Rotherhithe Primary School

Intent, Implementation and Impact Statement

Mathematics

Intent

At RPS we believe the habits of thinking mathematically are life-enriching. Through the teaching of Mathematics, we teach children how to make sense of the world around them by developing their ability to calculate, reason and solve problems. Our aim is for children to understand the relationships and patterns in both number and space in their everyday lives. We view maths as a creative and highly interconnected subject essential to everyday life, science, technology and engineering, and necessary for most forms of employment. It is vital to be numerate to participate fully in society and democratic processes. At Rotherhithe we ensure that every young person, regardless of background, has a rich and meaningful mathematics education. Our curriculum is cumulative and ambitious.

Through the teaching of mathematics, our aims are:

- Success for all - Every child can enjoy and succeed in mathematics. A growth mindset enables pupils to develop resilience and confidence.

- Deeper understanding - Pupils must be given time and opportunities to fully explore mathematical concepts. The challenge comes from investigating ideas in new and complex ways.

- Problem-solving - Enabling learners to solve new problems in unfamiliar contexts is the ultimate aim of our mathematics education. Identifying, applying and connecting ideas enables pupils to tackle new and more complex problems.

- Mathematical thinking - Successful mathematicians are known to develop mathematical 'habits of mind'. To encourage this, we support pupils to be systematic, generalise and seek out patterns.

- Mathematical language - Mathematical language strengthens conceptual understanding by enabling pupils to explain and reason.

- Multiple representations - Objects, pictures, numbers and symbols enable pupils to represent ideas and make connections in different ways. This develops understanding and problem solving skills – while making lessons engaging and fun.

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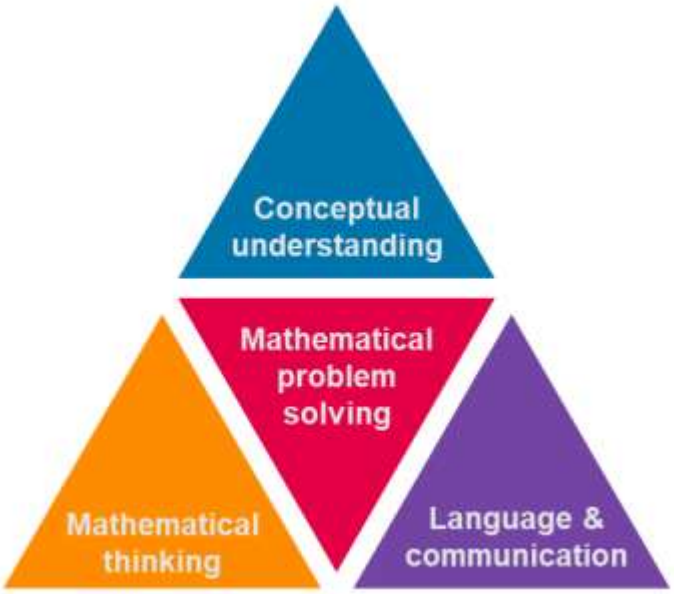
At Rotherhithe, we follow the **Mathematics Mastery** Curriculum which is fully aligned with the national curriculum. Our curriculum is underpinned by the dimensions of depth which are central to problem solving and together enable pupils to develop deep understanding of the subject.



The three principles of the dimensions of depth are:

1. Conceptual Understanding

Mathematics tasks are about constructing meaning and making sense of relationships. Our children deepen their understanding by representing concepts using objects, pictures, symbols and words. Different representations stress and ignore different aspects of a concept and so moving between representations and making explicit links between them allows them to construct a comprehensive conceptual framework that can be used as the foundation for future learning. The six-part lessons are sequenced to help the children build a narrative through different topics. These topics are then sequenced in a logical progression that allows learners to establish connections and draw comparisons. Support and challenge for all is achieved by adding and removing scaffolding to differentiated tasks. Multiple representations are carefully selected so that they are extendable within and between different areas of mathematics. Using these rich models encourages learners to develop different perspectives on a concept.

2: Language and Communication

Mathematical language strengthens conceptual understanding by enabling our pupils to explain and reason. This is carefully introduced and reinforced through frequent discussion to ensure it is meaningfully understood. Talk is an essential element of every lesson. 'Star Words' are introduced

at the beginning of each lesson and time is dedicated to developing confidence with specific vocabulary as well as verbal reasoning. The content of our curriculum carefully progresses in order to induct learners into the mathematical community. A large part of this community is confident use of the language, signs and symbols of mathematics.

3: Mathematical Thinking

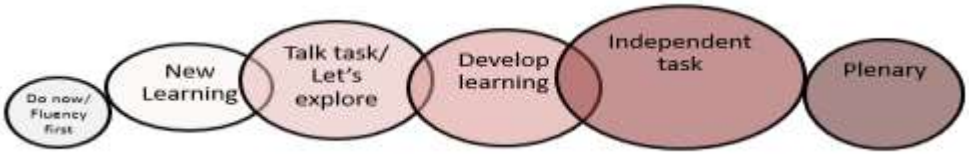
We support pupils to develop mathematical 'habits of mind' – to be systematic, generalise and seek out patterns. The creation of a conjecturing environment and considered use of questions and prompts are important elements of encouraging learners to think like mathematicians. Our curriculum is designed to give learners the opportunities to think mathematically.

Implementation

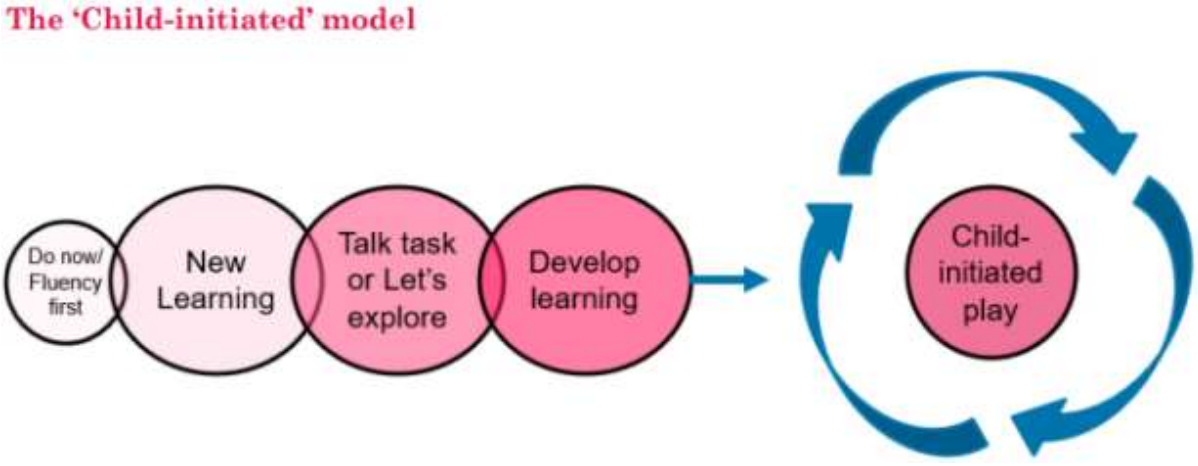
Lesson Structure

Lessons incorporate a daily talk task using carefully structured sentences to support the development of reasoning. Known facts are chanted during transitions between the lesson parts to support fluency in number facts. The lesson

KS1 & KS2



Reception



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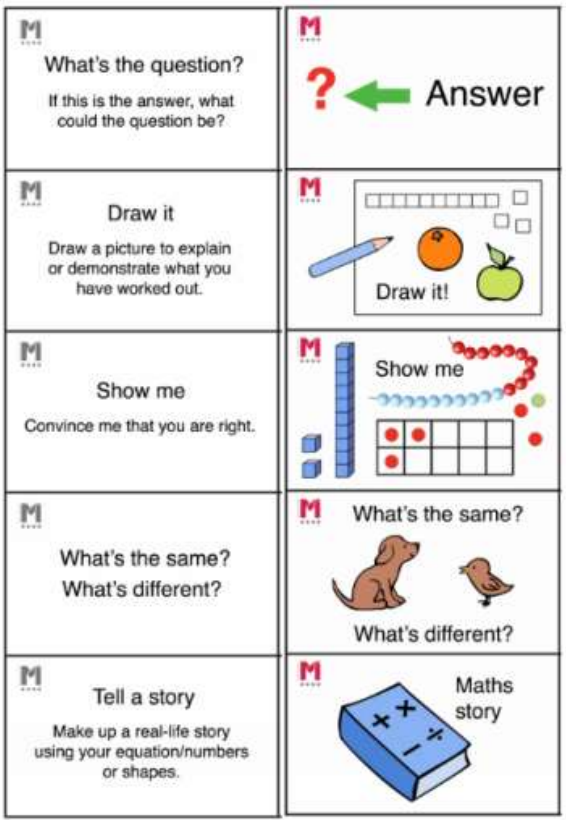
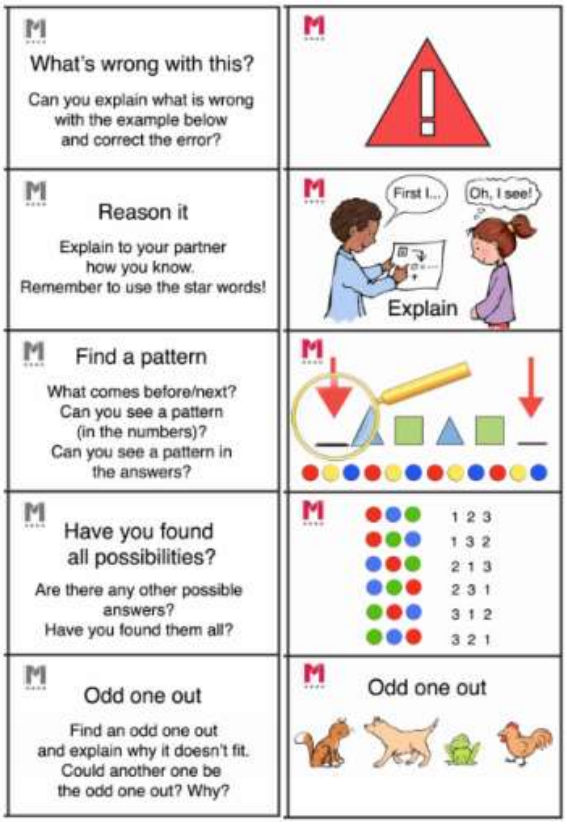
Adaptation

The majority of children in a class move through the programme of study at broadly the same pace and are exposed to the same questions during lessons. Children in all classes sit in mixed ability pairings to allow collaborative learning, exposure to different opinions about the same work and regular opportunities for discussion of answers to support pupils' reasoning skills and check and deepen their understanding. Learners are supported by the structure of the lesson, their peers and additional adults as well as scaffolds provided by teachers. Children are extended as a result of higher order questioning where conjectures and generalisations are required. It is expected that all pupils will experience challenge in a lesson through exposure to rich problem solving tasks and pattern spotting, rather than acceleration to new content.

Depth Symbols

In order for pupils to develop as active mathematicians, we need to provide opportunities for them to ask questions and create their own problems to explore. This is a great way to develop deep understanding but it also fosters curiosity and creativity in mathematics. We use ten ideas that challenge pupils to develop a depth of understanding within a concept, rather than moving them on to a new objective. Each of the ten ideas is represented by a picture or symbol. The idea being that, after introduction, the tasks can be easily identified by pupils without the need for instruction. Depth tasks are incorporated in every lesson.





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Maths Meetings

Daily sessions are timetabled for all years and are used to consolidate key areas of maths based on assessment and curriculum coverage. Maths meetings provide an opportunity for children to revisit key concepts throughout the year and increase their memorisation of key facts that may not be explicitly covered during all maths lessons. This means that pupils are practicing concepts and skills on a regular basis; they continually build on their mastery of these concepts and are more likely to become fluent. Classes use NCETM's Mastering Number program to develop and embed place value and number sense.

Same Day Intervention

A small number of pupils (maximum of 6 per day) receive additional support (by the class teacher where possible) following the lesson. This ensures no child falls behind because of a lack of conceptual understanding. If more children require support, then the lesson is retaught the following day using variation to focus on the areas of misconception.

Catch Up Intervention

Children who enter our school at different points in the year may have gaps in mathematical understanding. Support staff use Mathematics Mastery 5 minute keep-up intervention materials to develop pupils' number sense.

Ready to Progress

We use Mathematics Mastery Ready to progress materials to support pupils acquire the pre-requisite knowledge needed to access content within a new unit.

Diagnostic Questions

Pre and post unit tests help inform adaptations to planning so that learning is cohort specific.

EYFS

Maths is everywhere! Outside of direct teaching time, practitioners look for opportunities to reinforce and embed maths in everyday life, play and routines. Continuous Provision Cards align with the MM units of work and suggest provision ideas that will complement the work covered that half-term. Mathematics Mastery provides 'Continuous Provision' cards for each half term. Pupils do not need to be engaged in the 'maths area' to be developing their mathematical understanding or thinking. There are eight cards planned for which focus on creative play, construction, role play, small world, table top play, sand, water and maths display. These cards outline the objectives and key vocabulary for the half term as well as some suggested activities and question

prompts. The dimensions of depth are evident in the interactions between pupils and practitioners, through questioning and next steps.

Impact

We measure impact every day through continual formative assessment that informs daily planning. Teachers mark work during the lesson and carry out same day and keep up interventions ensuring that 'no child falls behind'. NTS- (National Test Style) summative maths assessments are completed termly to evidence how children have independently applied the maths' skills taught. Teachers use this information to make judgements about progress and attainment which is inputted onto Target Tracker. This enables the school to monitor progress towards National Curriculum objectives as well as the progress of targeted intervention groups. Moderation meetings are held and throughout the year, the Senior Leadership Team carry out learning walks, observations, book looks, planning sessions and pupil progress meetings so that we can monitor the quality of teaching throughout the school. The outcome of these reviews is reflected in actions set out in teachers' appraisals, the Maths Action Plan and as whole school targets shared with staff.