Review Date:- July 2023

MATHEMATICS POLICY

"Good mathematics is not about how many answers you know … It's how you behave when you don't know." Author unknown

"I like maths and it is important. We need it for everyday life."

--Year 5 pupil – October 2019

Aims of the Mathematics Curriculum

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. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Y5/6 Maths Team Challenge

KS1 Trip to HSBC

National Curriculum - Purpose of Study

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.

What we intend to do

The study of Mathematics develops children's abilities to make sense of the world around them through developing their ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships and patterns in both number and space in their everyday lives.
When teaching mathematics at Brabin's, we intend to provide a curriculum which caters for the needs of all individuals and sets them up with the necessary skills and knowledge for them to become successful in their future adventures. We aim to prepare them for a successful working life by incorporating sustained levels of challenge through varied and high quality activities with a focus on fluency, reasoning and problem solving.

Pupils are required to explore maths in depth, using mathematical vocabulary to reason and explain their workings. We encourage children to support and challenge each other's' thinking to help reach conclusions.
A wide range of mathematical resources are used and pupils are taught to show their workings in a concrete, pictorial and abstract form wherever suitable. They are taught to explain their choice of methods and develop their mathematical reasoning skills. We encourage resilience, adaptability and acceptance that struggle is often a necessary step in learning.
Our curriculum allows children to better make sense of the world around them relating the pattern between mathematics and everyday life.

More Able Learners in Mathematics

HOW LEARNERS ARE CHALLENGED

All children are challenged through quality first teaching within every maths lesson. Children will be encouraged to 'aim high' and be the best they can be.

To challenge **more able** learners teachers will:

*Anticipate and adapt their planning.

*Deepen understanding through well-chosen next step tasks.

*Use skilful questioning to promote conceptual understanding.

*Use problems that can be extended for more able learners.

*Use concrete, pictorial and abstract ("CPA") representation.

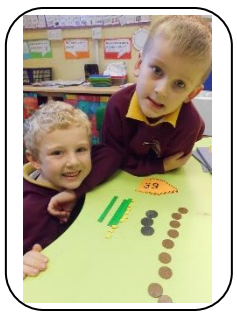
*Allow time to explore, think and reflect.

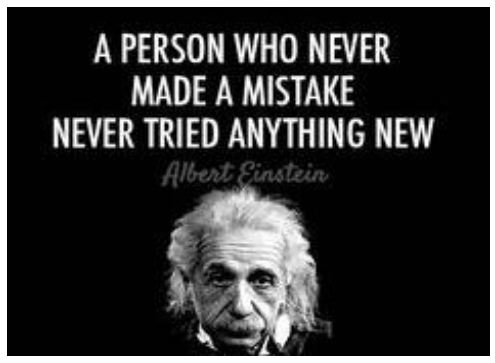
Non-Negotiables in Maths

- **Respect everyone's responses but offer challenge in a supportive way**
- **Be resilient**
- **Take risks, mistakes help you learn**

All children will access…

- A range of resources to support their learning
- Opportunities to solve problems and reason
- Challenges to help build resilience
- Process success criteria to show the steps to success
- Varied practice
- A supportive environment where children are encouraged to take risks and learn from mistakes
- Opportunities to work practically and then pictorially
- Work modelled by the teacher
- Opportunities to explain their reasoning and challenge each other





Supporting Learners in Mathematics

Learning in mathematics is carefully planned to include all learners. Learning may be differentiated by outcome, by support, by task or by resources.
A range of interventions are also deployed to help close gaps or attend to individual needs. These may be delivered by the class teacher or teaching assistant within or outside the maths lesson.
A comprehensive series of interventions are also provided to offer targeted support – these may cover basic number recognition, times tables or time.
Where needed, children may have an Individual Support Plan to target specific areas. Each target will be SMART – specific, measurable, attainable, relevant and timely. These will be taught and supported by teachers and teaching assistants.

Outdoor Maths focus in Forest School Sessions

PARENTAL INVOLVEMENT

Parents are invited into school twice yearly to discuss their children's work in maths. Children's individual maths targets are also shared with parents so that they can support their child at home.
Information regarding key learning and activities are shared on the website.
Relevant homework is given weekly to support the work being done in class.

Implementation

What Mathematics will look like

A variety of teaching and learning styles are demonstrated in mathematics lessons. Our main aim is to develop children's knowledge, skills and understanding in mathematics. We do this through a daily lesson that has elements of whole-class, group-directed teaching and independent work. During these lessons, the children are encouraged to share their reasoning and challenge each other's thinking in a supportive and collaborative manner.
A wide range of resources such as number lines, number squares, digit cards and small apparatus are used to support their work through visual representation.
Maths' Working Walls capture higher-order vocabulary, provide challenging questions and display process success criteria as developed by the children. Visual representations are modelled and shared to support the learning of the children.

We believe that children learn best when skills and concepts are taught as a spiral curriculum so they can be practiced, revisited and applied repeatedly throughout the year and during a child's time at primary school. The children are encouraged to see the relationships between different concepts within maths and apply their knowledge to new situations.
In all classes there are children of differing mathematical ability. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies, such as, differentiated work, the use of practical equipment or the use of highly skilled teaching assistants.

BRABIN'S ENDOWED PRIMARY SCHOOL

Maths Curriculum Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1/2	-Place Value -Length and Mass -Addition and Subtraction -2D and 3D shape	-Counting, Sequencing and Sorting -Statistics -Fractions -Capacity and Volume -Money -Time	- Place Value -Mass and Volume and Capacity -Addition and Subtraction -Money -Multiplication and Division	-Length and Mass -Addition and Subtraction -2-D and 3-D Shapes -Fractions -Position and Direction -Time	-Place Value -Addition and Subtraction -Capacity and Volume (Y2 Temperature) -Fractions -Position, Direction and Time -2D and 3D shape	-Time -Multiplication and Division -Statistics and Calculation -Measurement -Sorting
Year 3/4	-Place Value, Addition and Subtraction -Length and Perimeter -Statistics -Addition and subtraction	-Multiplication -Division -Time -3-D Shape	-Place Value -Multiplication -Division -Fractions -Negative numbers	-Addition and Subtraction -2D shape -Multiplication and division in the context of measures -Time -Fractions	-Mental addition and subtraction -Volume, capacity and mass -Multiplication within contexts -2D and 3D shape	-Mental calculations (addition, subtraction, multiplication and division) -Fractions (equivalence) -Statistics -Time
Year 5/6	-Place Value incl. decimals -Mental and Written Addition and Subtraction -Mental and Written Multiplication -Mental and Written Division	-Mental and Written Division -Fractions, Decimals & Percentages -Geometry and Area -Statistics	-Place Value & Calculations -Shape -Sequences and Algebra -Geometry: properties and co-ordinates	-Fractions, decimals and percentages -Measures and volume -Ratio and proportion -Geometry 3D -Statistics- averages	-Place Value -Measures: metric/imperial - Geometry: angles and pie charts -Fractions, decimals, percentages, ratio and proportion	-Measures -Calculations -Fractions & Shape

Subject Organisation and Implementation at Brabin's

Maths is taught following the EYFS Framework and the National Curriculum for Mathematics Programmes of Study for Key Stages 1 and 2, National Curriculum 2014.

We adapt the Lancashire Math's Scheme and other resources to plan our curriculum tailored to meet the needs of our mixed age classes.

It is the class teacher who completes the weekly plans for the teaching of mathematics. These weekly plans list the specific learning objectives for each lesson and give details of how the lessons are to be taught in sequence. The class teacher keeps these individual plans. The class teacher and subject leader often discuss them.

The class teachers also make use of the Lancashire LAPS documents to ensure that as the children revisit concepts throughout the year they build on previous knowledge and make good progress.

The DfE and NCETM Ready to Progress materials are also used to support the teaching of maths and the progression from one year to the next.

The NCETM Mastering Number programme is also taught to KS1 pupils outside the maths lesson to improve their number fluency and calculations skills.

Every lesson will help promote the aims of the National Curriculum and will involve elements of fluency, reasoning or problem-solving.

Professional Development in Mathematics

At Brabin's, we intend to keep the subject of mathematics rigorous and alive so it is reflective of pedagogical research and is ambitious in its aims. To do this, we invest in Continued Professional Development in maths for our staff.
The school staff are regularly encouraged to access resources and research from the NCETM. The subject leader regularly attends subject leader network meetings and feeds back anything of relevance to ensure all staff members are kept up to date.

SPIRITUAL, MORAL, SOCIAL AND CULTURAL DEVELOPMENT WITHIN MATHS

	We promote **spiritual** development	We promote **moral** development	We promote **social** development	We promote **cultural** development
Maths	The study of mathematics enables students to make sense of the world around them and we strive to enable each of our students to explore the connections between their numeracy skills and every-day life. Developing deep thinking and an ability to question the way in which the world works promotes the spiritual growth of students.	The moral development of students is an important thread running through the mathematics curriculum. Students are provided with opportunities to use their maths skills in real life contexts, applying and exploring the skills required in solving various problems.	Problem solving skills and teamwork are fundamental to mathematics through creative thinking, discussion, explaining and presenting ideas. Pupils are always encouraged to explain concepts to each other and support each other in their learning. In this manner, students realise their own strengths and feel a sense of achievement which often boosts confidence. Over time they become more independent and resilient learners.	Mathematics is a universal language with a number of cultural inputs throughout the ages. Different approaches to mathematics from around the world are often explored during cross curricular work in history. This provides an opportunity to discuss their origins. We try to develop an awareness of both the history of maths alongside the realisation that many topics we still learn today have travelled across the world.

CULTURAL CAPITAL

'It is the essential knowledge that pupils need to be educated citizens, introducing them to the best that has been thought and said and helping to engender an appreciation of human creativity and achievement.'

Mathematics presents good opportunities for children to learn how to take risks, becoming resilient, innovative and resourceful problem solvers.

DEVELOPING BRITISH VALUES WITHIN THE MATHEMATICS CURRICULUM

Children at Brabin's will demonstrate the following values in maths:

Democracy
Take into account the views of others in shared activities.

The Rule of Law
Undertake safe practices, following class rules during projects and activities for the benefit of all.
Understand the consequences if rules are not followed.

Individual Liberty
Make own choices.
Tolerance of those with different opinions.

Mutual Respect
To behave appropriately allowing all participants the opportunity to work effectively.
Review each other's work respectfully.
Work together on projects, help and advice others.

WELLBEING AND MENTAL HEALTH

"*In order to help their pupils succeed; schools have a role to play in supporting them to be resilient and mentally healthy*" Department of Education, 2014

THE Rose Review: Mathematics in Primary Years reminds us that maths provides us with a powerful language for abstraction and logical thinking. It is an intensely human activity that embraces connected processes, such as representing, pattern-seeking, generalising, proving and evaluating, which are relevant beyond the subject.
At Brabin's we recognise the role that maths can play in developing a child's mental health and wellbeing, through building resilience and solving problems collaboratively in a supportive environment. Also by respecting everybody's contributions.

MATHEMATICS IN THE EARLY YEARS

We teach mathematics in our reception class using the NCETM Mastering Number programme and, as the class is part of the Foundation Stage, we also relate the mathematical aspects of the children's work to the objectives set out in the Development Matters, which underpin the planning for children aged three to five. We give all the children ample opportunity to develop their understanding of number, measurement, pattern, shape and space through varied activities that allow them to enjoy, explore, practise and talk confidently about mathematics.

Mathematics is one of the four specific areas in the Early Years Foundation Stage (EYFS) and is broken down into two aspects.

Number
Children at the expected level of development will:
- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts

Numerical Patterns
Children at the expected level of development will:
- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally

ASSESSMENT

All children are encouraged to be involved in the process of learning. In lessons, across the school, teachers will strive to provide instant oral feedback. When appropriate, the children have the opportunity to respond to written marking and complete 'fix it's' in red pen in line with our whole school marking policy. Teachers are expected to make regular assessments of each child's progress and use it effectively to inform their planning.
Pupil progress data is shared with the Subject Leader on a half termly basis. More formal assessments, such as Lancashire end of term assessments of arithmetic and reasoning are used from Year 1 to Year 6 or past SATS papers for Year 2 and Year 6 to help inform judgements to complete the end of term tracker. Pupil Progress meetings takes place each term.

In the EYFS, formative assessments are carried out on a daily basis. This type of assessment informs planning, the children's next steps and monitors progress. The level of development children should be expected to have attained by the end of the EYFS is defined by the early learning goals (ELGs). At the end of EYFS, the teacher completes an end of year report and EYFS Profile, making a judgment whether a child is: meeting the level of development expected at the end of the EYFS (expected) or has not yet reached this level (Emerging). In maths, the judgements will be made against the ELGs for Number and Numerical Patterns.

Children will add learning they are proud of to their Learning Tapestries during the year. They will take this home when they leave school

Statutory assessments include: End of Key Stage 1 and Key Stage 2 SATS.

MONITORING

Monitoring is undertaken by the Headteacher/Subject Leader. This is conducted regularly and includes: -

- Monitoring of planning
- Book Scrutiny
- Learning Environment Walkthroughs
- Talking to children
- Data analysis
- Lesson Observation

Information will be shared with all governors through the Curriculum Committee, the Headteacher Report to Governors and with our Governor for Maths, Mr John Stott.

IMPACT

Children will leave Brabin's Endowed Primary School recognising that mathematics is essential for everyday life and making at least good progress from their starting point. They will recognise the importance of mathematics as a facilitating subject to enable them to access other areas of learning and operate successfully is everyday life both now and in the future. We strive to ensure that the children will be resilient and learn to take risks recognising the importance of learning from their mistakes. They will be able to work collaboratively with others and independently to solve problems and clearly explain their thinking.