

Part of the Inspire Trust

Mathematics Policy

Document Purpose

This policy reflects the values and philosophy of Sitwell Junior School in relation to the teaching and learning of Mathematics. It sets out a framework within which all staff, both teaching and non-teaching, work. It gives guidance on planning, teaching and assessment. In addition, it highlights the purpose and nature of Mathematics teaching.

The school's policy is based on the National Curriculum for England 2014. The policy has been drawn up as a result of staff discussion and has the full agreement of the Governing Body. The implementation of this policy is the responsibility of all staff.

Audience

This policy, having been presented to and agreed upon by the whole staff and Governing Body, is distributed to:

- Mathematics Subject Leader
- Head Teacher
- Class Teachers

A copy of the policy is also available on:

- Staff area of network

This is to ensure that the policy is readily available to other non-teaching staff in school, school governors, visiting teachers, support staff and parents.

Vision and Purpose of Mathematics

At Sitwell Junior School, we believe that Mathematics is central to the curriculum of all children. The Mathematics Curriculum should provide breadth and balance and be relevant and differentiated. It should be flexible, motivating all children, thus encouraging success at all levels.

Mathematics teaches children how to make sense of the world around them through developing an ability to be fluent in mathematical facts, to reason and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives. As teachers, we will use every relevant subject to develop pupils' mathematical fluency. Confidence in numeracy and other mathematical skills is a precondition of success across the national curriculum. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of Mathematics.

Mathematics is a tool for everyday life and an important life skill. It encourages a feel for numbers, develops an inquiring mind and the desire to be challenged, and a need to find a successful and satisfying solution!

Our main vision is that all our children will develop a positive attitude towards Mathematics and learn to use it with confidence, understanding and pleasure and to simultaneously eradicate the view in this country that it is acceptable to have poor Mathematical skills.

Aims

Mathematics is a core subject within National Curriculum. The aims for Mathematics are 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.

We aim to do this by:

- Creating links between mathematical concepts.
- Allowing children to apply their mathematical understanding across the curriculum.

- Planning for Experiential Learning and making use of the outdoor space.
- Making use of practical resources, allowing children to move from the concrete, to pictorial, to the abstract.
- Using variation to allow children to experience mathematical concepts in a variety of contexts.
- Teaching mathematics in a real life context, wherever possible.
- Providing children with a balance of exploration, acquisition, consolidation and application.
- Engage with children's thinking, giving sufficient time for dialogue and discussion and space to think.
- Demonstrating the correct use of mathematical vocabulary, language and symbols, images, diagrams and models as tools to support and extend thinking.
- Teaching children how to evaluate solutions and analyse methods and understand why some methods are more efficient than others.
- Modelling with children how they identify their learning skills, and manage and review their own learning.
- Challenging and inspiring children to the highest possible standards.
- Giving opportunities to work in a variety of ways: class, group, individually, depending on the task.

By doing this, we develop mathematicians that can:

- Reason, generalise and make sense.
- Explain and communicate their thinking.
- Persevere and understand failure is part of the process.
- Use and understand mathematical vocabulary.
- See links, patterns and relationships.
- Choose and use practical apparatus successfully.
- Work collaboratively.
- Be fluent in number facts.
- Be fluent in written calculation.
- Solve problems.
- Use and apply in a range of contexts, including real life.

Organisation

In the teaching and learning of Mathematics, we endeavour to provide all children with opportunities to develop, use and apply their knowledge, skills and understanding.

We carry out the curriculum planning in Mathematics in two phases:

- Medium term
- Short term

Medium Term Planning

Medium term plans give details of the teaching objectives for each block of work for each term. Staff plan in year groups and include a termly outline of the units of work and their main teaching objectives. The medium term plan is a working document and is updated termly. At the beginning of each topic, staff will look for opportunities to use and apply mathematics in other subject areas and this then forms part of the topic planning and is available to view on Weekly Planning documents.

Short Term Planning

The class teacher completes short term planning. These plans list objectives for lessons and how the lessons are to be taught and take prior learning into consideration. Weekly plans identify lesson objectives, differentiated activities (following the whole school 'chilli' approach), resources and assessment opportunities. Staff break-down the medium term objectives into smaller goals that are expected to be achieved during class lessons. This short term planning is done on a weekly basis and planning is stored in the Planning Folder on Staff. Cross curricular planning is detailed on the Weekly Planning documents, which can also be found in the Planning Folder on Staff. It is expected that measure plays a key part of all planning and, where possible, mathematical concepts should be taught through measure as a vehicle for learning.

Implementation - Class Organisation and Teaching Style

At Sitwell Junior School, we recommend that Mathematics is based on four key principles. These are:

- A dedicated Mathematics lesson every day.
- Direct teaching and interactive oral work with the whole class and/or groups.

- An emphasis on mental calculation.
- Controlled differentiation, with all children engaged in Mathematics related to a common theme.

Class teachers are responsible for their own class organisation and teaching style in relation to delivering the Mathematics lessons.

Lesson Structure

Each class has a daily-dedicated mathematics lesson that lasts for 60 minutes.

Mental and Oral starter

Mental and oral work provides a focus for the beginning of all lessons. It uses existing knowledge and number facts to rehearse, sharpen and develop mental and oral skills, thus developing the children's fluency in number. The objective is usually the same for all children, but the task and questions may be differentiated.

Main Activity

This part of the lesson has teaching input and pupil activities. They work in differentiated groups on independent, paired or group tasks, where the objective is the same, but the expectation is differentiated to match the ability of the individual by the 'chilli' approach. Additional adults may be used to provide 'split-inputs' where children are working above or below the overall objective. Children are provided with a range of activities that allow them demonstrate their fluency, reasoning and problem solving skills in that area.

Plenary

Teachers will work with the whole class to sort out misconceptions and to identify progress. They may summarise key facts and ideas and what to remember. Links may be made to other work and the next steps in pupil learning may be discussed. It also offers an opportunity for children to use and apply the skills developed in the lesson.

Checking

During the course of the lesson, all adults in the room will use Assessment for Learning strategies to 'check' upon children's progress within the lesson to ensure all children make good progress within the lesson. As result of this, they may provide extra support for certain children, or move children's learning on. Support staff and TA's are given clear objectives to support classroom teachers in the delivery of Mathematics and their role is clearly identified on the weekly Mathematics plans.

The structure of the lesson should always be flexible and at all times should respond to the needs of the children. Similarly, the mathematics lesson does not have to be

taught in the morning, although considerations about TA support are made to ensure the progress of the children is always paramount.

Basic Skills Check

Each week, children will complete a Basic Skills Check. This is to practice and consolidate a range of skills on a weekly basis. This will be followed by a 'Big Maths' session, where the teacher will choose specific questions that caused most trouble for the class and will do some further focussed teaching of these areas.

Arithmetic

In upper school (year 5 and 6), children complete a weekly arithmetic test to practice and consolidate these skills.

Recording of Mathematics

Children record their maths work in books of 1cm/0.7cm squared A4 paper.

The learning objective is shared with the whole class at a strategic point in every session (not necessarily at the beginning) and the 'chilli' is recorded on the child's work at the top of the page, along with the date. The teacher will print off a slip for each child which details the 'chilli challenges' for the lesson. During self/peer assessment or marking, the objective met is assessed against in the student column and children should identify as OA/PA/NA. This allows children to see what they have achieved and whether they are over or under estimating their ability.

There are occasions when it is not necessary to record mathematics in a permanent form, but there are also occasions when it is both quick and convenient to carry out written calculations. It is also important to record aspects of mathematical investigations. Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and convenient method of recording. Children are encouraged to use mental strategies before resorting to a written algorithm.

Recording work may involve children making rough jottings first followed by recording actual answers for the teacher's attention. All children are encouraged to work tidily and neatly when recording their actual answers but jottings may take any form and are important evidence for the teacher.

Marking

Work in mathematics can generate a great deal of marking and it is recognised that it is not always necessary to mark every piece of work. The children can sometimes mark exercises with support and guidance from the teacher. Where appropriate,

children in Upper KS2 are encouraged to check computational exercises with a calculator. This can foster independence in the children, who can seek help if they are unable to locate and correct their errors. The teacher may also 'check' a child's work during the lesson and leave a 'keyword' for the child to work on during the remainder of the lesson. Other forms of marking include: step marking, challenge marking, reminder marking and example marking. (See Marking and Feedback Policy for further guidance)

Marking should be linked to the learning objective and provide feedback to the child on their understanding and how they can move their learning on (their next steps).

Cross-Curricular Mathematics

Mathematics objectives are linked to work in other curriculum areas, where possible, in particular: Science, Geography, Design Technology, ICT and Art.

The teaching of Mathematics can provide opportunities for teaching many of the cross-curricular themes. Links between Mathematics and cross-curricular themes are identified by the class teachers in year groups and the classroom teacher ensures that children are provided with opportunities for developing the skills of Mathematics within other curriculum areas.

Assessment

Assessment for Learning takes place on a daily basis, where the short term planning sheets are annotated in the assessment column. This assessment information can be used to update E-Mag system half-termly.

Formative assessment takes place in Mathematics in the following ways:

- Observations of child or group on task
- Discussion with children about their task
- Work in books
- Children's own evaluation of their work
- Marking

These assessments:

- Inform future planning
- Provide information about individuals or groups
- Provide summative information

- Provide information for parents
- Contribute to each child's record of achievement

These assessments are carried out throughout Key Stage 2 and are the responsibility of the class teacher.

Record Keeping

Records are kept of each child's progress against the End of Year Objectives in Mathematics using Assertive Mentoring Record Sheets on E-Mag. These are updated on a half termly basis. At the end of each half-term, each child will take a half-termly Assertive Mentoring Test. The results from this are entered on to the E-Mag system and a stage is generated. Other evidence used to gauge a child's progress includes: weekly maths basic skills tests, evidence gathered in a child's book, observations made during mental and oral starters, independent activities and plenaries. These other forms of evidence can also be added to the E-Mag, in addition to the test data.

Resources

A variety of Mathematics resources are available in school.

These include:

- Teacher-made resources
- Teacher reference books
- Practical Mathematics equipment for investigational work
- Computer-based materials (ITPs, spreadsheets, Smart Notebook files, APPs)

These are downloaded onto staff laptops.

- Pictorial resources

All classes have a set of calculators.

In addition, the school has a complete set of Abacus resources which assist teachers with planning and provide children with stimulating text books to work from. There is also an online mathematics portal all children can access to practice carefully selected and differentiated mathematics skills at home for home learning.

Most mathematics resources are kept in classrooms and shared within the year group. Some resources are stored centrally in the kitchen area of Year 4.

The Mathematics Subject Leader reviews Mathematics resources and their storage annually. Staff are consulted and asked to submit lists of any resources required. Staff are also asked to let the Subject Leader know if any resources are damaged or need to be replaced through wear.

The purchase of resources is planned each year by the Mathematics Subject Leader and Head Teacher. This Mathematics budget will reflect the degree of priority which Mathematics is being given in the School Development Plan each year. It will always include a proportion for replacement and wear and tear.

Information and Communication Technology

ICT resources will be used in various ways to support teaching and motivate children's learning. They will, however, only be used in a daily Mathematics lesson when it is the most efficient and effective way of meeting the lesson objectives. The school has a range of mathematically themed APPs which can be used in a range of different mathematical areas.

Dispute the calculator having less emphasis in the new curriculum, at Sitwell Junior School, we still believe a calculator is a powerful tool that:

Enables children to explore numbers and their patterns

- Allows children to concentrate on process and not on the mechanics of computation
- Encourages mental calculations and estimations and enables children to work with real data

Initially calculators are used to explore numbers and to develop a feel for numbers. The proper use of calculators will be taught and practised throughout the school, but is not statutory. The work with calculators is pursued alongside the practice of the skills of estimation and approximation. Distinct methods of recording work using calculators will be developed and encouraged.

Equal Opportunities

All teaching and non-teaching staff at Sitwell Junior School are responsible for ensuring that all children, irrespective of gender, ability, ethnic origin and social circumstances, have access to the whole curriculum, which is broad and balanced, in order to make the greatest possible progress.

All children have equal access to the Primary Framework for Mathematics, its teaching and learning, throughout any one year. Day-to-day monitoring of the Mathematics policy is the responsibility of the Mathematics Subject Leader.

Special Educational Needs

At Sitwell, we teach Mathematics to all children, whatever their ability. Provision for children with SEND in relation to Mathematics is the responsibility of the class teacher, support staff and SEND coordinator as appropriate. There are a variety of programmes used within school to provide support for those children who have special educational needs in mathematics, including 'Catch – Up Numeracy'. Children usually work on these programmes in small groups, led by Teaching Assistants, supported by the classroom teacher. Intervention for Formal Response and EHCP children will lead to the creation of an Individual Education Plan (IEP) for children with special educational needs. The IEP may include, as appropriate, specific targets relating to Mathematics. Pre-learning tasks and same-day intervention is also carried out by teachers in an afternoon with groups of children, which may include children with special educational needs.

Children with Particular Needs

The daily mathematics lesson is appropriate for almost all pupils, including children with EAL, hearing impairments etc. Teachers will involve all pupils through differentiation or more specific requirements. Specific Wave 2 intervention programmes are used when appropriate for identified groups of children who would benefit from this in order to achieve age-related expectations by the end of the year.

Gifted and Talented Children

Where possible, more able pupils will be taught with their own class and stretched through differentiated group work, variance and extra challenges. When working with the whole class, teachers will direct some questions towards the more able to maintain their involvement or split inputs can be used. Very occasionally special arrangements will be made for an exceptionally gifted pupil e.g. they may be taught with children from a higher age range or may follow an individualised programme with more challenging problems to tackle.

Subject Leader's Role

There is one member of the staff designated as the Mathematics Subject Leader, Miss E Longstaff, with support from the Leadership Team. Mr J Berkshire also shadows.

They work together to support all the staff in Mathematics. This can include:

- Leading discussions and preparing policies
- Giving advice to all members of staff working with children on maths

- Help with planning
- Yearly mathematics audit and action plan
- Coordinate INSET
- Coordinating resources
- Monitoring and evaluating planning, teaching, learning and assessment.
- Ensure teachers are familiar with the Framework and help them to plan lessons
- Lead by example in the way they teach in their own classroom
- Working with the SENDCO
- Observe colleagues from time to time with a view to identifying the support they need
- Inform parents
- Deploy support staff to address needs within the school
- Monitor and evaluate mathematics provision in the school

Monitoring and Review

Monitoring of the standards of children's work and of the quality of teaching in Mathematics is the responsibility of the subject leader and Phase Leaders. The work of the subject leader also involves supporting colleagues in their teaching, being informed about current developments in the subject, and providing a strategic lead and direction for Mathematics in the school.

Evaluation

Evaluation and review of the policy for Mathematics takes place on an annual basis. The Head Teacher, Mathematics Subject Leader and all teaching staff work together to discuss any changes or adaptations to the policy. The policy is then amended by the Subject Leader and agreed by the whole staff. Throughout the year, the school staff are encouraged to feed back information and ideas to the Subject Leader about any aspect of the teaching and learning of Mathematics.

