

Mathematics Policy

Date	Author	Comment
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Mathematics Policy

This policy outlines the structures in place to ensure that Southcoates Primary Academy delivers a high quality Mathematics curriculum for all learners.

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Intent

Purpose of Study

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 non-routine 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 in order to reach greater depth in their learning. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

Implementation

Organisation

In Nursery and Reception, the mathematical aspects of the children's work are related to the objectives set out in the Early Years Framework, which underpins the curriculum planning for children aged three to five, in addition to using the White Rose Maths scheme in Reception. All of

the children are given ample opportunity to develop their understanding of number and number patterns through varied practical activities that allow them to enjoy, explore, practise and talk confidently about mathematics. These opportunities are provided in both structured, teacher-led sessions and through independent learning activities. The children's maths learning takes place both inside the classroom and outdoors.

In the Summer Term, the teachers from Reception and Year 1 liaise to ensure that the children are ready for their transition to Year 1, to reduce any gaps in learning from Early Years to Key Stage 1.

Mathematics is a core subject in the National Curriculum and the 2014 Primary National Curriculum is used at Southcoates Primary Academy as the basis for the teaching of mathematics. The Primary National Curriculum gives a detailed outline of what is taught in the long term, while the yearly teaching programme identifies the key objectives in mathematics that are taught in each year. The SPA Medium Term Plan for Mathematics outlines the specific objectives that are taught in maths.

Class teachers complete plans for the teaching of mathematics (either weekly or per unit), ensuring that all activities are age appropriate. These plans list the specific learning objectives for each lesson and give details of how the lessons are to be taught. The class teacher keeps these individual plans, and the class teacher and subject leader have opportunities to discuss them on an informal basis.

The **Subject Leader Audit for Mathematics** outlines:

- The unit(s) of focus for the half term
- Theme-related maths
- Wider Curriculum links

The **Termly Progression Document for Mathematics** details the procedural and declarative knowledge that will be taught in each phase, each term.

- Early Years objectives have been written in line with the **Early Years Framework**, with most of the mathematics objectives relating to the 'Mathematics' Area of Learning and Development.
- The objectives for Years One to Six cover the expectations of the **National Curriculum**.
- The mathematics curriculum at Southcoates plans for opportunities to embed learning related to our Curriculum Drivers: Safe Behaviours, Positive Role Models and Awareness of the World.
- The progression of technical vocabulary relating to Mathematics is also planned for on the **Termly Progression Document**.

Using the objectives from the Termly Progression Document for Mathematics and each phase's Medium Term Plans, **Short Term Planning** is conducted by teachers to plan the sequence of lessons that will enable the high quality teaching of the objectives.

The **Declarative and Procedural Knowledge Progression Document for Mathematics** outlines how progression is planned for, with opportunities to recap and build on prior learning.

Impact

Children's work in mathematics is assessed from three aspects (long-term, short-term and medium-term). Short-term assessments (assessment for learning) are used to help adjust daily plans; these short-term assessments are closely matched to the teaching objectives.

Children's progress is assessed at the end of each unit of maths against the key objectives.

Hot tasks at the end of each unit of maths assist teaching staff with their assessments. Weekly Big Maths Tests and/or Framework tests are conducted for revision and retrieval. Termly multiplication checks take place to ensure that children are developing their automaticity when recalling number facts.

The attainment of children is recorded in Bromcom at the end of each unit of work.

Long-term assessments are made towards the end of the school year, and are used these to assess progress against school and national targets. Targets are then set for the next school year along with a summary of each child's progress, which are shared with parents. This information is passed on to the next teacher at the end of the year, so that s/he can plan for the next school year. Long-term assessments are made with the help of end-of-year tests and teacher assessments. The national tests are used for children in Year 2 and Year 6, in addition to the teacher assessments throughout the school year. Annual assessments of children's progress are measured against the level descriptions of the National Curriculum.

Parents are informed of children's progress during consultation meetings in the Autumn, Spring and Summer terms. There is a written report in the Spring term in Years One to Six, and in the Summer term for Early Years, where parents have the opportunity to respond.

Pedagogy

Rationale

The SPA Curriculum aims to provide our children with teaching, opportunities and experiences that will help them to flourish and grow into successful citizens who will make positive contributions to the world around them. Underpinning our curriculum are our Curriculum Drivers:

Safe Behaviours	Whilst not explicitly taught in the mathematics curriculum, where possible and when opportunities arise, teachers will discuss safe behaviours. Within their mathematics lessons, children will be taught the importance of the safe and responsible use of equipment, and will begin to gain an understanding of the value of money, including the importance of saving.
Positive Role Models	It is very important that the children value their learning. Learning about key figures and meeting mathematicians and engineers will help them to understand where the subject fits in the world. Understanding how mathematics has assisted the development of areas such as industry and technology and the potential for further development will help to raise our children's ambitions and aspirations for their own futures.

Awareness of the World

Children at Southcoates are given the opportunity to think about the use and importance of mathematics in the world, and to develop skills for life. As the next generation in a rapidly changing world, our children will contribute to further changes and advances in the future.

Resources

There is a wide range of resources to support the teaching of mathematics across the school for both indoor and outdoor learning. All classrooms have a wide range of appropriate small apparatus and resources such as Numicon, base 10 and digit cards, which are readily accessible to children who are encouraged to select materials that are suitable to their task. In the Early Years, this selection of resources will need guidance from the class teacher but, as children progress through the school, they should become increasingly independent in their selection. Other equipment is available from a central storage area.

All classrooms have flipcharts for the children which provide support with place value, times tables and a variety of other areas of maths which are year group specific. Working walls are evident in each classroom and children can refer to them to support them with their learning. A range of software is available to support work using ICT for both staff and pupils. Intervention sessions are used to provide pre or post teaching. New equipment and/or resource needs can be requested by any member of staff and purchased by the subject leader.

Opportunities to Revise, Repeat and Build on Prior Learning

Our SPA Curriculum has been designed by Southcoates' teachers to ensure that the objectives progress as the children move through their years at Southcoates. Opportunities to revise, repeat and build on prior learning are built into our Long Term Plans, Medium Term Plans and Short Term Plans.

The specific progression of procedural and declarative objectives can be found in the Declarative and Procedural Knowledge Progression Document for Mathematics.

Daily, repetitive mental/oral lesson starters (CLIC sessions), weekly maths tests, termly times tables testing and end of unit hot tasks provide opportunities for revision and retrieval.

Assessment

Assessment for Learning

Ongoing assessment is carried out within lessons through the marking of work, questioning, discussion and observation to check the children's understanding. Teachers monitor the application of newly learned skills. Teachers and pupils engage in focussed discussions about how to make progress, and ongoing assessment for learning influences the following teaching inputs and lesson design.

Assessment Structure

In line with all Enquire Learning Trust schools, teachers record formative assessment on the system Bromcom, assessing against each year group objective.

Teachers use ongoing assessment of work to inform the data inputted on Bromcom. In addition to the assessment of tasks completed during lessons, teachers conduct weekly tests such as times tables, arithmetic, Big Maths CLIC and SAFE tests (dependent on year group), 'hot tasks' are completed at the end of each unit and a termly times tables assessment is conducted to inform teacher judgements and monitor progress (Appendix 1).

These assessments inform the groupings for maths sets to ensure that all children are being taught based on their need and ensures accelerated and targeted progress, with any gaps in learning being filled.

Progress in mathematics is monitored and discussed at the termly pupil progress meetings.

Culture

Opportunities for All

Southcoates Primary Academy is committed to the inclusion of all pupils, within the school curriculum and participation in all aspects of school life.

All children are expected to fulfil their potential, regardless of their background or circumstance. Mathematics is taught to all children, whatever their ability or culture. It is part of the Academy curriculum policy to provide a broad and balanced education to all children. Learning opportunities are provided that are matched to the needs of children with learning or language difficulties. Work in mathematics takes into account the targets set for individual children in their relevant Graduated Approach document.

All children are taught either in their own class or in year group specific sets and are provided with equal opportunities to achieve. There are no barriers based on sex, culture or ability. Children and parents are actively involved in their learning and their perceptions are explored and valued.

Children who are confidently achieving age related expectations are challenged to deepen their learning by being given opportunities to apply their skills in a variety of situations, dependent on the task being undertaken.

Fostering a Love of the Subject

Southcoates Primary Academy highly values all subjects, and is committed to ensuring that every child has access to high quality experiences as well as an ambitious progressive and embedded curriculum.

To raise the profile of mathematics, and to ensure that children understand the importance of the subject outside of the school environment, the following opportunities and experiences are organised for our children:

- Participating in World Maths Day activities.
- Maths across the school display.
- Visitors, such as engineers from the local Siemens Renewable Energy industry, are invited to speak to the children to highlight where maths skills can be used in the wider world.
- Enterprise activities for the annual Christmas and Summer Fairs give children real-life opportunities to budget with purpose, making products to sell to parents.
- In Upper Key Stage Two, theme work in each cycle enables pupils to use their mathematical knowledge:
 1. The opportunity to create a community, design floorplans and cost the furnishing of houses within a given budget (Cycle A).
 2. The chance to put into use their knowledge of converting when weighing and measuring ingredients to follow a recipe and practical use of temperature when baking their entries for 'The Great Southcoates Bake Off' (Cycle A).
 3. Generating fundraising projects and hosting events to raise money for charity (Cycle B).

Subject Monitoring and Improvement

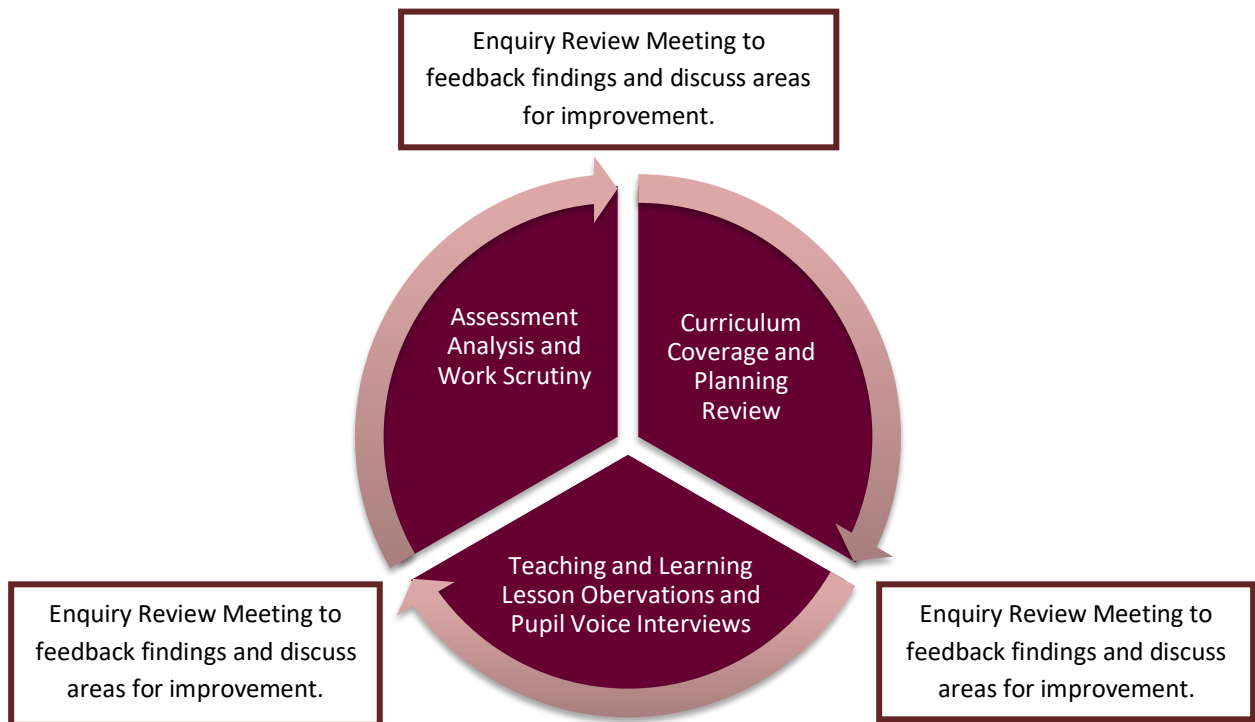
Subject Leadership

- Mathematics is overseen by the Assessment and Standards Faculty. The Assessment and Standards Faculty meet every other week to discuss:
 - Outcomes of monitoring.
 - Additional whole school opportunities and experiences to enrich learning and personal development.
 - CPD requirements.
 - Assessment.
 - Curriculum development.
- The Subject Leader for Mathematics and the Subject Leader for English work in partnership to complete the monitoring cycle and to work on curriculum development and improvement for both subjects.

Subject Triangulation

The curriculum, teaching and learning and outcomes of mathematics are monitored, developed and improved using an annual cycle of monitoring: subject triangulation.

Each year, a cycle of teaching and learning lesson observations, pupil voice interviews, work scrutinies, curriculum coverage/planning reviews and assessment analysis informs the subject leader of the quality of education for mathematics.



Subject Improvement

Subject leaders feed back findings from the Subject Triangulation monitoring cycle to all teachers at the termly Enquiry Review Meetings. In these meetings, strengths, areas for improvement and CPD requirements are discussed. Good practice is shared to help to continually raise the standard of teaching and learning. The Enquiry Review Meetings are attended by all Teachers, Subject Leaders and members of the Senior Leadership Team, enabling constructive and productive conversations that aid continuous reflection, development and improvement of the curriculum.

CPD

- Subject Leaders are given opportunities to attend CPD events run by The Enquire Learning Trust.
- Subject Leaders are able to request staff meeting slots to upskill teachers and to deliver updates and training.
- Teachers and Subject Leaders are encouraged to work together to discuss areas for improvement, and to identify areas where extra CPD may be required.
- Subject Leaders attend local Subject Leader Network Meetings to network with Subject Leaders from local schools.

Maths Assessment Structure

In line with all Enquire Learning Trust schools, teachers record formative assessment on the system Bromcom, assessing against each year group objective. Teacher assessments are informed by the following:

Termly Multiplication Tests	Year 1	Counting multiples: 2s, 5s and 10s.
	Year 2	x2, x5 and x10.
	Year 3	x2, x5, x10, x3, x4 and x8.
	Year 4	All times tables, up to 12x12.
	Year 5	All times tables, up to 12x12.
	Year 6	All times tables, up to 12x12.

Weekly Low Stakes Testing	Year 1	Year 1 Objectives Test
	Year 2	Framework Test
	Year 3	Big Maths Tests
	Year 4	Big Maths Tests
	Year 5	Big Maths Tests
	Year 6	Big Maths Tests

Hot Tasks	Years 1 - 6	A hot task that tests the learning from the past unit.
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Moderation

To ensure that teacher assessments are accurate, the following moderation activities take place:

- Teachers within a year group assess work together, using the Bromcom assessment tool.
- Termly meetings take place between year group teachers from Southcoates Primary Academy and Buckingham Primary Academy to compare and discuss assessments.
- Y2 attend the annual Local Authority Moderation training.
- The Maths Subject Leader meets with class teachers to discuss samples of children's work.
- The Maths Subject Leader, Y6 Teacher and Y2 Teacher meet to moderate children who are working at the Pre-Key Stage Standard.