



BIDSTON AVENUE PRIMARY SCHOOL

MATHS SUBJECT POLICY September 2022

Approved by the Governing Body of Bidston Avenue Primary School

Autumn 2022

Signed: _____

CLlr George Davies (Chair of Governors)

Bidston Avenue Primary School – Achieving Together



Our Vision:

Every child will leave school as a **reader** who **thinks** critically and has the **resilience** for the world's challenges.



Our Mission:

Bidston Avenue Primary School delivers a **world class curriculum**.

It is accessible, inspiring and ambitious, so that every child is equipped to make a positive contribution.



Evidence Tells Us:

Reading ability is the best predictor of future educational achievement and future success.

Tomorrow's jobs require **thinking** and problem solving abilities.

Children who are **resilient** flourish in all environments.

We value: *friendship / RESPECT / equality / determination / inspiration / courage / excellence*

Intent

Purpose

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.

Aims

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 nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects. The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

Supporting our Vision

Teaching maths for mastery is a transformational approach to maths teaching which stems from high performing Asian nations such as Singapore. When taught to master maths, children develop their mathematical fluency without resorting to rote learning and are able to solve non-routine maths problems without having to memorise procedures.

- Evidence-based approach to teaching maths
- Helps pupils develop a deep, long-term and adaptable understanding of maths
- Inclusive approach where all children achieve
- Slower pace which results in greater progress
- Reflected in the 2014 English national curriculum for mathematics
- Endorsed by the Department for Education, NCETM and OFSTED

Singapore developed a new way of teaching maths following their poor performance in international league tables in the early 1980's. The Singapore Ministry of Education decided to take the best practice research findings from the West and applied them to the classroom with transformational results. Based on recommendations from notable experts such as Jerome Bruner, Richard Skemp, Jean Piaget, Lev Vygotsky, and Zoltan Dienes, Singapore maths is an amalgamation of global ideas delivered as a highly-effective programme of teaching methods and resources.

We want our children to become confident, independent learners and to understand how Mathematics impacts our daily lives. We want them to constantly be asking questions, applying knowledge and to ensure that they understand that Mathematics plays a vital role in our future. During the Maths lessons, we will ensure that children are given the opportunity to ask ambitious questions, use manipulatives and apply knowledge to word problems. Children will draw conclusions, use evidence to justify their ideas and use their understanding to explain their findings. It is vital that knowledge content is taught in context with real life experiences, making links between topics, applying skills and understanding from previous learning to new areas as they are met. As part of this it is important that they are exposed to and specifically taught the essential Mathematical vocabulary related to each topic in order to demonstrate their knowledge and understanding effectively.

A high-quality mathematics education 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. (National Curriculum 2014)

At Bidston Avenue Primary School, we believe that **every** child can master **an understanding and love** of **mathematics** with the **right kind** of **teaching and support**.

The drivers that shape our curriculum



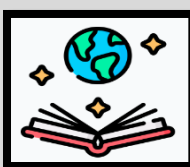
Reader

At Bidston Avenue we understand that becoming a reader enables all pupils to access the curriculum and master key concepts. Developing reading skills ensures that pupils can access and understand vital vocabulary and notation to become fluent mathematicians. Being a reader ensures that children can articulate their own understanding and effectively explain this knowledge to others. A focus on vocabulary and maths terminology means that children have the necessary skills to understand a wide range of concepts and make links. This knowledge can be effectively applied to other areas of the curriculum.



Thinker

Critical thinking is key to deep and sustainable learning in maths. Pupils at Bidston Avenue develop their mathematical thinking by being encouraged to explore what they notice in the structures and patterns of maths. Children are given time in lessons to think deeply about key concepts and to critically analyse strategies and efficient methods. This ensures that children have a deep understanding of maths and avoid the need to simply rely on procedures. Providing children with opportunities to revisit learning through quizzes and activities ensures that learning is embedded and fun.



Resilience

The maths curriculum is designed in such a way as to promote resilience and self-confidence as all pupils have access to the same learning and move through the content together. Problem-solving is at the heart of the design and therefore enables children to use prior knowledge and grapple with non-familiar contexts. Children are encouraged to work collaboratively, sharing ideas to reach logical conclusions. They become accustomed to valuing the opinions of others and develop the skills necessary to justify their thought processes. Children are encouraged to develop resilience by consistently re-evaluating their ideas and opinions based on factual evidence. Small steps of learning enable all children to succeed and build resilience in the same way.

Supporting our Values

In all we do, we promote the following values

- **Respect**
- Friendship
- Determination
- Excellence
- Courage
- Inspiration
- Equality

Opportunities for promoting acquisition of Cultural Capital

At Bidston Avenue, we understand the importance of cultural capital on the lives of our children. We aim to give the children the most exciting, inspiring and culturally aware experiences of their lives. The knowledge and experiences will equip them for the world around us, the way they live their lives and the future.

We ensure that all children have a clear understanding of Mathematical concepts to apply to their own life experiences whilst giving them the opportunity for awe-inspiring experiences. Real life visits, residential trips and working alongside specialist visitors provide the children with role models for the future and a determination to 'have a go. The belief that ANYTHING IS POSSIBLE!



Implementation

Bidston Avenue Primary School delivers a world class curriculum. It is accessible, inspiring and ambitious, so that every child is equipped to make a positive contribution.

In ensuring high standards of teaching and learning in Maths, we implement a curriculum that is progressive throughout the whole school.

Planning for Maths is a process in which all teachers are involved to ensure that the school gives full coverage of, 'The National Curriculum programmes of study for Maths 2014' and, Maths in the Early Years Foundation Stage.

Teachers plan the learning journey together to ensure full coverage and progression of the History curriculum is achieved. Teachers also plan to suit their children's interests, current events, their own teaching style, the use of any support staff and the resources available.

Planning

Teachers follow the long and medium planning from the 'Maths no Problem' Scheme.

Daily planning addresses four key areas:

- 1 - What do I want them to learn?
- 2 - How will I know if they have learned it?
- 3 - What will I do if they already know it?
- 4 - What will I do if they struggle to learn it?

This can take the form of notes on the planning, additional notes or a planning format alongside the planning

Teaching and Learning

Key approaches to learning - learning is about making connections

- The spiral curriculum (curriculum approach) – connecting to extend existing knowledge and skills
- The Concrete-Pictorial-Abstract (C-P-A) development of concepts (pedagogical approach) that connect to make sense of learning
- Learning experiences (Learning approach) – connections to relate the curriculum. 'Ideas do not get crystallised unless they get a chance to be articulated.'

There are 5 main components to most mathematics lesson (in order):

- Explore }
- Structure } Anchor Task
- Journal }
- Reflect } Let's Learn
- Practice } Guided and Independent

An outline of the typical lesson structure used in the Singapore approach

<u>Lesson Phase</u>	<u>Outline</u>
<u>Explore</u> Anchor Task: Problem given to explore	In Focus – A real life problem is presented to pupils (based on what is in the textbook) and they are left to explore it. The Teacher uses this time to observe their responses and prompt further exploration with questioning.
<u>Structure</u> Anchor Task: Children's response	The Teacher gathers together pupil's ideas and the class discuss them as a whole group, often re-exploring new suggestions made.
<u>Journal</u> Anchor Task: Note taking preferred method	Pupils record what they have been doing in their maths journals – there is an emphasis on showing things in different ways and effective communication of thinking.

Reflect

Text book

Let's Learn – The textbook is used and the Teacher guides the class through the textbook solutions to the problem they have been discussing.

Practice

Guided by Teacher then independent

Guided Practice – The Teacher starts off by guiding the class through examples of similar problems to the one they have just done. Then, pupils work through more examples independently with the Teacher supporting them if necessary. All questions are typified by their constant variation – they are designed to extend pupil's thinking rather than just be lots of examples presented in the same kind of way.

Work Book – The children complete tasks independently building on prior learning and new knowledge from the lesson.

Subject specific SEND Scaffolding

Teachers reinforce an expectation that all pupils are capable of mastering maths.

The majority of children progress through the curriculum content at the same pace. Those children who are not sufficiently fluent are provided additional support to consolidate their understanding before moving on.

Planning will clearly indicate provision for children who have achieved the objective and children who need additional support. This can take the form of scaffolding within the lesson for low attainers, clarification of misconceptions by the teacher, specific intervention, small group work or pre-teaching support. Routine use of manipulatives, teacher modelling, pre-teach and interventions were necessary are used to support learners.

Challenge for the rapid graspers will include activities/questions which deepen understanding and promote making links and connections.

The key approaches to Maths learning will be underpinned in other subjects including Science and Geography where maths skills/problem solving can be developed further enabling deeper maths learning.

Links to other subjects/curriculum areas:

English – spoken language in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof, written explanations for mathematical problems and justification.

Science – Data handling, reading scales on thermometers, sound loggers, measuring.

Art - Exploring patterns, symmetry and sequences

ICT - Using spreadsheets & databases to analyse and explore data, using apps to support learning (TT Rockstars, SumDog, Purple Mash), coding for Scratch, calculators.

DT -Solving problems linked to materials, measuring, estimating and interpreting scales, calculating costs for materials, exploring, designing and making food.

Geography -Using spreadsheets & databases to analyse and explore data, using coordinates for map work and plotting points for directions.

History – Understanding timelines, chronological dates,

Languages - Counting and completing simple maths activities in Mandarin, telling the time, saying the date.

Music - Using songs and rhymes to learn tables and recall number facts, counting the beats in time with music, composition.

PE – Dance -moving in response to music in dance, working out team numbers, planning a competition.

PSHE - working with money, calculating a budget, thinking for themselves and building on foundations by using discussion to probe and remedy misconceptions.

Experiences every child should have:

We believe that practical and first-hand experiences are vital for our children. They bring learning to life and make it meaningful. This is particularly true in our local context, where many of our children will not otherwise have access to the experience which others might take for granted.

- Make things relatable to 'real life' situations.
- Creating and introducing inspirational life experiences that can be drawn on in future life.
- Be surprised by what happens and excited about what they discover when working practically using manipulatives.
- Make discoveries through trial and error - and not being afraid to get things wrong.

Organisation

Maths Teaching in the Early Years Foundation Stage

Opportunities are provided for children in Foundation 1 and Foundation 2 to meet the age-related expectations laid out in the Development Matters non-statutory guidance document. The DFE Statutory Framework for the Early Years Foundation Stage sets out the two early Learning Goals in Mathematics, for children to achieve by the end of Early Years Foundation Stage.

At Bidston Avenue Primary, children in Foundation 1 and Foundation 2 investigate the uses of number in their everyday world. Time is dedicated to investigate each of the numbers to 10, and then beyond.

Everyday problems and real-life objects are used where possible in teaching sessions, and Continuous Provision. Concrete, pictorial and abstract resources are available for children to use for tasks in Continuous Provision. The adult's focus will be to support, challenge and extend children in the various areas of learning.

Maths sessions in Foundation 1 are composed of:

- Counting to secure the cardinal order principle
- Teacher and practitioner input that focuses on concrete strategies and guided practice
- Independent or collaborative tasks following the main input

The sessions may also include:

- Number rhymes and songs
- Exploring maths through a story
- Playing games
- Puppet play

Maths sessions in Foundation 2 use the '**Maths – No Problem! Foundations**' programme. Each session develops key mathematical ideas and a deep maths mastery focus through direct instruction, small group activities and is consolidated and further enhanced through Continuous Provision tasks. It also incorporates a maths language feature to support mathematical vocabulary and language development.

Maths sessions in Key Stage 1 and 2 all use the '**Maths – No Problem!** programme.

Roles and Responsibilities

The Maths leader is responsible for providing an overview of the subject across the school to inform staff planning and to offer advice in the ways in which the curriculum can be delivered in an effective and engaging way.

They should have an up-to-date knowledge of the subject requirements and ensure that these are met across the school, as well as having an overview of assessment.

They are responsible for ensuring that an overview of the subject is available on the school website.

The Maths leader also has a sound knowledge of the resources, which are available within school, and ensures that resources are replenished and updated as necessary.

The Maths leader is responsible for the planning and implementation of any subject specific events, which are ran in the school.

Individual teachers are responsible for the day to day planning, delivery and assessment of the Maths curriculum.

The Senior Leadership team is responsible for ensuring there is a good professional dialogue with the subject leader throughout the school year.

Impact

Every child will leave as a **reader** who **thinks** critically and has the **resilience** for the world's challenges.

The impact and measure of this is to ensure children not only acquire the appropriate age-related knowledge linked to the Maths curriculum, but also skills which equip them to progress from their starting points, and within their everyday lives.

Assessment

Learning Journals

Every child (Y1-Y6) has a mathematics journal to record their thinking and explanations in each session. The journals will be marked in accordance with school policy. A tick to show the work is correct. If the work is incorrect, the Teacher will acknowledge this with a dot, scaffolding support or a question.

Workbooks

Every child (Y1-Y6) has a mathematics workbook to independently apply their learning from the session. The Teacher will indicate whether the work is correct with a tick or with a dot if it is incorrect.

If the child has received additional support when completing the workbook, the Teacher or child will record this on the page.

Any misconceptions will be addressed or scaffolded throughout the lesson/intervention/feedback before the next session.

A child can receive intervention during the afternoon session or a pre-teach session so that they are confident and ready for the next lesson.

The children complete a review at the end of each unit, mid-year assessments and revision sessions at the end of each book. They support teacher assessment and the GL assessment process.

Summative Assessment

Summative assessments will take at the end of each term. These assessments are based upon the children's learning over that half term/term. This will be a clear indication of what the child has understood, recalled and applied their learning independently. Can the children independently apply their learning? Whole school moderation (internal and external) is used to ascertain the final assessment and ensure the attainment is secure.

At Bidston Avenue Primary School, we use GL assessments to check the learning against the National Curriculum. We use these to check the children's standards against the national picture.

Each child will receive a standardised score. We use this data to further support intervention and out of hours learning.

Children in Year 4 are assessed on all multiplication tables up to 12x12. They complete an online assessment in June which consists of 25 random questions. The children have 6 seconds to answer each question. The expectation is for all children to answer every question correctly.

Monitoring

The Maths subject lead is responsible for monitoring the standards of children's work and the quality of teaching.

The lead supports colleagues in the teaching of Maths by addressing CPD needs and by giving them information about current developments in the subject, and by providing a strategic lead and direction for the subject in the school.

The subject lead is also responsible for reviewing developments for Maths identified on the School Improvement Plan, evaluating strengths and weaknesses in the subject, and indicating areas for further improvement.

Monitoring and Review

The Maths subject lead is primarily responsible for monitoring the implementation of this policy.

This will be through ongoing discussion with the Senior Leadership Team and consideration of the evidence gathered in the subject file. The subject lead will report on this to the governor's curriculum committee.

The work of the subject leader is also subject to review by the head teacher as part of our performance management arrangements.

Governor Approval and Review Dates

The policy is to be reviewed annually.