

RUSHEY GREEN PRIMARY SCHOOL



MATHEMATICS POLICY

Approved by:

Date: April 2020

Signed:

Last reviewed on: April 2019

Next review due by: September 2022

Intent

The 2014 National Curriculum for Maths 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

The expectation is that most pupils will move through the programmes of study at broadly the same pace.

- Pupils 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.

At Rushey Green these skills are embedded within Maths lessons and developed consistently over time. We are committed to ensuring that children are able to recognise the importance of Maths in the wider world and that they are also able to use their mathematical skills and knowledge confidently in their lives in a range of different contexts. *Mathematics contributes to the school curriculum by developing learners' abilities to calculate; to reason logically, to solve problems and to handle data. Mathematics is important for learners in many other areas including science and technology.*

We want all children to enjoy Mathematics and to experience success in the subject

Implementation

At Rushey Green we have been transitioning towards a mastery approach to the teaching and learning of Mathematics. We are part of the NCETM Maths hub Mastery programme.

The three aims of the national curriculum should be seen in each sequence of lessons

Fluency

Reasoning

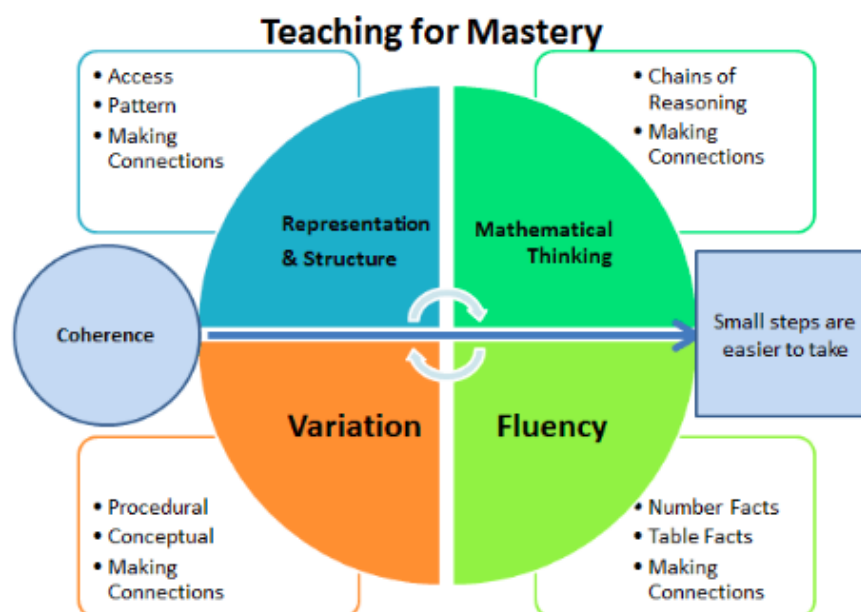
Problem solving

Teaching for Mastery Principles

- **It is achievable for all** – we have high expectations and encourage a positive ‘can do’ mindset towards mathematics in all pupils, creating learning experiences which develop children’s resilience in the face of a challenge and carefully scaffolding learning so everyone can make progress.
- **The ability to reason about a concept and make connections** – pupils are encouraged to make connections and spot patterns between different concepts (E.g. the link between ratio, division and fractions) and use precise mathematical language, which frees up working memory and deepens conceptual understanding.
- **Conceptual and procedural fluency** – teachers move mathematics from one context to another (using objects, pictorial representations, equations and word problems). There are high expectations for pupils to learn times tables, key number facts (so they are automatic) and have a true sense of number.
- **Problem solving**– this develops pupils’ understanding of why something works so that they truly have an appreciation of what they are doing rather than just learning to repeat routines without grasping what is happening.
- **Challenge through greater depth** - rather than accelerated content, (moving onto next year’s concepts) teachers set tasks to deepen knowledge and improve reasoning skills within the objectives

of their year group.

5 Big Ideas of Mastery 1



Impact

Regular and ongoing formative assessment informs teaching, as well as interventions. Through developing reasoning skills children are able to explain what they have learnt and make connections to previous mathematical topics. At Rushey Green we aim for all children to succeed and to progress in their mathematical skills.

Curriculum Design and Planning

White Rose

To ensure whole school consistency and progression, the school uses The White Rose Maths scheme as a starting point. This develops a consistent approach, ensures learning is broken down into small, connected steps and builds on what children already know. Teaching is taught in blocks to enable the achievement of "Mastery" over time.

Concrete Pictorial Abstract

When introducing a concept, teachers follow the CPA approach (concrete, pictorial and abstract) this reflects the schools current calculation policy which outlines how to introduce a topic. Staff have access to regular CPD for the CPA approach. Manipulatives are a key part of implementing the maths curriculum and these are accessible for all children in all lessons. Contexts and representations are carefully chosen to develop reasoning skills and to help pupils link concrete ideas to abstract mathematical concepts.

Questioning and Sentence Stems

Teachers plan key questions to be used to help develop the children's mathematical concepts. Sentence stems are used in lessons to help develop children's mathematical language. These are displayed in the classrooms and are used within lessons.

Resources

Each class is resourced with the appropriate manipulatives required. These are clearly labelled and accessible for the children and adults. Teachers are responsible for ensuring that these resources are kept in a good

condition and children are encouraged to use these regularly. Resources include: Base 10, place value counters (dependent on year group), bead strings, double sided counters. Teachers may use number lines, hundred squares and other manipulatives where appropriate. Resources needed are clearly identified in the calculation policy.

Reasoning and Problem solving

Reasoning and problem solving are a part of each lesson sequence. As well as discrete reasoning/problem solving tasks, teachers plan and use reasoning questions throughout a lesson for example: True/False, Convince me, odd one out, always sometimes never. Additional resources are used to develop children's problem solving strategies, for example Nrich

Arithmetic and Fluency

Children take part in the following:

- Weekly arithmetic sessions in Y1-6 with an emphasis on fluency and choosing the most efficient mathematical method to solve problems.
- Weekly Pixl arithmetic tests are used in Years 3-6.
- Key stage 1 uses repetition songs and rhymes to rehearse key number facts.
- In addition to the mathematics lesson, 15 minute mental maths sessions take place weekly to develop children's mental strategies.
- Times table Rockstar is used in Year 3 and 4 to develop their multiplication and division facts.

The lesson

- Learning objectives and success criteria are shared with the children
- There is regular interchange between concrete/contextual ideas, pictorial representations and their abstract/symbolic representation.
- Making comparisons is an important feature of developing deep knowledge. The questions "What's the same, what's different?" are often used to draw attention to essential features of concepts.
- Connections to previous lessons are made to ensure children are able to build on prior knowledge.
- MATHEMATICAL TALK between children and teachers is a vital part of the lesson and sentence stems are used to encourage conversations.
- Reasoning and problem solving are taught throughout each sequence of lessons.
- Independent/adult led tasks are planned to extend children's learning.
- Gaps in pupils' knowledge and understanding are identified early by in-class questioning. They are addressed promptly through individual or small group intervention
- Formative assessment is carried out throughout the lesson; the teacher regularly checks pupils' knowledge and understanding and adjusts the lesson accordingly.
- Tasks are scaffolded and extended to ensure all children make appropriate progress within a lesson.

Marking

Marking of books should be completed in line with the Rushey Green marking policy. Marking should pick up and address any misconceptions/mistakes and use of questioning ensures children have clarified their thinking clearly.

Assessment

In addition to the formative assessment in lessons, teachers will use termly assessments to reinforce their judgements and provide further opportunities to identify gaps in pupil learning. In Early years and Key Stage 1 these will be teacher led assessments. Key Stage 2 uses the NFER tests. This data is tracked through using Insight tracker.

Inclusion and Special Needs

Rushey Green School strives to extend all pupils to reach their full potential. The provision for children with special needs is detailed in the SEND Policy. For pupils with EAL, where appropriate, additional resources will be supplied to support children in learning vocabulary of mathematics or to access the curriculum. Pupils with hearing impairment follow the mainstream National Curriculum unless there are special circumstances. Pupils are supported in the classroom setting by trained Teaching Assistants for part of their day. We have high expectations of all children and strongly believe that all children are able to achieve in mathematics. Some may take longer to grasp concepts and may need careful scaffolding or extra time/support.

EYFS

Children in Nursery and Reception are taught maths through delivery of the mathematics area of learning in the Early Years Foundation Stage Framework. The teaching of maths in the EYFS involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces, and measures. Children will develop their understanding through planned, purposeful play, both indoors and outdoors and through a mix of adult-led and child initiated activities.

Children are given ample opportunity to develop their understanding of number, measurement, pattern, shape and space through varied activities that allow them to enjoy, explore, practise and talk confidently about mathematics. Children also have the opportunity to use ICT regularly in mathematics in the Early Years

Numicon is mainly used in the early years. Each Numicon represents a different number (1 to 10). Children can count the circles and recognise the shapes and colours of different number representations. They might notice that odd numbers have an 'extra bit that sticks out' and even numbers don't, and that a 4 Numicon and a 6 Numicon fit perfectly together to make a 10 Numicon ($4+6=10$). Children use their understanding of Numicon when they move onto using **Ten frames** to carry out simple calculations.

EYFS children's progress is tracked through the assessment tool Insight. In reception, children's progress is also tracked through the Early Years Foundation Stage Profile (EYFSP). Targets are set regularly throughout the year for the children in the Foundation Stage. Assessments are gathered through observations of children during both adult initiated and child initiated learning and are cross referenced to the age related expectations.

Home/School Link

- The school recognises that parents and carers have a valuable role to play in supporting their child's mathematical learning. It provides a number of opportunities for parents/carers to learn about what their child is learning and the way their child is being taught through parent workshops.
- Children are given Maths homework at least once a week from Year 1 to Year 6. 'My Maths' is used to provide tasks that are linked to the children's learning. Times table Rockstar is used in Year 3 and 4 to develop times table knowledge. Year 6 uses Pixl with the children at home.
- Parents are informed of their child's progress at Parents Evenings and this is also communicated in written school reports.

Role of Subject Leader

- Ensure teachers understand the requirements of the National Curriculum and support them to plan lessons. Leads by example by setting high standards in their own teaching.
- Leads continuing professional development and will ensure that all staff have access to professional development including observations of outstanding practice in the subject. Teachers regularly take part in the NCETM Maths professional development training.
- Monitor progression and continuity of Maths throughout the school through lesson observations and regular monitoring of outcomes of work in Maths exercise books.

- Monitor children's progress through the analysis of whole school data. They will use this data to inform the subject development plan which will detail how standards in the subject are to be maintained and developed further.
- Takes responsibility for managing own professional development by participating in external training, independent private study, engaging in educational research and scholarly reading and keeping up-to-date with Teaching for Mastery developments, including participating the NCETM Maths mastery Maths Hub
- Ensures that the school's senior leaders and governors are kept informed about the quality of teaching and learning in mathematics. .
- Keeps the school's policy for mathematics under regular review.

Reviewed by Alexa Jones – April 2020