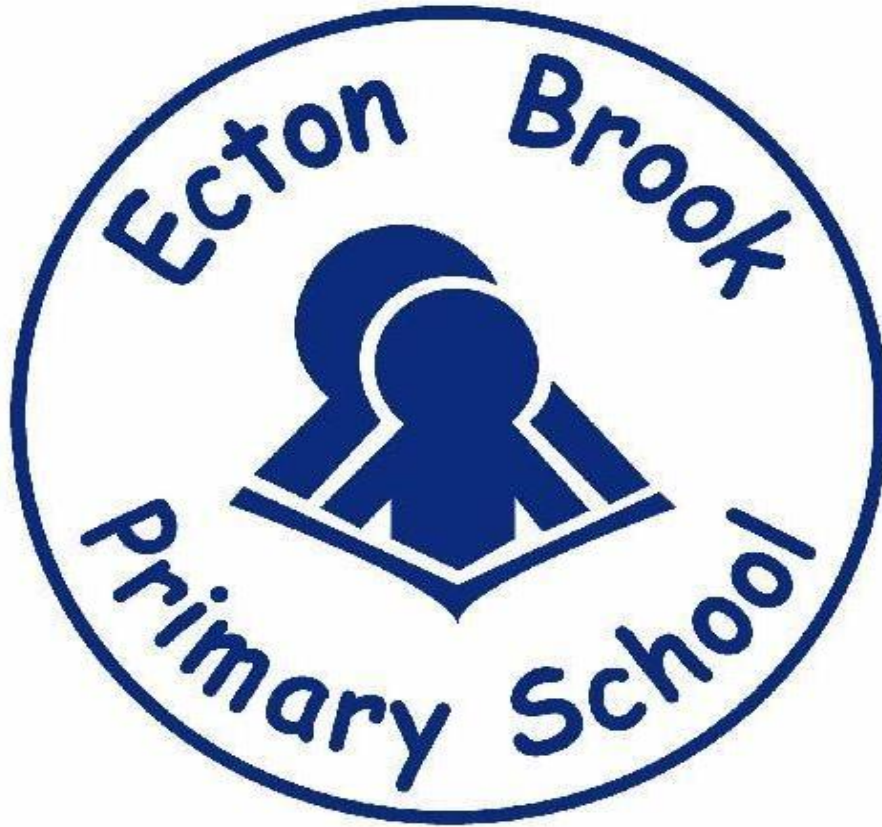


ECTON BROOK
Primary School



Mathematics
Policy
January 2023

Introduction

This policy outlines what we are aiming to achieve in respect of pupils' mathematical education. It is continuously being updated to reflect the school's development within the subject. The mathematics taught and the methods used reflect the recommendations outlined in the DfE guidance contained in the documents:

- (A) Early Years Foundation Stage Guidance
- (B) National Curriculum 2014

This policy should be read in conjunction with Northampton Academy Trust Mathematics Aims and Principles document dated February 2020.

Intent

The National Curriculum (2014) 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.

Using the Programmes of Study from the National Curriculum it is our aim that all children will understand that they can achieve in mathematics. Our school views all children as mathematicians and encourages pupils to have a positive attitude towards the learning of mathematics and an enthusiasm for the subject. We aim to create a stimulating and exciting mathematical environment so that all children will access to the maths curriculum and resources, regardless of ethnicity, gender, economic background, class or ability.

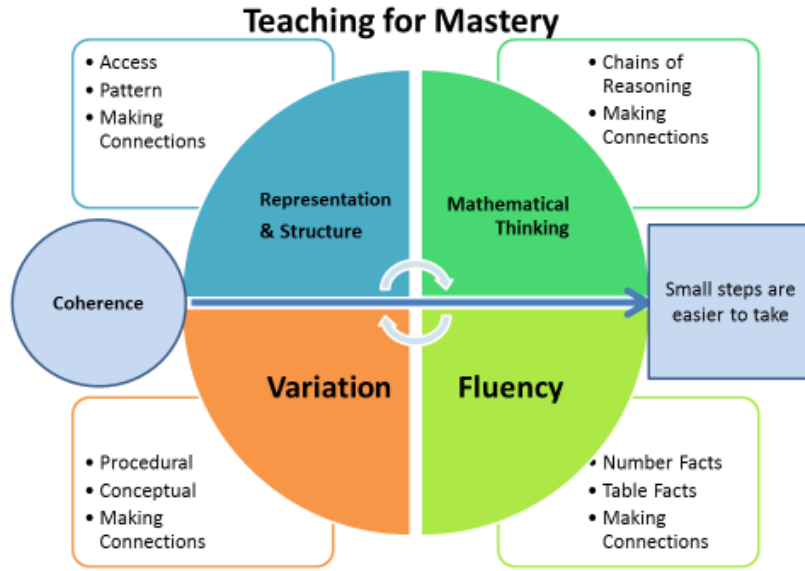
Role of the Mathematics Subject Leader

- To provide teachers with support in the teaching of mathematics by ensuring they understand the requirements of the National Curriculum.
- To monitor and evaluate planning, teaching and learning in mathematics across the school.
- To develop own practice by undertaking relevant CPD opportunities and setting high standards in their own teaching.
- To provide training for staff members that help raise standards in the teaching of mathematics.
- To keep up-to-date with developments in mathematics by independent reading of scholarly articles and engagement in educational research.
- To regularly audit resources in the school so that a high standard is maintained.

Implementation

Mastery

In September 2019, Ecton Brook began transitioning towards a mastery approach to the teaching and learning of mathematics. We understood that this would be a gradual process and take several years to embed. The rationale behind changing our approach to teaching mathematics lay within the research of Guskey (2009) and Skemp (1976), the Mathematics Specialist Teacher Programme and the NCETM/Maths Hub led Mastery Specialist Programme.



Coherence:	Variation:	Representation and Structure:	Mathematical Thinking:	Fluency:
Ensures concepts are planned out through small steps that link every question with the key concept for that lesson.	Procedural variation ensure questions are carefully thought out and conceptual variation is used to represent the concept being taught in more than one way.	Concepts are explored using a concrete, pictorial and abstract approach (CPA). This exposes the mathematical relationships and structures being taught.	Supports the children’s ability to find relationships between the mathematics they learn. They are encouraged to use their reasoning skills to look for patterns and connections.	Ensures a focus on number facts including number bonds, partitioning and times table facts so that they can apply these skills flexibly to their problem solving.

Maths in Early Years

Reception classes follow the Statutory Framework for the Early Years Foundation Stage alongside the NPAT Early Years Curriculum document. There is an emphasis on imaginative and enjoyment in activities, often of a practical nature, that may focus on mathematical development or draw out mathematical learning in other activities. In foundation stage, mathematical development is assessed with two Early Learning Goals:

- Number
- Numerical Patterns

A wide range of activities supports the teaching and learning of mathematics in Reception including:

- Observation of number and pattern in the environment and daily routines
- Board games
- Large and small construction
- Stories, songs, rhymes and finger games
- Sand and water
- 2D and 3D work with a range of materials
- Imaginative play
- Cooking and shopping
- Outdoor play and 'playground' games

The reception environment has a dedicated maths area and children are always able to choose to work independently. Lessons will often include, or be based upon, well-planned opportunities for children's play. The staff provide a wide range of opportunities for children to develop their independence and their ability to concentrate and persevere. We are currently reviewing practice to enable children to progress from Reception Year to Year 1 more smoothly.

Key Stage 1 and 2

Our teaching and learning strategy is built upon the Early Years Foundation Stage guidance and follows The National Curriculum. Children are taught in their classes with a focus on 'Quality First Teaching'. Teachers deliver lessons through a variety of lesson structures and the process rather than the outcome helps to embed new strategies or concepts. Mistakes are embraced in the classroom to allow for collaboration and discussion to understand why and how child can edit their work and understand their next steps.

The teaching of mathematics in Key Stages One and Two is based on six key principles:

1. Teachers believe in the importance of mathematics and that the vast majority of children can succeed in learning mathematics in line with national expectations.
2. In most year groups, the whole class is taught mathematics together, with no differentiation by acceleration to new content. **We do not group children by ability.** The learning needs of individuals are addressed through careful scaffolding, questioning

and appropriate rapid intervention where necessary, to provide the appropriate support and challenge. It is written into our action plan to adopt this approach across the whole school over the next few years.

3. The reasoning behind mathematical processes is emphasised. Teacher/pupil interaction explores **how** answers were obtained as well as **why** the method worked and what might be the most efficient strategy.
4. Precise mathematical language, often given as stem sentences, is used by teachers so that mathematical ideas are conveyed with clarity and precision. We value 'mathematical talk' and children get lots of opportunity to talk about and evaluate their mathematics during lessons.
5. **Conceptual variation** and **procedural variation** are used extensively throughout teaching. This helps to present the mathematics in ways that promote deep, sustainable learning.
6. Sufficient time is spent on key concepts to ensure learning is well developed and deeply embedded before moving on.

Features of Lesson Design

1. Teacher input usually lasts around 30 minutes giving ample time for independent practice whilst the teacher delivers **rapid intervention** should somebody require it. Independent practice includes reasoning, problem solving and higher order thinking activities.
2. Lessons are sharply focused with one new objective introduced at a time.
3. Difficult points and potential misconceptions are identified in advance and strategies to address them planned. Key questions are planned, to challenge thinking and develop learning for all pupils.
4. The use of high-quality materials and tasks to support learning and provide access to the mathematics is integrated into lessons.
5. There is regular interchange between concrete/contextual ideas and their abstract/symbolic representation.
6. Making comparisons is an important form of developing deep knowledge. The questions "**What's the same, what's different?**" are often used to draw attention to essential features of concepts. What is a triangle? What it isn't... What it is... ?
7. Teacher-led discussion is interspersed with short tasks involving pupil-to-pupil discussion and completion of short activities. Formative assessment is carried out throughout the lesson; the teacher regularly checks pupils' knowledge and understanding and adjusts the lesson accordingly. This forms part of the mastery learning instructional process.

Planning

Teachers plan in accordance with the National Curriculum. Through Years 1 to 6, we use the Power Maths White Rose edition resources which form a coherent programme of high-quality materials and exercises. These have been structured with great care to build deep conceptual knowledge alongside developing procedural fluency.

The Power Maths textbooks and workbooks are arranged in chapters and, over the course of the academic year, all units of the 2014 National Curriculum are covered. Short term planning is done on a weekly basis where teachers also plan activities and additional tasks, which offer support and provide further challenge for children who are able to progress further in their learning.

In KS1 and KS2, children record their work into their own Power Maths Practice book. Where appropriate, children will record their responses to the 'think together' part of the lesson in their Maths books or on individual whiteboards. Support tasks, further challenge questions and interactive questions are also recorded here.

Teachers are also encouraged to use resources such as White Rose, Numicon handbooks and NCETM Teaching for Mastery support documents to help them plan and deliver high quality lessons which are pitched at the right level.

Assessment

Daily AfL is at the heart of our assessment policy. Teachers are to assess children throughout each lesson and adapt their teaching to the needs of the learners.

In the Foundation Stage children are assessed using short observational notes and formative assessment grids. At the start of the year, a baseline assessment is compiled against the Early Learning Goals. At the end of the year, the Early Learning Goals achieved are reported to parents and used in school to support the transition into Year 1. Progress is measured termly from the baseline and used to share with SLT in Pupil Progress Meetings to ensure all children are progressing at an appropriate level for them.

At the end of each year, teachers assess children in accordance to the Department for Education (DfE) Framework, stating whether they are working towards, expected, or working at a greater depth. (These statutory assessments are externally marked and awarded by the Standards and Testing Agency in Year 6)

- In Year 1, the NTS Rising Stars assessment is completed during the Summer term to support their end of year teacher assessment.
- In Year 2, the NTS Rising Stars assessment is used in the Autumn Term, a past Standardised Assessment test (SATs) in the Spring Term and the national SATs test paper in May.
- In Year 4, a multiplication baseline score is taken for children during the Autumn term and the national Multiplication Check is completed during the Summer term.
- In Years 3, 4 and 5 the NTS Rising Stars are used three times a year (Autumn, Spring and Summer term). The assessments, again support teacher judgements but will also give the teacher access to a 'maths age' and allow teachers to compare to other children nationally.

- In Year 6, past SATs papers are used in the Autumn and Spring term; the children then undertake the national SATs test paper in May.

SLT review this data termly and use this as the basis of Pupil Progress Meetings, which then feed into action plans for staff to ensure progress and 'challenge for all'.

If children are working below the expected level for their year group due to SEN needs, teachers will assess the child against their own small steps in learning. Teachers should ensure they understand the needs of these children and that communication with parents is clear. The teacher needs to identify the key gaps in the children's learning and plan for their specific needs.

Homework and Parental Involvement

When appropriate information evenings are held to provide information to parents regarding the mathematics curriculum and to allow them to have the opportunity to ask questions.

TLCs (Termly Learning Conferences) are completed in the Autumn and Spring Terms. This is an opportunity for the parent to see the progress of their child's mathematics, discuss the attainment at that point in the year and to discuss their next steps.

Year 6 provide a SATs information evening to understand the end of Year 6 SATs tests. Booster sessions to support learners are provided in the build-up to the SATs to ensure children feel confident and prepared for the SATs tests.

Homework for year groups 2 to 6 utilises the Times Table Rock stars web-based platform. Furthermore, in year 6, the children are given homework tasks on the SATS Companion website. This is used to support the learning in the classroom, can assess the children knowledge and provides tutorials for the child to independently supplement their learning.

The Role of ICT

Each class has an interactive LED screens installed, which is used when appropriate in lessons. Teachers and children also have access to iPads and chrome books and can be used in mathematics when appropriate to enhance the children's understanding of mathematical concepts.

Resources

Classroom resources for mathematics include the following: Numicon, base10, place value cards, Rekenrek, counting sticks, subitizing cards, rulers, Unifix, cubes, dice, dominoes, calculators (KS2), number lines and hundred squares. Central resources in mathematics are

the responsibility of the maths co-ordinator who has a small budget available. These include equipment for measurement, shape and space activities, government documents, resources for teaching money, problem solving and investigational activities, games, number mats and posters.

Impact

We hope the impact of our Maths curriculum will enable children to make progress and achieve in-line with national standards. Our school values every child and the norms within our mathematics lessons are:

1. Everyone can learn mathematics to the highest levels.
2. If you 'can't do it', you 'can't do it **yet**'.
3. Mistakes are valuable.
4. Questions are important.
5. Mathematics is about creativity and problem solving.
6. Mathematics is about making connections and communicating what we think.
7. Depth is much more important than speed.
8. Maths lessons are about learning, not performing.

Review and Evaluation

Opportunities for teachers to review the scheme, policy and published materials and action plan (SIP) are given on a regular basis during staff meetings.