



## Mathematics at Greenside

### Intent

At Greenside, our goal is for pupils to develop a **deep and lasting mastery of mathematics** through a Concrete, Pictorial and Abstract (CPA) approach. We want children to develop fluency, mathematical reasoning and precise use of mathematical language, alongside a passion for the subject and the resilience to persevere when mathematics is challenging.

Our mathematics curriculum is carefully sequenced so that pupils build secure knowledge over time, revisit and connect previous learning, and apply their understanding in increasingly varied and unfamiliar contexts. We want children to do more than learn mathematical facts and procedures. We want them to become confident mathematicians who understand **what they are doing, why it works and when they can use it**.

For us, mathematical mastery means that pupils develop sufficiently secure understanding to **use, connect and apply their mathematical knowledge flexibly**, rather than simply being able to recall a procedure.

Our approach is built around four key stages:

### **Practise → Apply → Reason → Deepening Understanding**

Through carefully structured practice, retrieval and repetition, pupils develop fluency and secure foundational knowledge. They then apply their learning to different questions, representations and contexts, before reasoning mathematically by explaining, justifying, questioning and making connections. Once understanding is secure, pupils are encouraged to deepen their thinking through more complex problems, multiple methods and solutions, identifying errors, making connections and applying their knowledge in unfamiliar situations.

We recognise that pupils may require different amounts of time and different forms of support to secure understanding. Our curriculum therefore aims to provide appropriate reinforcement and scaffolding while maintaining high expectations for all. For pupils with SEND, we adapt representations, resources, vocabulary, repetition and scaffolds to remove barriers, develop independence and enable pupils to access an ambitious mathematical curriculum.



Ultimately, we want pupils to leave Greenside as **fluent, confident and resilient mathematicians** who have mastered key mathematical concepts and can think mathematically, explain their ideas, solve problems, make connections and apply their knowledge independently.

## Implementation

Our mathematics curriculum begins in the **Early Years Foundation Stage**, where children develop the foundations of mathematical understanding through purposeful experiences, exploration, practical activities and daily adult-led teaching. The EYFS curriculum, NCETM and White Rose approaches support the development of the mathematical knowledge and vocabulary children need as they progress into Key Stage 1.

From Year 1 onwards, our curriculum is structured around the **White Rose Mathematics** overviews, aligned with the National Curriculum and informed by **mathematical mastery principles** and the **NCETM Ready to Progress criteria**. Learning is carefully sequenced so that new knowledge builds on prior learning, with regular opportunities to revisit, practise, consolidate and make connections between mathematical concepts.

Teachers use the **Concrete, Pictorial, Abstract (CPA)** approach to develop conceptual understanding. Concrete resources and practical experiences help pupils explore mathematical ideas; pictorial representations support them to make connections and visualise concepts; and increasingly abstract representations and notation enable pupils to develop fluency and independence.

Lessons provide opportunities for pupils to move through our **Practise → Apply → Reason → Deepening Understanding** approach. Teachers use modelling, questioning, discussion and carefully chosen examples to develop understanding and identify misconceptions. Pupils are encouraged to explain their thinking, justify their answers and use precise mathematical vocabulary, with questions such as "**How do you know?**" used to develop mathematical reasoning and communication.

Practice is purposeful and includes opportunities for retrieval and repetition so that important knowledge becomes increasingly secure and fluent. Where pupils require further reinforcement, teachers adapt teaching, provide targeted practice and revisit foundational knowledge. Pupils who demonstrate secure understanding are given opportunities to deepen their thinking, make connections and apply their knowledge in increasingly sophisticated and unfamiliar contexts rather than simply moving on to new content.



Problem solving and application are embedded throughout the curriculum. Pupils encounter different representations, questions and contexts that encourage them to select and use appropriate mathematical knowledge and develop flexibility in their thinking.

Our **calculation policies** support a consistent developmental approach to addition, subtraction, multiplication and division, with CPA representations used to build understanding before pupils progress towards efficient formal methods.

Planning identifies the key mathematical knowledge, objectives and vocabulary for each period of learning. Teachers use ongoing assessment to identify gaps and misconceptions and adapt teaching accordingly. The Ready to Progress criteria and other assessment information support teachers in identifying essential knowledge that pupils need to secure before progressing.

For pupils with SEND, teachers use appropriate adaptations, representations, resources, scaffolds and repetition to remove barriers while maintaining high expectations. Support is carefully considered so that pupils develop increasing independence rather than becoming reliant on scaffolding.

Pupils' mathematical work is presented carefully and consistently, supporting clear mathematical communication and the development of good mathematical habits. Teachers provide feedback and address misconceptions as part of the learning process, in line with the school's feedback and marking expectations.

## **Impact**

The impact of our mathematics curriculum is seen in pupils' **secure and increasingly flexible mathematical understanding**. We want pupils to retain important knowledge over time, make connections between mathematical ideas and use their understanding confidently to solve problems and reason mathematically.

We evaluate the impact of our curriculum through a range of evidence rather than relying on assessment data alone.

## **Assessment and Progress**

Teachers use ongoing formative assessment, end-of-unit assessments and termly assessment information to make informed judgements about



pupils' knowledge and understanding. Assessment identifies gaps and misconceptions and informs subsequent teaching, intervention, retrieval and opportunities for consolidation.

### **Book Looks**

Reviewing pupils' books enables us to see how knowledge and skills develop over time and whether pupils are moving from fluency and application towards increasingly sophisticated reasoning and deeper understanding. Books provide evidence of the use of representations, mathematical vocabulary, problem solving and pupils' ability to explain and justify their thinking.

### **Lesson Visits, Learning Walks and Observations**

Observations and learning walks allow leaders to evaluate how effectively the mathematics curriculum is being implemented. We look at the quality of mathematical explanations, modelling, questioning, use of CPA representations, opportunities for reasoning and problem solving, and how teachers respond to pupils' understanding.

### **Pupil Voice**

Through conversations with pupils, we explore whether children can explain what they are learning, articulate their mathematical thinking, use appropriate vocabulary and describe different methods or representations. We look for pupils who can explain **what they are doing, why it works and when they can use it**.

### **Staff Voice and Professional Development**

Discussion with teachers and support staff helps leaders understand how consistently the curriculum is being implemented, where further professional development is needed and how effectively teachers are responding to pupils' needs.

### **Curriculum and Policy Review**

The mathematics curriculum and associated policies are reviewed regularly to ensure that sequencing, progression, teaching approaches and assessment remain effective and reflect current best practice.

### **Pupil Outcomes**

End-of-year outcomes, internal assessment information and statutory assessment results provide additional evidence of pupils' attainment and progress. These are considered alongside the wider evidence of pupils' mathematical understanding rather than in isolation.



Ultimately, the impact of our mathematics curriculum is demonstrated when pupils can **recall important mathematical knowledge, use it accurately, reason and communicate their thinking, solve problems, make connections and apply what they have learned in new and unfamiliar contexts.**

We want pupils to leave Greenside with the mathematical knowledge, understanding, confidence and resilience they need for their **next stage of education and for life beyond school.**