Mathematics at Boundary Primary School

"Good mathematics is not about how many answers you know… It's about how you behave when you don't know" – Anonymous

Intent

Mathematics education provides a foundation for understanding the world, the ability to reason mathematically and a sense of enjoyment and curiosity about the subject. At Boundary, we encourage children to not only work fluently but to also be confident problem solvers. We encourage and promote multiple methods to solving problems, providing our pupils with self- confidence and resilience. Through the teaching of 'mastery', we ensure that children gain a deep and secure understanding of key mathematical concepts at each stage of their learning. We are dedicated to ensuring ourcurriculum supports for recovery of any missed learning.

The objectives of teaching Mathematics are to enable children to:

- Become fluent in the essentials of Mathematics including number and place value, time, shape and measure, statistics, money, addition and subtraction and multiplication and division.
- Reason mathematically.
- Solve problems by applying their mathematical knowledge.
- Understand and be prepared for how Maths applies to everyday life.

Implementation

Starting in Foundation, our children are given lots of opportunities to explore and investigate number and shape and measure, through first hand exploration. Mathematics is taught through the areas of learning in accordance with the EYFS statutory guidance and the National Curriculum for KS1 and KS2. We also plan in accordance with the White Rose Scheme in order to break teaching down into small, achievable steps; ensuring children have a concrete understanding of Mathematical concepts.

Our aim is to develop children's fluency, problem solving and reasoning skills, encouraging work at mastery level. In order to achieve this, we use a range of teaching and learning strategies, which encompass practical, pictoral, verbal and written methods. This includes independent and collaborative learning. Children are given the opportunity to revisit learning and use their ever-growing skill base throughout the year.

As well as White Rose, teachers use a range of resources to support the planning of Mathematics:

- NCETM
- Maths Hub
- Nrich
- I See Reasoning Resources

These are used as a tool to deepen children's thinking when they are problem solving and reasoning. They are also used to provide challenges to children in each aspect of Maths.

Children use a range of resources to enhance their learning such as; Numicon, Base 10, beadstrings, cubes, play dough, card fans, iPads, place value charts, place value counters, number lines, times table squares, money, dice and more.

Throughout the teaching of Mathematics, we encourage resilience, growth mindset and perseverance in a wide variety of problem-solving activities and challenges within the classroom.

For children with special educational needs and those working below age related expectations within mathematics, Boundary Small Steps are used to guide planning to break their learning down into ever further smaller steps. These are assessed half termly in order to assess the progress that the children have made and in order to identify their next steps for learning. Interventions are planned for and carried out where needed, however we ensure that all children access a quality first education inside the classroom

Mathematics Curriculum Overview:

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Reception children participate in the Mastering Number Program developed by the NCETM. This program is delivered to the children four times a week by the class teacher. It aims to secure firm foundations in the development of good number sense for all children in Reception. The aim over time is that children will leave KS1 with fluency in calculation and confidence and flexibility with numbers. The sessions are based around 3 key principles for developing good number sense in the Early Years. These include; 1) Subitising 2) Counting, cardinality and ordinality 3) Composition of number. The sessions are delivered to the children using songs, games, practical activities using manipulative and discussions. These sessions are then followed up with adult led activities in small groups, as well as enhancements within the classroom continuous provision. In Maths, personalised planning (objective led planning for each child) is used based on baseline assessment. Provision is enhanced with activities based on what the children are learning. Children progress at their own pace and move on when needed. Adult led activities are based on objective led planning.					
Year 1	**Number:** Place Value (within 10) **Number:** Addition and Subtraction (within 10)	**Number:** Addition and Subtraction (within 10) **Geometry:** Shape	**Number:** Place Value (to 20) **Number:** Addition and Subtraction (within 20)	**Measurement:** Length and Height **Measurement:** Weight and Volume **Number:** Place Value (to 50)	**Geometry:** Position and Direction **Number:** Fractions **Number:** Multiplication and Division	**Number:** Place Value (to 100) **Measurement:** Money **Measurement:** Time
Year 2	**Number:** Place Value **Measurement:** Time	**Geometry:** Shape **Number:** Addition and Subtraction	**Number:** Multiplication and Division **Measurement:** Money	**Measurement:** Length and Height **Number:** Multiplication and Division **Number:** Fractions	**Number:** Fractions **Measurement:** Mass, Capacity and Temperature	**Measurement:** Position and Direction **Statistics**
Year 3	**Number:** Place Value **Number:** Addition and Subtraction	**Number:** Addition and Subtraction **Number:** Multiplication and Division	**Number:** Multiplication and Division **Measurement:** Length and Perimeter	**Measurement:** Mass and Capacity **Number:** Fractions	**Number:** Fractions **Measurement:** Money **Measurement:** Time	**Geometry:** Shape **Statistics**
Year 4	**Number:** Place Value **Number:** Addition and Subtraction	**Number:** Multiplication and Division **Measurement:** Area	**Measurement:** Length and Perimeter **Number:** Multiplication and Division	**Number:** Fractions **Number:** Decimals	**Measurement:** Money **Measurement:** Time **Number:** Decimals	**Statistics** **Geometry:** Shape **Geometry:** Position and Direction
Year 5	**Number:** Place Value **Number:** Addition and Subtraction **Number:** Multiplication and Division	**Number:** Multiplication and Division **Number:** Fractions	**Number:** Multiplication and Division **Number:** Fractions **Number:** Decimals and Percentages	**Measurement:** Perimeter and Area **Number:** Decimals and Percentages **Statistics**	**Number:** Decimals **Geometry:** Shape **Geometry:** Position and Direction	**Number:** Decimals **Number:** Negative Numbers **Measurement:** Converting units **Measurement:** Volume
Year 6	**Number:** Place Value **Number:** Addition and Subtraction **Number:** Multiplication and Division	**Number:** Fractions **Measurement:** Converting Units	**Number:** Ratio **Number:** Algebra **Number:** Decimals	**Number:** Fractions, Decimals and Percentages **Measurement:** Area, Perimeter and Volume **Statistics**	**Geometry:** Shape **Geometry:** Position and Direction **Revision**	**Year 7 Transition** **Project Based Learning:** The Bakery White Rose Tours White Rose Futures

Assessment

Pre-assessments are undertaken at the start of each unit of work. This allows prior knowledge and gaps in learning to be identified. Formative assessment is carried out throughout the learning journey in order to adjust lessons to the children's needs. At the end of a unit, small assessments are carried out, which are used to inform the teacher of consolidation lessons that need to be carried out.

Termly assessments are carried out using White Rose arithmetic and reasoning papers. This helps to measure the children's learning and identify areas of weakness, which can be addressed in consolidation weeks and morning maths.

From the formative assessment and White Rose papers, teachers make a judgment at the end of each term on O'Track to show if the child is working towards, is at or above the expected standard. It will be identified here if a child is working towards, at the expected level or working at greater depth.

By Year 4, children are expected to have mastered their times tables up to 12 x 12. In Year 4, children take part in a Multiplication Check, where they will be tested on their recall.

SEN children are assessed by the use of Boundary Small Steps.Teachers use this assessment to influence further planning and to teach gaps in their learning.

EYFS

The early teaching of mathematics at Boundary is taught in line with the Early Years foundation stage statutory framework. The ELG for Maths is split into 2 key areas: Number and Numerical Patterns. In Maths, personalised planning (objective led planning for each child) is used based on baseline assessment. Provision is enhanced with activities based on what the children are learning. Children progress at their own pace and move on when needed. Adult led activities are based on objective led planning. Activities include adult led sessions as a whole class, small group activities and child-initiated learning opportunities. Children have a wide range of structured play resources for specific activities, which are planned in all learning areas as part of their continuous provision. For example, water play will include capacity, role-play may involve counting or amounts in the shop.

Reception children participate in the Mastering Number Program developed by the NCETM. This program is delivered to the children four times a week by the class teacher. It aims to secure firm foundations in the development of good number sense for all children in Reception. The aim over time is that children will leave KS1 with fluency in calculation and a confidence and flexibility with number.

The sessions are based around 3 key principles for developing good number sense in the Early Years. These include; 1) Subitising 2) Counting, cardinality and ordinality 3) Composition of number.

The sessions are delivered to the children using songs, games, practical activities using manipulative and discussions. These sessions are then followed up with adult led activities in small groups, as well as enhancements within the classroom continuous provision.

At EYFS, Mathematics is taught is various ways, which is tailored to suit the needs of all children. Staff use their knowledge and expertise to plan for and create high quality learning environments for children to explore the various areas of maths and develop and learn new concepts.

Children's assessment is made against the development matters Early Learning Goals and recorded on Evidence Me. Written notes, pictures and children's work are used as evidence. Staff are then able toaddress any misconceptions that have arisen and develop/introduce new concepts.

Impact

- Children gain a knowledge and understating of the world around them and they are prepared for using mathematics in their everyday life.
- Children show an enjoyment and enthusiasm for Mathematics
- Children gain confidence in working independently.
- Children develop their skills in working collaboratively.
- Children improve their problem solving and reasoning skills.
- Children develop their growth mindset in mathematics.
- High standards, ensuring children achieve national standards or above. (KS1 2023 - 75% KS2 2023 - 80%)
- Higher percentages of children working at greater depth. (KS1 2023 - 20% KS2 2023 - 35%)
- Strong progress measures at the end of Key Stage 2.