Maths at Shenley Primary School

Intent

The intent of our maths curriculum is to develop confident, resilient, and curious learners who are equipped with the knowledge and skills to succeed in their education and beyond. We intend for all pupils to build a deep, secure understanding of mathematical concepts and to appreciate the relevance of mathematics in everyday life. Through our curriculum, we promote our school values of self-belief**,** encouraging pupils to approach challenges with confidence; aspiration**,** inspiring them to achieve their full potential; and respect**,** valuing different approaches, ideas and perspectives in mathematics. We intend to foster a lifelong enthusiasm for maths by encouraging pupils to think logically, reason systematically, and solve problems creatively. Our curriculum is designed to instil a sense of curiosity and independence, enabling pupils to take risks, learn from mistakes, and support one another in their learning journey. By working collaboratively, pupils develop teamwork**,** recognising the importance of learning with and from others, while demonstrating strength in kindness through encouragement, empathy and perseverance, creating a positive learning environment where everyone can flourish.

Curriculum

Our curriculum intent is rooted in a mastery approach that ensures pupils:

- Become fluent in the fundamentals of mathematics, with rapid and accurate recall of key facts to prevent cognitive overload during problem-solving.
- Develop reasoning skills and apply mathematical understanding in a range of contexts, including open-ended investigations.
- Build rich connections across mathematical ideas to support fluency, and deeper learning.
- Use precise mathematical language to explain, justify, and explore their thinking.

We intend to introduce concepts through concrete, pictorial and abstract representations (CPA approach), ensuring that pupils build conceptual understanding before moving to formal methods.

Inclusion

We intend for maths to be accessible to all learners, regardless of background or ability. Our inclusive approach ensures that every pupil is effectively supported and challenged to reach their full potential, using adaptive strategies. We intend to create a classroom climate where mistakes are respected as part of the learning process and where perseverance and collaboration are actively encouraged.

Cross-Curricular opportunities

We intend for pupils to apply their mathematical knowledge across the wider curriculum, including science, design and technology, and computing. This cross-curricular intent reinforces the importance of mathematics as a foundational skill and supports the development of transferable competencies.

Personal Development

We intend to nurture pupils who believe in themselves as mathematicians. Our intent is to build independence, confidence, and resilience by encouraging pupils to work both independently and collaboratively. We also intend to expose pupils to the work of significant mathematicians from diverse backgrounds, helping them to see maths as a subject that is both inclusive and impactful. We aim to get involved with maths opportunities beyond the classroom including Maths Masters tournaments and enterprise events.

Outcomes
By the end of their primary education, our intent is that pupils will:

- Demonstrate fluency, reasoning, and problem-solving competence.
- Apply mathematical knowledge confidently across subjects and in real-life situations.
- Communicate mathematically with clarity and precision.
- Be well-prepared for the next stage of their education and future employment.

We intend to deliver a maths curriculum that inspires, challenges, and equips all pupils for lifelong success.

Implementation

The implementation of our maths curriculum is structured to ensure consistency, depth, and progression across all year groups. We deliver a mastery-based approach that is responsive to pupil abilities and needs. We also have a Mental Maths Curriculum Map which runs alongside maths teaching.

Planning and Pedagogy

EYFS follows the NCETM Reception programme. This programme includes the full curriculum (number and spatial reasoning) required for enabling children to meet the Early Learning Goals.

In Key Stage 1 and Key Stage 2, teachers use White Rose Maths as a springboard for planning. They follow the long-term overview and the sequential 'Small Steps' to ensure full curriculum coverage and logical progression. Each Small Step is carefully considered and transformed into a clear learning intention, supported by example questions from the White Rose Scheme of Learning, and supplemented with high-quality questions from additional resources, or created by the teacher. Planning is guided by the Concrete–Pictorial–Abstract (CPA) approach, ensuring that pupils build secure conceptual understanding through hands-on experiences, visual representations, and abstract methods. Teachers use the 'I do, we do, you do' model to structure lessons - beginning with explicit instruction, followed by guided practice, and culminating in independent application. They apply the 'build it, draw it, write it, say it' model to support children in understanding mathematical processes.

Teachers select the most appropriate resources to meet the needs of their cohort, drawing from White Rose, NCETM, NRICH, and other high-quality programmes. Worked examples are modelled using teacher books and visualisers (also at times on sugar paper or the interactive whiteboard), to demonstrate clear layout and expectations.

Lesson Structure

Each week includes daily maths lessons with opportunities to develop fluency, reasoning, and problem-solving. During the 'I do, we do, you do' phases, questions are selected for their quality rather than quantity, ensuring that pupils engage deeply with the mathematical ideas and processes.

Extra maths booster sessions take place during the week for children in Key Stage 1 and 2. We use the NCTEM Mastering Number materials to continue to secure additive fluency in years 1, 2 and 3.

The intended outcomes for the NCETM Mastering Number programme (Reception to Year 3) are for children to:

- Develop fluency in calculation and a confidence and flexibility with number that exemplifies good number sense
- Make good progress towards the Early Learning Goals and year group expectations

In line with Dfe Mathematics Guidance, the NCETM Mastering Number programme focuses on number facts, securing this knowledge, and additive relationships.

By the end of Year 3, we aim for all pupils to:

- Have secured fluency in additive facts within and across 10
- Be able to apply facts within 10 to addition and subtraction calculations within 100
- Understand the additive relationship and connect this to the part-part-whole structure

From Year 4 to Year 6, our school's Mental Maths curriculum is followed during extra maths booster sessions.

Early Years Foundation Stage
In the Early Years Foundation Stage (EYFS), mathematical learning is guided by the Development Matters framework and the Early Learning Goals (ELGs) outlined in the EYFS profile. The mathematics curriculum focuses on two key areas: 'Number' and 'Shape, Space and Measures'.
In the Early Years Foundation Stage, maths is delivered through a topic-based curriculum that supports early conceptual development. We implement the NCETM Reception Mastering Number programme (which includes spatial reasoning) to build strong foundations. Children encounter mathematics through planned activities and child-led exploration, with high-quality resources available across the learning environment.

Children are provided with rich opportunities to develop and refine their skills in counting, comparing quantities, solving simple addition and subtraction problems, and exploring spatial relationships. Learning is embedded through purposeful play, structured activities, and meaningful interactions, both indoors and outdoors. Practitioners observe and assess progress continuously, using children's interests to shape next steps and ensure that mathematical development is both engaging and appropriately challenging.

Mathematical learning in EYFS is evidenced through floor books and Tapestry, capturing both group and individual progress in a rich and meaningful way.

Key Stage 1
Lesson starters are called *Flashbacks*. These are 5 – 10 minutes long, and used five times per week to consolidate prior learning and address misconceptions. Flashbacks are informed by teacher assessments and respond to teaching and assessments, including observations from the previous lesson, White Rose end-of-unit assessments, and White Rose end-of-term assessments.

In Year 1 and Year 2, pupils receive an additional mathematics session three - four times per week using the NCETM Mastering Number programme which focuses on developing factual fluency for additive facts.

Daily maths lessons follow the White Rose Maths framework, with teachers adapting content to meet the needs of their cohort.

Manipulatives and the CPA approach are embedded throughout lessons to support conceptual understanding and scaffold learning.

Children use individual maths books to record their learning. These books serve not only as a record of progress but also as a revision tool, allowing pupils to revisit and reflect on previous work to support long-term retention and independence.

Key Stage 2
Lesson starters are called *Flashbacks*. These are 5 – 10 minutes long, and used five times per week to consolidate prior learning and address misconceptions. Flashbacks are informed by teacher assessments and respond to teaching and assessments, including observations from the previous lesson, White Rose end-of-unit assessments, and White Rose end-of-term assessments.

In Key Stage 2, pupils continue to follow the White Rose Maths framework, with lessons structured around sequential small Steps that build towards curriculum outcomes. Teachers use professional judgement to adapt pacing and content, ensuring all pupils are appropriately challenged and supported.

Manipulatives and the CPA approach are embedded throughout lessons to support conceptual understanding and scaffold learning.

Children use individual maths books to record their learning. These books serve not only as a record of progress but also as a revision tool, allowing pupils to revisit and reflect on previous work to support long-term retention and independence.

In Year 3, pupils receive an additional mathematics session three - four times per week using the NCETM Mastering Number programme which focuses on factual fluency for additive facts. Across the year, some sessions are for the whole class whilst others may be for small groups of children.

Daily maths lessons follow the White Rose Maths framework, with teachers adapting content to meet the needs of their cohort.

In Year 4, pupils receive an additional mathematics session three - four times per week which follows our school's Mental Maths Curriculum and also focuses on multiplication automaticity.

In Year 5 and Year 6, pupils receive an additional mathematics session three - four times per week following our school's Mental Maths Curriculum.

Assessment and Feedback

Assessment is integral to our implementation strategy.

In Nursery, we use the Development Matters non-statutory guidance to support Early Years practitioners in identifying children's starting points and use observations check points to ensure children are on track.

In Reception, the NCETM assessment resources are used to assess the full Reception maths curriculum, identifying and addressing gaps. The Reception Baseline is completed within the first 6 weeks of the child joining school and the Early Years Foundation Stage Profile is completed during the summer term.

In Key Stage 1, the NCETM assessment resources are used to assess additive facts, identifying and addressing gaps.

In Key Stages 1 and 2, we use White Rose end-of-unit and end-of-term assessments to monitor progress and inform planning. Teachers also use formative assessment throughout each lesson and unit to identify gaps and adjust instruction accordingly.

Live marking and responsive teaching takes place during each lesson, focusing on correction, consolidation and challenge. Teachers use green pen when marking work and providing these opportunities for children to respond.

Whole class feedback is given when appropriate to address common misconceptions.

Children in Year 4 complete the statutory Multiplication Tables Check and children in Year 6 complete the statutory maths SAT test.

Inclusion and Support
Our implementation is inclusive and ensures all pupils can access the full mathematics curriculum. Scaffolding and adaptive strategies help pupils to keep up and build confidence.

Teaching and Leadership
Teachers are supported with dedicated planning time, high-quality resources and CPD opportunities. Planning includes:

- Precise questioning to assess conceptual and procedural understanding
- Strategic use of manipulatives to scaffold learning
- Low-stakes quizzes to aid retrieval and reduce cognitive load
- Tasks that promote reasoning and deepen understanding

The Maths Subject Leader monitors implementation through book looks, learning walks, shared planning, staff training, and modelled teaching. Participation in local maths networks and specialist training ensures leadership remains informed by current best practice.

Home Learning and Parental Engagement
We implement a strong partnership with parents through workshops, curriculum information, and online platforms such Times Table Rockstars. Weekly home learning consolidates classroom teaching and supports fluency in key facts.

Ethos and Enrichment
Mathematics teaching is closely linked to our school's values-based ethos. Mistakes are respected as part of the learning process, and a growth mind-set is actively promoted.

Impact

As a result of our maths curriculum, pupils will:

- Work systematically to solve problems, providing clear explanations and justifications for their reasoning.
- Demonstrate the confidence and resilience to ask questions and seek clarification when faced with challenging tasks.
- Appropriately use subject-specific mathematical vocabulary in both verbal and written explanations.
- Feel valued and supported by peers and staff, fostering a strong belief in their ability to succeed in mathematics.
- Engage in meaningful mathematical dialogue and apply mathematical thinking to real-world contexts.
- Develop a secure understanding of the four operations and confidently apply a range of taught strategies.
- Speak with confidence about mathematical concepts and draw inspiration from influential mathematicians, past and present.
- Achieve fluent and rapid recall of number facts and multiplication tables.
- Cultivate inquisitive minds, taking intellectual risks and embracing challenge both independently and collaboratively.
- Transition to secondary education with a strong foundation in mathematics and the skills required for continued success.

Adaptive teaching

We use adaptive teaching strategies in maths lessons. Adaptive teaching is a twofold approach in which prior to teaching, teachers identify potential barriers to learning through effective planning, and then during teaching, continually modify their instruction based on ongoing assessment and feedback, responding to pupils' learning needs in real time. Unlike traditional differentiation, which often involves pre-planning different tasks for different ability groups, adaptive teaching is more dynamic and responsive.

At its core, adaptive teaching:

- Maintains high expectations for all pupils at both planning and teaching stages.
- Uses formative assessment continuously in responding to evidence of pupil learning as it emerges.
- Adjusts teaching strategies in the moment based on pupil progress and need.
- Focuses on developing pupil autonomy, agency and metacognition.
- Treats the learning environment as flexible and evolving.

(The National College)

Adaptive strategies could include:

- Proactive Planning: Anticipate potential barriers to learning, plan targeted responses, use assessment to gather evidence of progress, and make real-time instructional adjustments.
- Explicit Instruction: Provide clear, direct teaching of concepts and procedures.
- Cognitive and Metacognitive Strategies: Encourage learners to reflect on their thinking and learning processes.
- Scaffolding: Offer structured support to guide learners toward independence.
- Flexible Grouping: Organise learners into varied groupings based on need, task, or learning style – these evolve and change.
- Integration of Technology: Use digital tools to enhance engagement and accessibility.
- Unified Learning Tasks: Where feasible, ensure all learners engage with the same core material. Tasks should not be differentiated by content but should vary in complexity and depth.
- Questioning: questions can deepen understanding and guide learning, helping teachers adjust their teaching in real time.
- Pre-Teaching: Introduce key vocabulary and concepts in advance to support learners' understanding.
- Accessible Resources: Design worksheets that are clear, uncluttered, and manageable to prevent cognitive overload.

- Game-Based Learning: Use games to reinforce new or challenging concepts in an engaging way.

- Targeted Support: Provide additional input before lessons for learners requiring extra help. Use focused group work and offer repeated practice opportunities.

- Visual and Kinesthetic Aids: Incorporate visuals and physical actions to reinforce word meanings and concepts.

- Concrete Materials: Use manipulatives such as beads, strings, and counters to support conceptual understanding.

- Effective Use of Support Staff: Deploy additional adults strategically to maximize learning impact.

- Fluency Practice: Encourage learners to rehearse fluency skills beyond the core subject lessons.

- Environmental Print: Display key vocabulary around the classroom and refer to it regularly. Rephrase questions when needed to aid comprehension.

- Working Walls: Maintain displays that reflect current learning, support learning and aid retention.

- Visual Problem-Solving: Allow learners to draw representations to clarify their understanding.

Challenge is provided through depth rather than acceleration, with pupils encouraged to apply learning in varied contexts and make connections across concepts. Pupils working above expectations are offered enrichment opportunities, including extra-curricular competitions and investigative challenges.

Oracy

Our maths curriculum places a strong emphasis on oracy as a key component of mathematical understanding and communication. We are committed to developing learners' ability to articulate mathematical thinking, reason verbally, and engage in meaningful mathematical dialogue.

To support this, we embed principles from the National Centre for Excellence in the Teaching of Mathematics (NCETM)'s *Oracy in Mathematics Framework*, which include:

- Pupils' ability to express themselves and to modify their thinking through interaction with others (their peers and teacher) are key mathematical learning behaviours.
- Peer-to-peer dialogue and discussions engage all pupils in co-constructing knowledge, making connections, and deepening understanding.
- Oracy in the maths classroom allows pupils to develop their sense-making, both as they explore new ideas and as they present their current thinking. Teachers' understanding of oracy is a key aspect of their specialist knowledge for teaching for mastery.
- Teachers need to know how to create opportunities for pupil talk, be skilled in noticing significant pupil talk, and adapt lessons accordingly.
- The teacher listens to and extends purposeful dialogue in a coherent manner to develop learning.

<u>Lesson design:</u>

- Maths lessons reflect sequenced learning that is connected, for reasons which are made explicit and discussed during the lesson and understood by all.
- Teachers 'think out loud' - a strategy where a teacher verbally narrates their thought process while solving a problem or completing a task, making invisible mental steps visible to pupils.
- Sentence stems are used as they are a simple and effective technique for scaffolding pupil talk by supporting them to start a sentence.
- There is clear maths vocabulary progression – children are shown, taught and encouraged to use these words accurately.
- The teacher plans questions and opportunities for communication that advance the learning.
- Pupil responses are anticipated so that they can be addressed in the lesson design.
- Representations are used to promote noticing and play a key role in seeing and talking about mathematical relationships.
- Oracy in maths - requires pupils to be fluent in the language of maths (connected to the vocabulary progression), and to be able to read meaning into symbolic representations.
- Teachers design or adapt tasks which stimulate talk that harnesses learning and deepens understanding. As part of practice, pupils should have opportunities to verbalise their thinking and justify how and why.

In the classroom:

- The teacher skilfully manages the discourse to address a clear learning point.
- Based on what they hear pupils say, and drawing on their own specialist knowledge, they guide pupils' focus and support the building of concepts in a coherent manner.
- All pupils should have opportunities to engage in collaborative problem-solving and reasoning where dialogue is used to enable conjecture, listening to others' ideas, asking questions, and developing logical arguments.
- Teaching of precise mathematical language requires teachers to explicitly plan for the introduction and use of domain-specific language, relating mathematical vocabulary to conceptual meaning.
- It is important that the meaning of words used is well understood – this shared understanding cannot be assumed and is not necessarily present just because particular words are used.
- Communication is an effective tool for formative assessment, as it enables teachers to plan teaching to build on pupils' current conceptions of maths as the lesson progresses.
- Teachers design opportunities for pupils to communicate and to listen to what is said.
- This in-the-moment formative assessment directly informs teachers' adaptive teaching on how to move the learning forward to the intended learning point.