



Southfields Primary School

Mathematics Policy

Date agreed: September 2022

Review Date: September 2024

This policy, having been presented to, and agreed upon by the whole staff and Governors, will be distributed to:

- All teaching staff
- School governors

A copy of the policy will also be available in:

- The Staffroom
- The Head's office
- School web site

This will ensure that the policy is readily available to visiting teachers, support staff and parents.

Southfields Primary is totally committed to social justice and improving life chances for potentially vulnerable children. It is dedicated to sharing its work and findings beyond the school to improve outcomes for as many children as it can reach and has a particular specialism in Speech and Language development.

1. Vision, Aims and Curriculum Intent

Our children are not statistics: they are the future. We will equip them with the skills and knowledge to shape their world and become happy, confident and productive members of society.

**The more that you read,
the more things you will know.
The more that you learn,
the more places you'll go.**
-Dr. Seuss

We are education explorers and will endeavour to:

- Ensure that all children receive a broad, balanced 'first class' education.
- Create an interesting and stimulating environment, which reflects our values, promotes a sense of community and an individual sense of self-worth.
- Provide a differentiated curriculum which will enable all children, from the most able to those with special educational needs, to make excellent progress.
- To enable our children to develop life skills, for an everchanging world by continually evolving the curriculum.
- Promote social, cultural, moral and spiritual development, preparing children to be responsible citizens with British values.
- Encourage partnership with families and foster positive links with the community.
- Provide opportunities for children to develop independent enquiring minds and an enthusiasm for learning.
- Promote an understanding of the responsibility to sustain the local and global environment.
- To diminish the difference between pupil premium and disadvantaged children and their peers.
- To make links between social capital to become valued employees who contribute to the future

We believe the most effective way of achieving these aims is through the promotion of enquiry and curiosity, enthusiasm and challenge, sharing and learning together, the acceptance and embracing of differences, openness, respect and perseverance.

Our school aims to be an inclusive school where all children are welcome, feel happy and look forward to their school day. Every child is unique and we view those differences as opportunities for adults and children alike to learn more from each other.

1.1 Southfields Mathematics Aims and Objectives

The new National Curriculum states that:

“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.”

1.2 Our Intent

Southfields Primary School is based upon a fundamental belief that all children can achieve confidence and competence in mathematics, building fluency, a deep conceptual and procedural understanding through prolonged and varied practise. We see Mathematics very much as a multi-discipline, cross curricular, interconnected subject which should encourage creativity. As much revolves around the discussion about Mathematics between talk partners as it does the completing of calculations. We want children to see Mathematics as being relevant to their world and applicable to everyday life as well as being something that they will need as they move on through their school life and ultimately to the world of employment. To that end, a high-quality, inter-related and creative Mathematics experience should be one that develops the children’s ability to think mathematically and one which allows them to apply the tools to which they have been exposed in a variety of ways.

Following the introduction of the new National Curriculum in 2014 the emphasis has been to ensure that all children:

- Become **FLUENT**
- **REASON** and **EXPLAIN** mathematically
- Can **SOLVE PROBLEMS**

This means that children need to be regularly exposed to opportunities involving increasingly complex problem solving which allows them to apply their mathematical knowledge. In doing so they should be encouraged to develop an argument and line of enquiry which they can prove and justify using mathematical vocabulary. This includes the ability to break down problems, both routine and non-routine, into a series of steps.

2. Our Implementation

To continue to develop our Teaching for Mastery approach and further improve the quality and consistency of our maths teaching, we have adopted the White Rose scheme.

This scheme encourages the children to be **visualisers** as it incorporates a concrete – pictorial – abstract (CPA) approach to help children visualise the mathematics so that they understand mathematical concepts securely and make deeper connections between different representations. Through the small, sequenced steps, the children are equipped with the skills to think, reason and reflect confidently so that they can build their problem-solving skills which we use across our curriculum in all subjects.

Whilst embarking on their journey to mastery, the children also become **describers** as they regularly discuss the mathematics and draw upon key vocabulary to support them to take ideas further. They become **experimenters** as we want them to love and learn more about mathematics.

Children working at **mastery** can: recall rapidly and accurately mathematical facts; make connections between concepts; use a variety of representations to demonstrate understanding and articulate fully in discussion “how” they have calculated rich and sophisticated problems by using mathematical language.

We believe that **knowledge is not fixed** and explicitly embed a **growth-mindset** approach into all our children – through **hard work, practice** and a willingness to see **mistakes** as part of their journey - they can succeed. Mathematics is taught in **mixed-ability groupings** to enable children to learn collaboratively. We believe that our approach to mixed-ability groupings necessitates vital discussion: the use of accurate and specific **mathematical language** to explain what is known; validate an idea or reason and enable our children to develop a deep understanding that underpins all future learning.

Maths talk is integral to the structure of teaching at Southfields. Within lessons, **reflection time** is built in; this allows opportunities for children to make links and focus. Where possible, working in mixed-ability pairs or small-groups, children are encouraged to explain what they know using stem sentences and key mathematical language to discuss and express concepts precisely - this is empowering when clarifying understanding and can highlight any possible misconceptions.

To further develop our Teaching for Mastery approach, we are partnered with the Cambridge Maths Hub of Expertise, which enables all staff at Southfields attend staff meetings that regularly have a Mathematics focus that provides information on current thinking centred around Mastery Mathematics and introduces them to new teaching methodologies and ideas. In addition to this, teachers are given further CPD opportunities to develop their Mathematics teaching and learning, particularly in addressing the requirements of the new National Curriculum in relation to assessment and moderation at the end of each Key Stage.

It is important that parents and carers are actively involved in the children’s education. In order to help keep them informed of what is happening within school, we will run annual information sessions, alongside the Curriculum Open Days, which will look at current developments within the school, projects in which we are involved, new methodologies for delivering the teaching of Mathematics and also any new statutory changes such as curriculum or assessment/testing arrangements.

3. Early Years (EYFS) experience of Mathematics

A child’s early experiences with Number, Shape, Space and Measure are vitally important to their development as successful and independent learners. The Early Years (EYFS) team work hard to ensure that children have access to an engaging and

encouraging learning environment for children's early encounters which focuses upon building confidence in their ability to understand and use mathematics.

The children in Early Years carry out their learning following the White Rose Scheme alongside resources from Master the Curriculum. The small objectives built into the scheme enable the children to learn collaboratively through discussion so that they can build their vocabulary. The structure focuses on specific areas of learning from the EYFS framework which supports children's learning, understanding and development of key concepts. EYFS teachers and practitioners incorporate children's interests into both their learning environment and planned activities and the 'Characteristics of Effective Learning' are observed and linked to what the children are observed doing independently and alongside enabling adults. 'Thinking Critically' is a characteristic most often linked to Mathematics, where children are seen to be making links, finding new ways to do things, solving problems, changing strategies as needed, making predictions and developing ideas of grouping sequencing, cause and effect.

Through a combination of child-led, child-initiated and adult-led activities, mathematics is taught on a daily basis, ensuring that it is fun, interactive and most importantly, linked to children's current interests and fascinations. Within the EYFS, we also use the Concrete – Pictorial – Abstract process of learning when introducing new concepts. This approach develops children's understanding at a deeper level and can be used both at home and within the EYFS setting. Young children are happy engaging with construction toys and making marks on paper, but cannot always solve the problem of $5 + 2 = 7$ without a play-based introduction to this as a concept using concrete and pictorial resources. Children begin learning about number by playing with real objects and resources, e.g. shells, pebbles, toy figurines or cut out pictures. They build confidence with the basic idea of adding together or taking away alongside adults engaged in play before moving to the second stage of drawing pictures that represent their objects and fascinations. Much later in a child's mathematical development you will begin to see them including numbers in their drawings.

Children need to be exposed to different representations of mathematical concepts in order to embed their understanding of them. Children are given opportunities to reason and develop their skills around number, recognising patterns and relationships.

Short Home learning tasks and Weekly Updates are designed to give every child a wealth of opportunities to help you understand the processes taking place at school throughout the week. Counting aloud as you walk up the stairs or peg the washing out, will help children master the skill of counting in the right order, so they can later use that knowledge to support their problem solving. At Southfields, planning for mathematics involves providing children with 'real-life' opportunities to solve practical problems in different ways.

A child's inquisitive nature and natural curiosity help greatly with observing their approach to exploring 'number, numerical patterns and mathematics', where lots of discoveries and questions start outside in the outside learning environment, in the sand

or water tray, through filling and emptying containers and through messy play opportunities.

4. Planning and Assessment

Planning is followed through White Rose which is based on the National Curriculum Programmes of Study (2014). This ensures the correct progression of coverage in each year group. In addition to this, teachers have access to a range of other resources to 'Intervene Early' which is built up of a range of activities to provide further support, practise and challenge to their lessons to ensure all pupils are able to build on and extend their learning.

Teachers work in their year group teams to plan and deliver lessons that suit the particular learning styles of the children within that year group which follow the progression of skills. They will use their own judgement and use formative assessment to ensure a flexible approach is adopted which recognises the pace of learning within the classroom. Individual, paired and group work will be used across a series of lessons and children will be given reasoning tasks and problems to solve regularly so that all children can challenge, assess or demonstrate their learning.

Within each lesson, children should be allowed to engage in mathematical discussion, investigations, problem solving, practical experiences and written methods, as well as allowing time to demonstrate their understanding through consolidation and gap tasks.

In order to assess children's progress, teachers will use White Rose end of unit assessments and PiXL termly assessments. This will then be shared with the co-ordinator to give an overall picture of the schools understanding in each area of the programme of study. Teachers will use Scholar Pack to track the progress of the children informed by work in books and summative assessments, which will be monitored by the co-ordinator.

Children will be provided with feedback either verbally or through written marking. This feedback will recognise progress and address misconceptions. The feedback will enable the children to carry out the next step in their learning to further develop, challenge or clarify their understanding. When marking, teachers should adhere to the school's Marking Policy. This can be downloaded directly from the school website.

4.1 Short Term Planning

Teachers follow the medium-term plans adapted from the White Rose scheme. In addition to this, teachers create 'Intervene Early' activities that are based around learning that has taken place. Teachers use a variety of sources to create a support, practise and challenge activities based on their teacher assessment to ensure all children make progress. Teachers use Google Slides to record their daily planning.

4.2 Lesson Structure

At Southfields, every mathematics lesson begins with a **number fluency** session for 15 minutes. The session involves explicit teaching and daily practise of age-appropriate number facts. Following this, the children recall and discuss key vocabulary which progresses into **high-quality modelling** led by the teacher. Through the CPA approach, children experiment and practise the skill which is known as a **fluency** task. Tasks are incorporated to provide opportunities to collaboratively convince, prove and justify an answer through **reasoning verbally**. Children are taught how to apply their understanding of a mathematical concept to solve a problem and reason which is known as the **deepening** stage of the lesson. As part of our mastery approach, we **'Intervene Early'** to provide the children with further activities in order to strengthen or further extend their understanding following formative assessment in the lesson.

4.3 Calculations

A calculations policy was developed and revised in line with the new National Curriculum requirements in 2014. This is also in line with the expectations set out in White Rose. This can be downloaded from our School Website.

4.4 Calculators

Calculator skills are no longer taught as part of the Primary Mathematics Curriculum (2014) however as a school we will use calculators as we feel appropriate.

5. Resources and Displays

Mathematics resources are located within each classroom throughout the school in addition to the resources rooms located in Key Stage One and Two respectively (KS2 room is located beneath the second stairwell, KS1 resources room is located in the cupboard towards the back of the hall).

Resources kept in the classroom are accessible daily, clearly labelled and visible to the children. Additional resources that are borrowed from the resources rooms are the responsibility of the Teacher who collects them, should be signed out/in and returned to the correct location promptly after they have finished using it. The Teacher should inform the co-ordinator of any damages or losses so that they can be fixed/replaced if necessary.

Each classroom displays a working wall which includes relevant information to support children with their current unit of work. The working wall shows a journey of learning and a range of methods children can use to support their independent work. The working wall contains 'This week's vocabulary' which displays key words the children need to learn for the unit. To recognise and praise children's determination to practise their own mathematics skills, each classroom recognises the children's achievements from their online learning resources such as Times Table Rockstars and IXL.

Online resources are the responsibility of the Teachers and Teaching Assistants to ensure that children are using them efficiently. The co-ordinator will provide log in information for Teachers and Teaching Assistants to access any online resources and training provided half termly to support staff with using these effectively. It is the Teachers responsibility to notify the co-ordinator of any issues that arise with online resources to ensure that these can be rectified.

6. Home Learning

At Southfields we believe that home learning is very important to allow children additional time to practise their skills. We have devised a separate Home Learning Policy for Mathematics which can be accessed via the School Website.

7. The Impact of Our Implementation

- Mathematics is delivered in line with the National Curriculum guidelines
- They are equipped with the skills to become fluent, reason and solve problems in mathematics
- The delivery of Mathematics is filled with cross curricular opportunities
- The children learn Mathematics through a lively, exciting and stimulating environment which develops mathematics skills and knowledge accompanied by the quick recall of basic skills.
- Children confidently understand the meaning of mathematical vocabulary and apply this knowledge to reason and explain precisely
- Children have time to engage in discussions with their peers
- Children are challenged and stretched to take risks in their learning
- A sense of awe and wonder surrounding Mathematics involving parents and Governors is created
- All children show an enjoyment towards mathematics whatever their needs, talents
- or cultural background via a positive attitude.
- Children are secure in their understanding of number and relationships
- Children enjoy low entry-high ceiling challenges.

8. Monitoring and Evaluation

The policy and practice will be monitored and evaluated by the Mathematics co-ordinator and the Senior Leadership Team annually.

Teachers are observed as part of monitoring the School Development Plan to achieve high expectations in Mathematics teaching and learning. Feedback is given to the individual teacher orally by the observer and a written response will follow. Targets are set to address areas of development with a measurable timescale.

The co-ordinator is responsible for: keeping staff up to date on the curriculum area, offering advice, managing resources, working within a budget, analysing assessment results, organising INSET session/days, monitoring planning and ensuring any training needs of individual teachers are met, e.g. ECT's are supported.