathematics Mastery

At Shakespeare Primary School, the teaching of Mathematics is focused around a 'Mastery' approach. Our vision for Mathematics is underpinned and informed by the research evidence conducted by the National Centre for Excellence in the Teaching of Mathematics (NCETM), who have developed 'Five Big Ideas' to bind together the various disciplines in the development of mathematical competence.

Teaching for Mastery

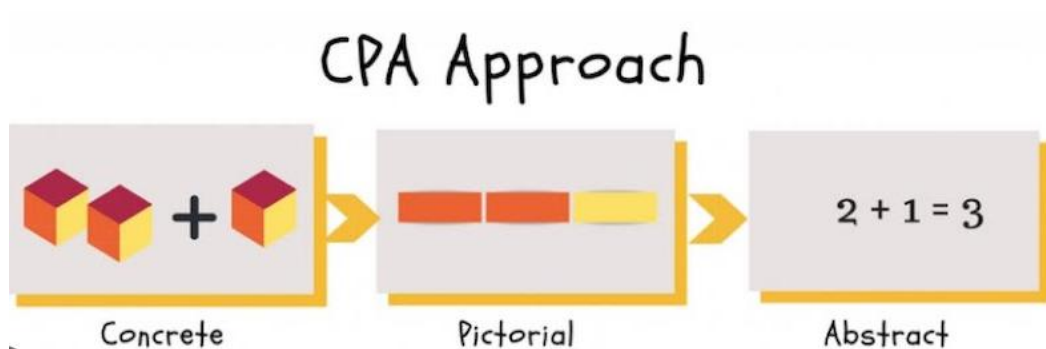


Coherence

Our Mathematics curriculum is sequenced in a manner, which allows for coherent learning progression through the curriculum. At Shakespeare we use the White Rose Mathematics progression steps, where each mathematical topic is broken down into 'small steps', which provides access for all pupils to develop a deep and connected understanding of mathematics that they can apply in a range of contexts.

Representation and Structure

Before any deep mathematical learning can take place, it is vital that children can 'see' the mathematics before they can 'do' the mathematics. At Shakespeare, our children are guided through this using the concrete-pictorial-abstract approach (CPA).



Using key representations in this manner, allows the children to 'see' the mathematical concept before 'doing' and allows these representations to become mental images that pupils can use when thinking about mathematics, supporting them to achieve a deep understanding of mathematical structures and connections.

Mathematical Thinking

Developing mathematical thinking is a key skill in achieving a deep understanding of mathematics. At Shakespeare, our pupils are given regular opportunities to develop their mathematical thinking through dialogue with each other, where they are able to discuss their thoughts, share opinions and reflect on taught concepts. They are also provided with a variety of tasks that are aimed to apply the taught concept

in a wide array of reasoning and problem-solving tasks that make connections between the taught concept and others previously taught.

Fluency

Fluency is a key skill that allows pupils to have the flexibility to move between different contexts and representations of mathematics, to recognise relationships and make connections, and to choose appropriate methods and strategies to solve problems. At Shakespeare, we believe that these skills are underpinned by arithmetical automaticity of key number facts. Beginning in EYFS and continuing until the end of Key Stage 1, our pupils take part in the NCETM's 'Mastering Number' programme, a daily lesson which promotes automaticity in a wide variety of key mathematical concepts. The aim of this is to encourage automaticity in the pupils' understanding key concepts such as, bonds within 10 and addition and subtraction facts within 20. In Key Stage 2, we have developed a mental arithmetic progression grid, where each year group has a series of key arithmetical skills which are taught daily.

Variation

The purpose of variation is to draw closer attention to a key feature of a mathematical concept or structure through varying some elements while keeping others constant.

- Conceptual variation involves varying how a concept is represented to draw attention to critical features. Often more than one representation is required to look at the concept from different perspectives and gain comprehensive knowledge.
- Procedural variation considers how the student will 'proceed' through a learning sequence. Purposeful changes are made in order that pupils' attention is drawn to key features of the mathematics, scaffolding students' thinking to enable them to reason logically and make connections. Through the use of the White Rose materials, pupils are exposed to variation in each small step.

White Rose Mathematics

White Rose Mathematics is a comprehensive scheme that supports the teaching of a mastery curriculum. It breaks down the UK National Curriculum into small, manageable steps, ensuring that pupils have a deep understanding of each concept before moving on. The scheme promotes a balance of declarative, procedural, and conditional knowledge, aligning closely with the principles of mathematical mastery.

White Rose Mathematics provides a structured progression through mathematical topics, with each unit building on previous learning. The scheme emphasises depth over speed, encouraging pupils to explore concepts thoroughly and from multiple angles. The use of varied representations and real-world problems helps pupils see the relevance of mathematics and apply their knowledge in different contexts.

White Rose Mathematics breaks down the National Curriculum objectives into weekly and termly blocks, ensuring that all required content is covered systematically. It provides detailed lesson plans, assessment materials, and additional resources to support teachers in delivering high-quality mathematics instruction. This structured approach ensures that pupils at Shakespeare Primary School are consistently exposed to the full range of mathematical concepts and skills required by the National Curriculum, while also allowing for flexibility to revisit and reinforce key ideas as needed.

Vocabulary

At Shakespeare, we recognize that a strong grasp of mathematical vocabulary is crucial for students to develop a deep understanding of key concepts and communicate their ideas effectively. We emphasize the consistent use of precise mathematical language in all lessons, encouraging students to articulate their thinking clearly. Teachers will introduce and reinforce specific terms during instruction, using visual aids,

working walls and regular practice to help students internalise this vocabulary. By engaging with mathematical language in various contexts—such as discussions, problem-solving activities, and written work—students will build confidence in using the correct terminology, which will support their overall mathematical development.

Assessment in Mathematics

Pre-teach assessments are used to gauge pupils' prior knowledge and readiness for new content. These assessments help teachers identify any gaps in understanding that may need to be addressed before introducing new concepts. At Shakespeare Primary School, pre-teach assessments are a vital tool for ensuring that all pupils start each new topic with the necessary foundation to succeed.

Regular low-stakes quizzes provide ongoing opportunities for pupils to consolidate their learning and for teachers to monitor progress. These quizzes are designed to be stress-free and formative, allowing pupils to reflect on their understanding without the pressure of high-stakes testing. They are an essential part of our approach to developing fluency and ensuring that knowledge is retained over time.

End of topic assessments provide a more formal measure of pupils' understanding of specific mathematical concepts. These assessments allow teachers to evaluate how well pupils have mastered the material and to identify areas where further instruction may be needed. At Shakespeare Primary School, these assessments are used to inform planning and to ensure that any gaps in understanding are addressed promptly.

End of term assessments offer a summative overview of pupils' progress across a range of mathematical topics. These assessments help to track long-term progress and identify trends or patterns in pupil achievement. The results of these assessments are used to inform interventions and to provide targeted support where necessary, ensuring that all pupils are on track to meet or exceed national expectations.

Culture and Ethos

We are committed to fostering a positive and inclusive culture around mathematics. We believe that every child is capable of achieving success in mathematics and that a growth mindset is essential for overcoming challenges and building resilience.

We actively encourage a growth mindset in all our pupils, emphasising that mathematical ability is not fixed and that effort and perseverance are key to improvement. Mistakes are seen as valuable learning opportunities, and pupils are encouraged to take risks and try new strategies without fear of failure. This ethos is reinforced through praise for effort, persistence, and creative problem-solving.

Collaboration is a key component of our mathematics culture. Pupils are regularly given opportunities to work together, share ideas, and learn from one another. Group work, paired tasks, and mathematical discussions are integral to our approach, helping to build a sense of community and mutual support in the classroom. This collaborative environment not only enhances understanding but also fosters a love for mathematics as pupils engage in shared problem-solving and exploration of concepts.

Supporting SEND Pupils (and those that require additional support) in Mathematics

At Shakespeare Primary School, we are committed to ensuring that all pupils, including those with Special Educational Needs and Disabilities (SEND), can achieve success in mathematics. Our approach is centered on helping pupils to keep up with their peers, rather than catching up, by providing timely and targeted support that is integrated into everyday classroom practice.

Our teaching practices are inclusive by design, with lessons planned to meet the diverse needs of all pupils. Differentiation is embedded in our approach, with tasks and resources adapted to ensure that every pupil

can access the learning. For example, we might use manipulatives for pupils who benefit from a concrete understanding of concepts, or provide visual aids and scaffolded tasks to support those who need additional help. By anticipating and addressing the varied needs of our pupils, we create an environment where every child can succeed.

For pupils who require additional support, we provide targeted interventions that are closely aligned with classroom learning. These interventions might be delivered in small groups or on a one-to-one basis, focusing on specific areas of difficulty identified through ongoing assessment. Our aim is to ensure that interventions are proactive and preventive, helping pupils to keep pace with their peers by addressing gaps in understanding as they arise.

We work closely with SEND specialists, including the school's Special Educational Needs Coordinator (SENCO) and external professionals, to ensure that our approach to mathematics is inclusive and effective. This collaboration ensures that we are using the best strategies and resources to support our SEND pupils, and that we are continually refining our practice based on the latest research and guidance. By working together, we ensure that all pupils, regardless of their individual needs, have the opportunity to succeed in mathematics.

Monitoring

The mathematics lead and SLT are responsible for monitoring the standard of pupil's work, the quality of the teaching and evaluating impact. The work of the team involves supporting colleagues in the teaching of mathematics, being aware of current developments in the subject. The mathematics subject leader provides a strategic lead and direction for the subject in the school so that it remains high profile. The effectiveness of our mathematics curriculum is measured through a variety of methods:

- SLT quality assurance (observations, work scrutinies, moderation)
- Data evaluations
- Pupil voice conversations
- Staff performance management discussions
- Governor visits
- Advisor quality assurance

Impact

The overall impact of our mathematics is that at the end of Key Stage 2 our pupils achieve and make progress in line with other pupils nationally, evident through:

- Fluency in their recall of key number facts and procedures
- Accuracy in the formal calculation methods for all four operations
- The flexibility and fluidity to move between different contexts and representations of mathematics.
- The ability to recognise relationships and make connections in mathematics
- The confidence and resilience to reason mathematically and solve a range of problems.