Lawns Park Primary School: Mathematics policy

Introduction

Here at Lawns Park, we teach maths following the Programme of Study and Aims of the National Curriculum. Maths is a core subject at our school, and this policy has been written to outline the direction and opportunities our pupils are given for their learning.

'Mathematics is a creative and highly interconnected discipline that has been developed over centuries providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering and necessary for financial literacy and most forms of employment. A high-quality mathematical education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the power and beauty of mathematics, and a sense of enjoyment and curiosity about the subject.' (DfE 2013)

Intent

The aim of our mathematics curriculum is to equip pupils with the skills and the tools they need to be successful, positive mathematicians. These tools come in the form of arithmetic, fluency, reasoning and problem solving as well as the ability to think in an abstract way.

As we know maths is an integral part of life, we strive to ensure that our children develop an enthusiastic and persevering attitude towards mathematics that will stay with them and support them into the next stages of their education and into the future. We endeavour to provide opportunities for children to foster patience and politeness through group work and practical activities.

At each stage of their school life, our pupils are supported and challenged to reach their full potential.

The National curriculum for mathematics aims to ensure that all pupils:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over

time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

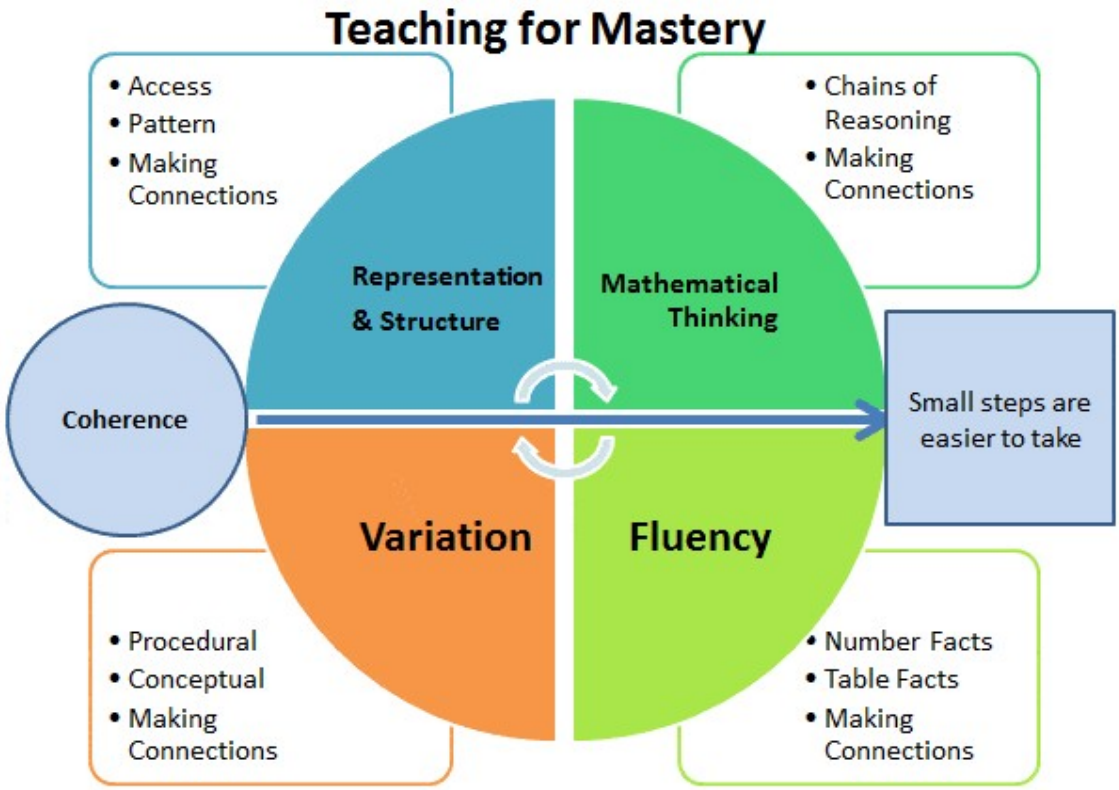
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- can solve problems by applying their mathematics to a variety of routine and non- routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Implementation

As a school, each and every maths lesson allows pupils to strive for **mastery** of that lessons' focus. All teachers follow a termly overview plan that is based around the scheme of learning from the White Rose Maths Hub. Alongside this, teachers have access to a wide variety of additional resources to assist with their lesson design.

A typical Lawns Park maths lesson consists of an hour-long session, at least 5 times a week that is started with a discrete, specific arithmetic lesson that focuses on key fundamental areas for the different year groups. Through these, school-wide methodologies are taught and modelled to ensure consistency and to make pupils ready to succeed in Upper Key Stage 2. The children are encouraged to develop fluency in their recall of key facts and draw upon some of the learning they complete in arithmetic, and vice versa. Reasoning and problem-solving skills are explicitly taught to enable children to become resilient and independent learners who are prepared to push themselves outside their comfort zones. Throughout each unit, pupils are given opportunities to reflect on previous learning and make interconnective links between subjects in order to add challenge and give a purpose to their learning.

We have based our lesson structure strongly on the guidance given by the NCETM in their teaching for mastery graphic:



Fluency:

Fluency is ingrained in our whole maths curriculum. It is targeted to become embedded within children so they have a solid foundation of maths in which they can build upon to encounter problems both in lessons and in real life. Fluency is the first stage of pupil's understanding, and includes things such as:

- Quick recall of facts and procedures.
- The flexibility and fluidity to move between different contexts and representations of mathematics.
- The ability to recognise relationships and make connections in mathematics.

Variation:

There are 2 types of variation within our teaching structure, **procedural variation** and **conceptual variation**.

Procedural variation: This is a deliberate change in the type of examples used and questions set, to draw attention to certain features.

Conceptual variation: When a concept is presented in different ways, to show what a concept is, in all of its different forms.

During lessons, variation is explored by children through questioning involving spotting what is the same and what changes in examples of different concepts and procedures.

Representation and structure:

Our teachers carefully choose representations of mathematics to expose mathematical structure. This supports pupils in seeing the maths, rather than using the representation as a tool to do the maths. By doing this, the pupils create mental images that they can draw upon to support their understanding and allowing for deepening of different concepts.

Mathematical thinking:

Within our lessons, pupils are given the chance to look for patterns and relationships. Through this they make connections, arguments, reasoning and generalisations about the maths they have learned. They actively engage in mathematical thinking in all lessons, communicating their ideas using precise mathematical language.

Coherence:

Through our tight following of the White Rose Maths Hub, we ensure that our curriculum has been developed with progression and mastery in mind. Each unit is broken into 'small steps' that allow lessons to follow on from the previous lesson and feed into the following lesson.

EYFS

Mastering number, essence of White Rose

Key Stage 1

Arithmetic, mastering number, White Rose

Key Stage 2

Arithmetic, times tables, White Rose

Impact

The impact of our Maths curriculum is that from Early Years to the end of Key Stage 2, our children achieve and make progress in line with their year group expectations. This can be seen through:

- Fluency in their recall of key number facts and procedures.
- Accuracy in the formal calculation methods for all four operations.
- The flexibility and fluidity to move between different contexts and representations of mathematics.
- The ability to recognise relationships and make connections in mathematics.
- The confidence and resilience to reason mathematically and solve a range of problems.

SEND

Children with additional needs are supported by using practical resources and differentiated activities where needed. They are also further supported by additional support staff wherever possible. Where applicable, children's support plans incorporate suitable objectives from the National Curriculum, EYFS framework and our White Rose developed curriculum which teachers keep in mind when planning work. In addition to quality first teaching and following the mastery approach, interventions also take place throughout the afternoons and focus on those children who may need more specific targeted input.

Assessment

We utilise both formative and summative assessments to track our children's progress throughout the year.

For summative assessments, year groups utilise the White Rose assessments that are split into two papers; Arithmetic and Reasoning & Problem Solving. This gives teachers an overall assessment of where their children are working at against year group expectations, and allowing for responsive interventions to be planned for the following sequences of learning.

Formatively, teachers assess throughout every lesson. Arithmetic is often responsive to gaps that have arisen in previous sessions, and lessons begin with the opportunity for pupil's to complete some quick recall style questions to check understand from previous lessons, units and even years.

Alongside this, we have a robust SDI (same day intervention) programme that responds to any gaps immediately following the lessons. Teachers and teaching assistants are responsible for completing these interventions which allow for children to finish lessons confident and able to move on to the next point of learning in the sequence.

Arithmetic

Arithmetic and calculation understanding forms an essential part of our curriculum across school. From Year 1, we have specific and progressive objectives for teachers to follow that allows pupils to develop confidence in their methodology and reinforces basic mathematical concepts taught within lessons.

Our milestones link to the White Rose Maths Hub curriculum and we have devised our own calculation policy for these arithmetic sessions to ensure consistency and continuity throughout the year groups.

We assess our children's progress in arithmetic termly, utilising the White Rose assessments that give us accurate gap analysis and an in understanding of where children are working at that current period of time.

Times tables

The National Curriculum states that by the end of Year 4, pupils should be able to recall multiplication and division facts for multiplication tables up to 12x12. Children in Year 4 are also required to take a multiplication tables check (MTC) in the Summer Term. The purpose of this check is to determine whether pupils can fluently recall their times tables up to 12, which is essential for future success in mathematics. Because of this, we have put a large emphasis of the importance of good times tables teaching, ensuring pupils are both quick and accurate in their recall.

Our end of year group expectations relating to times tables are as follows:

- **Year 1:** Be able to count in multiples of twos, fives and tens.
- **Year 2:** Be able to recall 2, 5 and 10 multiplication and divisions facts.
- **Year 3:** Be able to recall 3, 4 and 8 multiplication and division facts.
- **Year 4:** Be able to recall 6, 7, 9, 11 and 12 multiplication and division facts.

- **Year 5/6:** Application of multiplication and division facts to problem solving.

As a supporting tool, we have access to Times Table rockstars which is used for in-class learning and homework. The idea behind this programme is to track and adjust pupil's learning responsively and improve their fluency and accuracy.