



# SOUTH STANLEY INFANT AND NURSERY SCHOOL

## Mathematics Policy

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## 1. Introduction

Mathematics teaches children how to make sense of the world around them through developing their ability to calculate, to reason and to solve 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. This policy will outline the purpose of the subject at South Stanley Infant and Nursery School, the roles of all key stakeholders to ensure its success and how it will be implemented.

## 2. Aims and Objectives

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.

Pupils who are **fluent**, can **reason mathematically** and **solve problems** in line with age-related expectations are **mastering** the curriculum. At South Stanley Infant and Nursery School every child is given the opportunity to master the curriculum. The expectation is that the majority of pupils will move through the programmes of study (set out by the Early Years Profile and National Curriculum) 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 (**mastering** the curriculum and **greater depth**) 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.

In addition to the above aims, at South Stanley Infant and Nursery School we endeavour to use mathematics as a vehicle to develop the following in our children:

- being able to work **independently**, building **resilience** and utilising the skills which have been developed. Challenging oneself to **achieve** and surpass personalised targets
- the ability to **work collaboratively** with others to follow a line of enquiry, understanding how to work as a team and support one another compassionately
- high levels of **communication**, both **verbal** and **non-verbal**. Children should be able to clearly articulate, using subject specific language, through planned opportunities to discuss, question, explain and present. Additionally, pupils should be encouraged to show **pride** in their work by being taught how to present work.
- show an ability to **apply** mathematics **across the curriculum**

### 3. Roles

#### School Staff

- To promote a confident, positive attitude towards the learning and use of mathematics making it an enjoyable experience;
- To promote confidence and competence with numbers and the number system;
- Encourage pupils by believing that every child, with hard work, can be good at Mathematics through promoting a **Growth Mind-set**.
- To promote the ability to solve problems through connecting ideas, decision-making and applying their mathematical skills in a range of contexts, including other subjects such as science;
- To promote mathematical reasoning by following a line of enquiry, developing an argument and making justifications using mathematical language;
- To promote a practical understanding of the ways in which information is gathered, presented and used;
- To promote the exploration of features of shape and space and develop measuring skills in a range of contexts;
- To understand the importance of mathematics in everyday use, especially in relation to essential life skills, such as telling the time and understanding money.

#### Children

- To develop an enjoyment of learning through practical activity, investigation, exploration; mental exertion and discussion;
- To develop confidence and competence with numbers and the number system;
- To develop the ability to solve problems through connecting ideas, decision-making and applying their mathematical skills in a range of contexts, including other subjects such as science and geography;
- To develop the ability to reason mathematically by following a line of enquiry, developing an argument and making justifications using mathematical language;
- To develop a practical understanding of the ways in which information is gathered and presented;
- To explore features of shape and space, and develop measuring skills in a range of contexts;
- To foster positive attitudes towards mathematics by developing confidence, independence, resilience and co-operation skills;
- To understand the importance of Mathematics in everyday life, especially in relation to essential life skills such as telling the time and handling money.

#### Parents and Carers

- To be understanding and supportive of our aims in learning and teaching mathematics.
- To attend and contribute to Parent Consultation Meetings.
- To support their children with mathematics homework activities.

- To praise their children for the good things that they do in mathematics.
- To communicate and work with School whenever further support is needed to develop their children's mathematical skills and understanding.
- To make mathematics part of children's everyday lives.

### **Governors**

To appoint designated EYFS and KS1 governors who will:

- Visit School and talk to pupils about their experiences of Mathematics;
- Promote and support the positive involvement of parents in Mathematics;
- Attend training and other events relating to the Mathematics curriculum;
- Report jointly with the Subject Leader, both for the School Prospectus and to the governing body with recommendations, if appropriate, once a year.
- To be understanding and supportive of our aims in the learning and teaching of Mathematics.

## **4. Implementation of Mathematics Policy**

Mathematics is a core subject and has a high profile across the entire school. Starting in Nursery, children begin their journey through to the end of Year 2 before moving on to junior school. There are 2 important milestones, which the children will reach, along the way: the end of Early Years (Reception, aged 5) and the end of Key Stage 1 (Year 2, aged 7). Therefore, this section of the policy will be set ordered accordingly.

### **Early Years Organisation**

- Our Reception teachers use the Early Years Profile to support their planning, teaching and assessment of mathematics.
- On entry, all children are baseline assessed and this forms the starting point from which teaching is matched to learning needs. As pupils are all individual in their learning needs, this may mean that content not secured from earlier provision will need to be revisited before commencing on age-related statements.
- Mathematics is planned on a weekly basis (using an agreed format) and assessed using the criteria from the Early Learning Goals.
- A variety of other planning and assessment resources are used to add weight and validity, whilst ensuring a broad and balanced mathematics curriculum.
- The children explore, enjoy, learn about, and use mathematics in a range of personalised situations.
- Children's work will be recorded in the following way:
  - Baseline and subsequent assessments are completed one to one with a teacher using an assessment sheet. Teacher-scribed observations and relevant child-produced evidence are recorded in an assessment file. Each child will have their own section within the file and these assessments will help map out the progress children are making across the year.

- All adult directed (AD) work, resulting from whole-class teacher input and group work is to be recorded in a Maths floor book or a child's individual mathematics book. Each piece of work is to be dated, titled, labelled to show level of support and marked against the objectives. This will generally be through the use of post-it note observations (including the child's voice), photographic evidence and evidence of children's written work. The presentation of this book is to be of the highest possible standard.

### Key Stage One organisation

Mathematics is a universal subject, and thus the aims for teaching mathematics are firstly taken from the National Curriculum:

The following stakeholders are vital to ensuring the success of the policy and thus share in the collective accomplishment of the aims:

As the children enter Key Stage 1, more formalised and discrete mathematics teaching takes place.

- Teachers plan, teach and assess according to guidance outlined in the National Curriculum Programmes of Study (2014). In order to ensure a broad and balanced mastery curriculum we follow the White Rose Maths Hub Schemes of Learning.
- The key intention is for all children to master the curriculum (set out in the National Curriculum PoS) thus weekly planning is tailored to developing fluency, reasoning and problem solving for each curriculum statement. Teachers have access to the subject leader and the White Rose documents to formulate ideas on how to best achieve learning objectives set by the National Curriculum.
- In line with the Singapore approach to teaching mathematics, content will be taught slower in order to achieve an in-depth understanding which will become embedded over time. Pupils will develop their understanding through a CPA (Concrete, Pictorial and Abstract) approach to ensure mastery of all subject areas is achieved.
- **However**, this slower, mastery-based approach to learning must not be confused with a compromise on pace. Teaching is to be stimulating, and carefully matched to pupil needs in order to accelerate progress and maintain both motivation and enjoyment.
- Children will work through the programme of study broadly at the same speed, albeit at different levels, and this will be assessed in line with the mathematics assessment policy.
- White Rose end of unit assessments are used at the end of each teaching block.
- NCTEM Maths assessments are used at the end of each term.
  - **Note:** in Year 2 children are assessed using the end of Key Stage TAF (Teacher Assessment Framework) documents.
- Children will enter a year group having been assessed by their previous teacher and then moderated through our transition process.
- A mixture of independent work in children's books, end of unit assessments and teacher observations are used to make judgements when completing a formal assessment cycle.
- These assessments are moderated both within school and at cluster meetings to ensure accuracy. Moderation from local authorities are subject to a county monitoring cycle.

- The above is all monitored and evaluated on a half-termly basis.
- All lessons/episodes of learning have **fluency, reasoning** and **problem solving** opportunities at the heart of them. Conceptual variation offers children the ability to show their understanding in a variety of ways – this is paramount to ensuring a mastery curriculum, especially at greater depth.
- Furthermore, mathematics interventions (during assembly and afternoon sessions) give children of all abilities the opportunity to achieve their potential.
- All children formally record their written work in a mathematics book. This book will form the basis of most assessment and will demonstrate the progress a child is making in their mathematics. The emphasis is on **pride, presentation** and **productivity**.
- Children's work should be marked regularly (in line with the marking policy) and feedback given so the children can make corrections or complete extension activities (Next Step Challenges).
- Homework is set for all children in Key Stage 1 weekly (in line with the homework policy) so that children can consolidate their weekly work. This also gives parents the opportunity to not only support their child at home but learn more about what is been studied in school.

## 5. Planning Formats

- As mentioned earlier teachers plan from the Early Years Profile and National Curriculum Programmes of Study and this is supported further by the White Rose Schemes of Learning.
- There are 2 main formats for weekly planning: teachers in Reception use a tailored planning frame with the remainder of the school using another.
  - Objectives, lesson structure, differentiated activities, resources (including additional adults), assessment opportunities and evaluations are a required component, encouraging teachers to be reflective.
  - Teachers can add more detail if they desire but the plan is to be shared and understood by all adults involved in the lesson's implementation.

## 6. Calculation Policy

The National Curriculum works towards all children using formal written methods; however, children need to be taught a variety of practical methods and models in order to fully appreciate and understand the mathematics involved. The calculations policy shows the methods and procedures children should use.

## 7. Cross Curricular

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, we encourage children to read and interpret problems in order to identify the mathematics involved. The children explain and present their work to others. Younger children enjoy stories and rhyme that rely on counting and sequencing.

Children use and apply mathematics in a variety of ways when solving problems using ICT. Younger children use ICT to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables when explaining their results or when creating repeating patterns.

Opportunities are used to draw mathematical experiences out of a range of other subjects, such as in science, geography, history, music, art and PE. This allows children to make links between other subjects and in real life contexts.

Mathematics contributes to the teaching of personal, social and health education, and citizenship. The work that children do outside their normal lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each other's views.

The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We group children so that they work together, and we give them the chance to discuss their ideas and results.

## 8. Resources

- The use of mathematics resources is integral to the concrete – pictorial – abstract approach and thus planned into our learning and teaching.
- We have a wide variety of good quality equipment and resources, both tangible and ICT based, to support our learning and teaching.
- These resources are used by our teachers and children in a number of ways including:
- Demonstrating or modelling an idea, an operation or method of calculation, e.g.: a number line; place value cards; dienes; money or coins; measuring equipment for capacity, mass and length; bead strings; the interactive whiteboards and related software; 3D shapes and/or nets; Numicon and related resources and software; multilink cubes; clocks; protractors; dice; number and fractions' fans; individual whiteboards and pens; and 2D shapes and pattern blocks, amongst other things;
- Enabling children to use a calculation strategy or method that they couldn't do without help, by using any of the above or other resources as required; and
- Providing a context, where possible and linking it to the application and practise of calculation strategies and number skills.
- Standard resources, such as number lines, multi-link cubes, dienes, hundred squares, shapes, etc. are located within individual classrooms.
- Resources within individual classes are accessible to all pupils who should be encouraged to be responsible for their use.
- Further resources (often larger items shared by the whole school) are located in the mathematics resource boxes.
- Teachers are encouraged to use the school playgrounds as an outdoor classroom when possible, for example, when teaching length, area or perimeter.
- Each year group in Early Years and Key Stage 1 has access to Numicon resources relevant to their class groups. The Numicon resources are tangible resources, which are used for individual interventions; intervention groups; or in-class focus groups.

## 9. Parents and Carers

- The School aims to involve parents/carers in their children's learning as much as possible and to inform them regularly of their child's progress in mathematics.
- Parents/carers have the opportunity to meet with child's class teacher at least twice a year at Parent Consultation Meetings and receive written reports during the year.
- Parents/carers are encouraged to speak to their child's teacher at any point during the year, either informally or by making a specific appointment to discuss anything to further support them at home.
- Information about their child's standards, achievements and future targets in mathematics is shared with parents/carers at these times and also ways that parents/carers may be able to assist with their child's learning.



- Parents/carers are encouraged to support their children with homework.
- School also provides a number of opportunities for parents/carers to learn about what their child is learning and the way their child is being taught through Parent Evenings.
- The Year 2 teachers annually hold a SATs Parent's Evening to inform and discuss the SATs tests in Mathematics. Parents/carers are also invited into school to discuss how to best support their child in other areas of the school, this is often linked to other school occasions, for example, coffee mornings.

## 10. Subject Leader

- The role of the Subject Leader is to provide professional leadership and management in mathematics in order to secure high quality teaching, effective use of resources and high standards of learning and achievement for all pupils.
- They will achieve this by affecting the following key areas: strategic direction and development; learning and teaching (including planning and marking and presentation); leading and managing staff; and efficient and effective deployment of staff and resources.
- The Subject Leader will train and coach staff on mathematical pedagogy within the school and keep up to date with developments from a county and national level.
- The Subject Leader has regular discussions with the Head Teacher and other senior leaders about learning and teaching in Mathematics.
- During the academic year the Subject Leader has specific allocated time for subject self-evaluation activities, including, lesson observations, book scrutiny and learning walks this is recorded in a specific log on sharepoint.

## 11. Monitoring and Evaluation

- The subject falls within the School's monitoring and evaluation schedule.
  - Lesson plans are scrutinised regularly
  - Lessons are observed by a member of the senior leadership team using the School's lesson observation criteria
  - Both teaching and non-teaching staff are given a yearly appraisal derived from the above observations
  - Book scrutinies are carried out regularly to ensure the policy is being utilised across the school
  - Data is analysed every half term
- Assessments and the quality of books are moderated at both school and cluster-school moderating meetings.
- The monitoring and evaluation schedule helps to inform both school evaluation and school improvement plans.

Written by: Helen Shiels May 2023