Mathematics Policy

Hillary Primary School

Approved by:	Governing Body	**Date:**	November 2022
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Hillary Primary School Mathematics Policy 2022

Our principal aim is that children leave Hillary Primary School with a wide range of happy and rich memories in Mathematics formed through interesting and exciting experiences driven through our 5 Key Values and are nurtured to THRIVE intellectually, emotionally, physically, socially and spiritually.
"Mathematics is a creative and highly inter-connected 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." National Curriculum 2014.

Aims

We have adopted a mastery approach to teaching and learning in mathematics in order to deliver the three aims of the National Curriculum fluency, reasoning, and problem solving. To support children in achieving this, we use White Rose medium term plans. These are used to both support and challenge children's understanding, in line with the higher expectations of the National Curriculum. The National Curriculum sets out year-by-year programmes of study for Key Stages 1 and 2. This ensures continuity and progression in the teaching of mathematics. The EYFS Statutory Framework 2014 sets standards for the learning, development and care of pupils from birth to five years old and supports an integrated approach to early learning. We aim for all children to have a positive experience of maths through providing them with a concrete, pictorial abstract route to their learning. Our mathematics curriculum aims to ensure that children are fluent in the fundamentals of mathematics and the recall of facts through daily practice and that children are appropriately challenged to master key concepts and skills.

The aims of the 2014 National Curriculum are for our pupils to:

- Become fluent in the fundamentals of mathematics through varied and frequent practice with complexity increasing over time.
- Develop conceptual understanding and ability to recall and apply knowledge rapidly and accurately.
- Reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.
- Can solve problems by applying their mathematics to a variety of problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.
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The EYFS Framework in relation to mathematics aims for our pupils to:

- Develop and improve their skills in counting.
- Understand and use numbers.
- Calculate simple addition and subtraction problems.
- describe shapes, spaces, and measures
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Intent

Our vision for mathematics ensures that every pupil is given a broad, balanced, engaging and relevant curriculum. At Hillary Street Primary School, we want to raise aspirations and help children to understand and make deep rich connections between the classroom and everyday real-life mathematics, in order to grow and thrive. We believe children should have a deep understanding of mathematics and number and positive, resilient attitudes towards the subject. We encourage them to have inquisitive minds and have the awareness of the power and wonder of mathematics. Children are given opportunities to articulate their ideas confidently and talk about the subject using mathematical language. Our Mathematic curriculum provides children the opportunity to build their knowledge with the ability to reason, think logically, and work systematically and accurately both independently and collaboratively. They are unique learners who take responsibility for their own learning and demonstrate their understanding by raising their own questions and creating their own problems. Opportunities for high quality oracy development are supported using appropriate vocabulary modelled throughout lessons by both staff and children. Once children can articulate their understanding of a concept, they can make connections within their learning. Children are supported to discuss misconceptions with both their peers and staff.

Implementation

All classes have a daily mathematics lesson where possible. In addition to this, to secure recall and mental maths skills, Maths fluency is discreetly taught during the week where possible, and 5 minutes quick recall using the online Daily 10 primary maths resource, as well as children having access to the Times Table Rock Stars application for multiplication. Teachers of the EYFS (Early Years Foundation Stage) ensure the pupils learn through a mixture of adult led activities and pupil-initiated activities both inside and outside of the classroom. Mathematics is taught through an integrated approach.

Planning

Most children will be taught the content from their year group only, mastering content, applying and being creative with new knowledge. We use the White Rose Scheme of learning to guide our steps of learning using high quality supporting material from the NCETM. The EYFS Statutory Framework 2014 sets standards for our Nursery provision and Reception to Year 6 use the White Rose Maths schemes of learning as their medium-term planning documents, which are uniquely adapted by teachers. These schemes provide teachers with exemplification for mathematics objectives and are broken down into fluency, reasoning and problem solving, key aims of the National Curriculum. Teachers use the White Rose calculation policy to aid subject knowledge and to ensure consistency and progression in the teaching of the different calculation methods across the school.

Lessons

All lessons begin with a short assessment to support **retrieval practice** and develop **long-term memory.**
Children are taught through clear modelling and have the opportunity to develop their knowledge and understanding of mathematical concepts. Our approach incorporates using

the CPA approach **concrete** objects, **pictorial** representations, **worded** problems, and **numbers.**

Concrete – children have the opportunity to use concrete objects and manipulatives to help them understand and explain what they are doing.

Pictorial – children then build on this concrete approach by using pictorial representations, which can then be used to reason and solve problems.

Abstract – Once this is in place, children can move to an abstract approach using numbers and key concepts with confidence.

Children can **ACQUIRE** the skill (fluency), **APPLY** the skill (problem solving), or **DEEPEN** the skill (reasoning) within the lesson. Children move through the different stages of their learning at their own pace. Children who have shown their understanding at a deep level within the unit, will have opportunities to apply these skills at GREATER DEPTH. This should be challenging and ensure that children are using more than just one skill to be able to answer the mathematical problems. Resources are available to assist demonstration of securing a conceptual understanding of the different skills appropriate for each year group. Children record learning in books, aided by chrome books when appropriate. Children are encouraged to explain their maths orally as well as on paper, to develop the oral skills within maths which include explanation, discussion, reasoning and questioning as well as written maths. Enabling children to explore, apply and evaluate their mathematical approach during investigations to develop a deeper understanding when solving different problems/puzzles.

Early Years Foundation Stage (EYFS)

Children in EYFS explore mathematical concepts through active exploration and their everyday play-based learning. Children are taught key concepts and develop number sense using a hands-on practical approach. EYFS practitioners provide opportunities for children to manipulate a variety of objects which supports their understanding of quantity and number. Pupils explore counting numbers, calculating simple addition and subtraction problems, describing shapes, spaces, and measures and the development of models and images for numbers as a solid foundation for further progress. The CPA approach is used when teaching children key mathematical skills. Practitioners allow children time for exploration and the use of concrete objects helps to support children's mathematical understanding. Mathematics in the early years provides children with a solid foundation that will enable them to develop skills as they progress through their schooling and ensures children are ready for the National Curriculum.

Inclusion

Hillary Primary aims to meet the needs of all, considering gender, ethnicity, culture, religion, language, disability, age, and social circumstances. The provision for children with special needs is detailed in the SEND (Special Educational Needs & Disabilities) Policy. SEND pupils may be supported by additional adults, different resources, differentiated activities. They may also complete additional activities outside of the mathematics lesson. We have high expectations of all children and strongly believe that all children can achieve in mathematics. Some may take longer to grasp concepts and may need careful scaffolding or extra time/support.

Feedback

Feedback of mathematics books should be completed in line with the Hillary Primary feedback policy. Next steps are not necessary as the next lesson is normally the next step in learning. However, it is essential that all feedback picks up and addresses any misconceptions/mistakes and thorough questioning ensures children have clarified their thinking clearly. To ensure we have a keep-up not catch-up model of learning, any children who have not grasped the lessons learning are caught up with in 'keep-up' time. Where whole class misconceptions are identified by teachers, whole class feedback slides are added to the next lessons teaching slides.

Our learning environment

Our curriculum is supported by a rich learning environment. Working walls support children's learning in every classroom for maths.

- Maths working walls are in constant use throughout individual lessons and across weeks focusing on a particular domain.
- Key vocabulary is displayed.
- Reasoning question stems 'Thinking Frames' are on show and used to model reasoning.
- Worked examples are modelled and displayed for reference (sometimes including pictorial and concrete representations).
- Mathematical manipulatives and resources are easily accessible for all children to support their learning.

IMPACT

A variety of data and feedback is used to check learning, this impacts the further planning of teaching and learning, which enables us to respond quickly and accurately to the needs of our pupils.

Formative assessment - daily retrieval practice provides opportunities to check for children's retention of previously taught concepts. Formative assessment takes place daily and teachers adjust planning accordingly to meet the needs of their class. Teachers use formative assessment to evaluate the learning during a lesson, through questioning and live marking, enabling them to give individual and whole class feedback.

Summative assessments - are used to identify and track pupil progress and inform pupil progress meetings**.** They include White Rose Unit tests upon completion of each unit, which will then be incorporated into retrieval practice in subsequent units of learning. Children will sit termly NTS tests from Year 1 to Year 6, followed by SATs in May and children's progress and attainment are discussed with senior leaders in pupil progress meetings, which informs our tracking and interventions provision.