

ST MARGARET'S COLLIER STREET SCHOOL

Mathematics Policy

Mathematics teaches us how to make sense of the world around us through developing a child's ability to calculate, 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. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many people to the development and application of mathematics. Mathematics should be a source of delight and wonder, offering pupils intellectual excitement and an appreciation of its essential creativity.

Aims

The school's aim is for all pupils to have equality of opportunity and:

- To promote enjoyment and enthusiasm for learning through manipulatives, explorations and discussion.
- To develop logical thinking and reasoning skills through natural curiosity and investigations.
- To be able to demonstrate their skills and knowledge and talk about their work using appropriate mathematical language.
- To develop confidence in the fundamentals of mathematics, develop conceptual understanding and recall and apply knowledge.
- To develop the ability to solve problems through decision-making and reasoning in a range of contexts.
- To develop an efficient, reliable, compact written method of calculation for each operation.

Objectives

- To ensure that all pupils follow a broad and balanced mathematics programme based on the requirements of the National Curriculum, alongside the written calculation policy
- To ensure that all pupils are provided with interesting and challenging tasks that enable them to achieve standards commensurate with their abilities and potential
- To ensure that pupils can work individually and collaboratively in groups and within the whole class
- To allow pupils to develop as independent learners, able to make decisions about their own work

Approaches to Teaching and Learning

Teachers and practitioners will draw on a range of teaching strategies, techniques and tools, including online resources. Our aims will seek to make learners more aware of the learning processes they are using. Children will develop a range of problem-solving strategies that they consciously apply in a variety of contexts. Teachers recognise the critical role in learning played by experiences or interactions with the surrounding environment and manipulatives and support this by exploratory pedagogic approaches. Teaching of the curriculum will support individual, paired and group work and will recognise the importance

of scaffolding to support learning. Teachers will encourage the development of independence through carefully structured learning experiences.

Teachers will aim to:

- Plan and provide a balanced experience incorporating the exploration, acquisition, consolidation and application of knowledge and skills, with opportunities to use, extend and test ideas, thinking and reasoning.
- Share the excitement of learning mathematics and capture children's imagination by showing them the unusual or unexpected; show children how mathematics can be used creatively to represent, measure, predict and extrapolate to other situations.
- Model for children how to explore mathematics and look for patterns, rules and properties, identify the rules and laws and deduce for themselves when they apply; help children to describe, replicate and use patterns and properties; ensure that they meet both general applications of the rules and exceptions.
- Give children opportunities to consolidate the mathematical knowledge in order to become fluent, understanding and skills they have learned; ensuring that they recognise how their learning builds on previous learning; ensure that they feel appropriately supported and challenged by the work they are set.
- Engage with children's thinking; promote discussion for children to think about their ideas, methods and mathematical representations of the real world; focus on underlying concepts and processes with prompting and probing questions.
- Demonstrate and promote the correct use of mathematical vocabulary and the interpretation and use of symbols, images, diagrams and models as tools to support thinking, problem solving, reasoning and communication.
- Provide children with the well-directed opportunity to use and apply what they have learned to solve routine and non-routine problems; highlight any properties or patterns they identify or create and make connections to other work they have done; draw on their ideas and model approaches and strategies children can use to support a line of enquiry or to interpret or explain their results and methods, using their own approaches and strategies.
- Teach children how to evaluate solutions and analyse methods, deciding if they are appropriate and successful; help children to understand why some methods are more efficient than others; provide opportunities to compare and measure objects and identify the extent to which shapes and calculations are similar or different; develop children's understanding and language of equivalence and deduction to support reasoning and explanation.
- Embed opportunities to develop mental calculation skills.
- Display key words on learning journey walls and teachers ensure that they model the correct use of mathematical words.
- Periodically identify the knowledge, skills and understanding children acquire; pausing to take stock to review children's learning and how it can be applied to new aspects of mathematics.
- Model with children how they identify, manage and review their own learning; highlight the learning skills they have acquired and used and draw out how these might be applied across the curriculum.
- Assist children in making their thinking clear to themselves as well as others and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions
- Ensure mathematical extensions and challenges to broaden children's understanding and develop reasoning.
- Provide regular opportunities to learn, recall and apply multiplication facts to ensure they are embedded.

Foundation Stage

In the Foundation stage, children's mathematical learning is developed through play activities and a learning environment which offers opportunities for mathematical exploration. Children should experience mathematics on a daily basis. This early introduction to mathematics will generally be undertaken orally and often in the context of a class theme.

Principles of Learning

When working with others, learning develops through shared consciousness (group interaction) and borrowed consciousness (expert others). Children will be encouraged to develop greater knowledge and skills when working with more expert guidance or with peers than they will attain alone. Interaction with others in the class as well as with the environment is important in the learning process for each child.

Through planning and teaching it will allow children access to:

- communication
- working with others
- problem-solving
- improving own learning and performance
- application of number
- information technology

They also include 'thinking skills' such as:

- reasoning
- enquiry
- creative thinking
- information processing
- evaluation

Organisation of Mathematics

Planning

Mathematics planning is based on the 2014 National Curriculum and takes account of mixed age group classes. Planning begins from a thorough understanding of children's needs gleaned through effective and rigorous assessment and tracking, combined with high expectations and ambition for all children to achieve. Long term/medium and short term planning will take place throughout the school. Medium term planning will outline the areas of mathematics that will be taught during the term to ensure coverage of the National Curriculum. Within short term planning, clear learning objectives will be shown to demonstrate the progression needed to reach and exceed the objective.

Planning will allow for a variety of approaches during the week to maintain the enthusiasm and interest of the pupils.

Our four key principles are:-

- regular lessons every day
- an emphasis on becoming fluent in the fundamentals of mathematics
- reason mathematically
- regular opportunities for problem solving and investigations

Differentiation

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems that broaden their knowledge before any acceleration through new content. In order to successfully 'close the gap' between different abilities, teachers should try to avoid using programmes of study from other year groups. However, the New Curriculum states that schools have some flexibility to introduce content earlier or later than set out in the programme of study.

Children will be taught as a whole class with the teacher using a range of questions to develop mathematical thinking but children should be able to begin their tasks as and when they feel ready. Not all groups of children will necessarily start the activities at the same time. Teachers value pupils' oral contributions and create an ethos in which all children feel they can contribute. Activities are planned to encourage the full and active participation of all pupils and teachers differentiate tasks during the main part of the lesson in order to meet the needs of all abilities.

Daily Maths lesson –

A typical lesson will be 45 – 60 minutes. Daily mathematics lessons are structured to maintain good pace and a variety of learning experiences. Daily lessons allow for opportunities for mental recall, discussion and reasoning, developing and consolidating ideas, investigating and experiencing and self or peer assessment although lessons will not have a set format.

Homework and After School Clubs

Mathematics homework will aim to consolidate and reinforce classroom learning. Homework is appropriately differentiated and set according to the school's homework policy. This will include on-line resources such as 'MyMaths'. When offered, mathematics club can be attended after school for children in KS2. This aims to provide enjoyable mathematics activities which will reinforce children's knowledge and build confidence.

Links to other curriculum areas

Cross curricular activities will be made for children to develop mathematical experience from a wide range of situations and curriculum subjects. This will enable children to practice applying their mathematical skills in real life situations including cookery, science and music.

Assessment, recording and reporting

Teachers will make regular assessment and evaluation. It is essential to ensure that future learning builds on previous attainment and the children's achievement. Pupil's progress which will be recorded in a variety of ways. This involves:

- informal testing of mental recall and mental calculation, given orally on a regular basis
- written assessments in the pupils' books through the marking of their work
- weekly assessments of all children to identify achievement in relation to the learning objective of that week
- reporting to parents through parent consultations
- 3 x annual assessments in preparation for Progress Review Meetings.
- Part of the annual report to parents

Format of pupils work

The pupils will start by recording their mathematics on plain paper which will change to the use of squared paper, firstly 10mm and then 8mm squares. There will be opportunities for pupils' to record their mathematics informally and through photos.

The pupils will be encouraged to give each piece of work a clear title, learning objective and date. They will be expected to present their work clearly and neatly and show all their jottings.

Role of Subject Leader

The Subject Leader will find opportunities through staff development days and staff meetings to inform teachers of curriculum developments.

The subject leader will:

- take the lead in policy development and implementation of the full curriculum to ensure progression and continuity throughout the whole school
- support colleagues as necessary in their short term planning, assessment and record keeping
- monitor the delivery of the Mathematics curriculum
- keep up-to-date with developments in Maths and disseminate information to colleagues as appropriate
- analyse assessment data including SATs
- produce a costed development plan following a needs analysis

Resources

A regular review of resources will be carried out by the Subject Leader and new resources will be bought from the budget as appropriate. Manipulatives are a fundamental in embedding mathematical concepts, building confidence and making connectives between mathematical concepts. Resources are used within lessons and are available for children to use independently.

Role of Teaching Assistants

TAs receive training in the methods and ethos of the school's approach to mathematics. Class teachers share their learning intentions and identify which children, are to be supported. Feedback is encouraged either orally or by written notes.

Parental Involvement

Parents are regarded as taking a vital part in the growth of their child's numeracy. It is expected that they will provide support throughout their child's school life especially in homework activities such as learning the times tables, number facts and 'MyMaths'.

Governors

From time to time governors will be invited to observe mathematics lessons on a rolling programme. They will be able to attend LA governor training and be updated on any new initiatives.

Health and Safety

In line with the school's health and safety policy, children are instructed in the safe use of all equipment especially when using heavy weights and using drawing compasses. Care needs to be taken when the younger children are using small apparatus such as counting objects.

Review

This policy will be reviewed by the Mathematics Leader following discussions with colleagues. Amendments will be presented to the whole staff and to the appropriate committee of the Governing Body before implementation.

This policy should be read in conjunction with other school policies:-

1. Health and Safety
2. Equal Opportunities
3. Marking
4. Homework
5. ICT
6. Assessment, Recording and Reporting
7. Literacy
8. Calculation

Equal Opportunities

The Governing Body, Head teacher and all staff are responsible for ensuring that all aspects of the school's maths policy and its application, promote equality for all pupils.