



Teaching for Mastery in Maths

Swallowfield Lower School

“A commitment that ALL pupils can and will achieve in mathematics by providing opportunities for all pupils to develop the depth and rigour they need to make secure and sustained progress over time.”

At Swallowfield Lower School we teach mathematics for mastery, an engaging and accessible style of mathematics teaching, inspired by Singapore and Shanghai. Our approach enhances mathematical understanding, enjoyment and achievement for every child.

Children are encouraged to physically represent mathematical concepts. Objects and pictures are used to demonstrate and visualise abstract ideas, alongside numbers and symbols.

Mathematical concepts are explored in a variety of representations and problem-solving contexts to give pupils a richer and deeper learning experience.

What is teaching for mastery?

Since mastery is what we want pupils to acquire (or go on acquiring), rather than teachers to demonstrate, we use the phrase ‘teaching for mastery’ to describe the range of elements of classroom practice and school organisation that combine to give pupils the best chances of mastering mathematics.

And mastering maths means acquiring a deep, long-term, secure and adaptable understanding of the subject. At any one point in a pupil’s journey through school, achieving mastery is taken to mean acquiring a solid enough understanding of the maths that’s been taught to enable him/her move on to more advanced material.

Our approach is based on key principles:

Problem solving

Mathematical problem-solving is at the heart of our approach. Pupils are encouraged to identify, understand and apply relevant mathematical principles and make connections between different ideas. This builds the skills needed to tackle new problems, rather than simply repeating routines without grasping the principles.

High expectations

We believe no child should be left behind. We focus on pupils ‘keeping up over catching up’. By making high expectations clear – and emphasising the high value of mathematics education – learners are encouraged to build confidence and resilience.

Concrete, Pictorial, Abstract

Objects, pictures, words, numbers and symbols are everywhere. Our approach incorporates all of these to help pupils explore and demonstrate mathematical ideas, enrich their learning experience and deepen understanding. Together, these elements help cement knowledge so pupils truly understand what they've learnt.

Depth before breadth

All learners benefit from deepening their conceptual understanding of mathematics, regardless of whether they've previously struggled or excelled. We believe pupils must be given time to fully understand, explore and apply ideas - rather than accelerate through new topics. This approach enables learners to truly grasp a concept, and the challenge comes from investigating it in new, alternative and more complex ways.

Growth mindset

We believe our 'abilities' are neither fixed nor innate, but can be developed through practice, support, dedication and hard work. 'Natural talent' is just a starting point and does not determine who has more or less potential to achieve. This belief encourages a love of learning and resilience that enables everyone to achieve.

Mathematical language

The way pupils speak and write about mathematics transforms their learning. We use a carefully sequenced, structured approach to introduce and reinforce mathematical vocabulary. We always ask pupils to explain the mathematics in full sentences (not just what the answer is, but how they know it's the right answer). This is key to building mathematical language and reasoning skills.

What will I see in Maths lessons at Swallowfield?

Whole class together – we teach mathematics to whole classes and do not label children. Lessons are planned based on formative assessment of what pupils already know and we include all children in learning mathematical concepts. At the planning stage, teachers consider the scaffolding that may be required for children struggling to grasp concepts in the lesson and suitable challenge questions for those who may grasp the concepts rapidly.

Longer but deeper – in order to ensure children have a secure and deep understanding of the content taught, our plans have been adjusted to allow longer on topics and we move more slowly through the curriculum. Lessons are based on Maths No Problem text book progression, and supplemented with other resources such as The NCETM and White Rose Maths. Teachers adapt each lesson to meet the needs of their children and add extra questioning / tasks which will allow children to learn the content more deeply. The learning

will focus on one key conceptual idea and connections are made across mathematical topics.

Key learning points are identified during planning and a clear journey through the maths developed.

Questions will probe pupil understanding throughout and responses are expected in full sentences, using precise mathematical vocabulary.

Fluency – there is a whole school focus on developing an instant recall of key facts, such as number bonds, using maths apps, times tables and unit + unit addition facts.

Lesson Structure

***Explore** – instead of ‘Let me teach you...’ or giving a learning objective as a starting point, children are encouraged to explore a problem themselves to see what they already know.

Develop **reasoning and deep understanding** (contexts and representations of mathematics) – problems are often set in real life contexts – carefully chosen practical resources and pictorial representations are used to explore concepts. These pictorial representations will appear in books as children show their understanding, rather than answers to a series of calculations. The use of practical resources, pictorial representations and recording takes place in every lesson (the CPA approach).

***Structure** – the teacher will organise the findings of the exploration, compare/contrast strategies and guide toward the most efficient strategy (or the one being learnt that day).

Step by step approach – journey through the mathematics through small carefully crafted steps to support deep understanding.

Questions to challenge thinking – teachers use questioning throughout every lesson to check understanding – a variety of questions are used, but you will hear the same ones being repeated: How do you know? Can you prove it? Are you sure? Can you represent it another way? What’s the value? What’s the same/different about? Can you explain that? What does your partner think? Can you imagine?

***Reflect** – Pupils reflect upon their learning with their talk partner and use manipulatives to develop their understanding further. Pupils have opportunities to talk to their partners and explain/clarify their thinking. There will be more talking and less recording in books. We do not want children to attempt independent recording until we believe they are secure with the concept. We do not want them to practise errors.

***Break in the learning- Rapid intervention (same day catch up) – in mathematics** new learning is built upon previous understanding, so in order for learning to progress and to keep the class together pupils need to be supported to keep up and areas of difficulty must be dealt with as and when they occur. We do this through same day interventions of 10 – 15

minutes after the Reflect section or later in the day. In addition, we still run intervention sessions outside of the maths lesson for some targeted children.

***Practise-Independent tasks** – recording the *learning* – not just pages of similar calculations –maths books are used. “Intelligent practice” characterised by variation.

Marking – the marking policy has been created following the guidance of the NCETM. Current marking policy is that learning is ticked and a comment is only made if/when a teacher feels this is necessary to move learning forward. The most valuable feedback is given during a lesson. Adults in the classroom will use the procedure of ‘hot marking’ during the lesson and will mark whilst the pupils are working independently. At this time work can be discussed with the pupil and relevant feedback given instantly to offer guidance and challenge.

SEND pupils – may be supported by additional adults, different resources, differentiated activities. They will also complete additional activities outside of the mathematics lesson. We do not label our children. We have high expectations of all children and strongly believe that all children are equally able in mathematics. Some may take longer to grasp concepts and may need careful scaffolding or extra time/support (guided groups, same day catch-up, additional homework, pre-teaching, intervention group or specific parent support).