CONEMUR
ST. MARY'S
CHURCH OF ENGLAND
PRIMARY SCHOOL

# MATHEMATICS POLICY

# Mathematics Policy
# for
# St Mary's C.E. School

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| **First agreed by Governing Body:** | **July 1998** |
| **Revised and updated:** | **March 2001, October 2006, November 2009, December 2012** |

# Mathematics Policy

## Introduction

Mathematics makes a considerable contribution to the overall school curriculum and is constantly used in everyday life, business and industry; the ability to apply it effectively to unfamiliar problems is therefore very important. A broad mathematical education is essential for all pupils to equip them to meet the responsibilities of adult life in the world today. Mathematics will provide children with intellectual challenges and contribute to each child's social, personal and intellectual development. Through our work at St Mary's CE School in mathematics, children will gain the knowledge and understanding to use confidently the skills needed to work within our world today.

## Aims

The teaching of mathematics should enable teachers to:

- teach mathematics in line with National Curriculum guidelines and the Primary Framework for Mathematics;
- develop a progressive understanding of mathematical concepts, skills and attitudes;
- ensure that pupils have access to a broad and balanced mathematical curriculum;
- create a stimulating and exciting mathematical environment;
- encourage a positive attitude towards the learning of mathematics and enthusiasm for the subject;
- promote an understanding of mathematics within all aspects of the primary curriculum;
- promote an understanding of mathematics in real life situations;
- develop the correct use of mathematical vocabulary and language;
- develop the pupils' understanding of mathematics through practical tasks, problem solving and investigation.
- give all children access to the maths curriculum and resources, regardless of disability, ethnicity, gender, class or ability.

## Organisation

### a) The Foundation Stage:

In the Early Years mathematics is taught through the Foundation Stage Curriculum. Teachers relate the mathematical aspects of the children's work to the objectives set out in the Early Learning Goals. Teachers give all the children ample opportunity to develop their understanding of number, measurement, pattern, shape and space, through the varied activities that allow them to enjoy, explore, practise and talk confidently about mathematics.

The classroom is organised to promote the social skills and to develop mathematical understanding of young children through stories, songs, rhymes, finger games, board games, sand and water, construction on a large and small scale, imaginative play, outdoor play, cooking and shopping, 2 and 3-D creative work with a range of materials and by observing numbers and patterns in the environment and daily routines.

**b) Key Stage 1 and 2:**

During the course of their time at St Mary's, the children are introduced to a range of knowledge, skills and understanding derived from the renewed Numeracy Strategy Framework for teaching mathematics from Foundation Stage to Year 6 (2006) and The National Curriculum Handbook for primary teachers in England (1999).

The children's knowledge, skills and understanding are taught and developed through the following blocks:

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| Block A: Counting, partitioning and calculating | Block B: Securing number facts, understanding shape | Block C: Handling data and measures | Block D: Calculating, measuring and understanding shape | Block E: Securing number facts, relationships and calculating |

**Strategies for teaching**

Mental arithmetic is a key feature, with children being taught a range of strategies to work out answers as well as demanding a quick recall of simple mathematical facts. Written calculations are taught with clear progression across the year groups. The teacher gives demonstrations and explanations, with an emphasis on the use of appropriate mathematical language and engages in whole class interactive teaching, involving:

- whole class, group discussions and paired work
- practice to consolidate specific skills
- problem solving and investigational activities in order to learn how to break down a problem
- practical activities
- mathematical games and puzzles.

The use and application of mathematical principles underpins the whole of mathematical teaching and learning. Opportunities are given so that pupils can apply their knowledge to a wide range of real life situations. They need to be able to choose appropriate equipment and methods for the task and to enable them to communicate and justify their findings in a manner appropriate to their age and ability, showing increasing concern for clarity and accuracy of meaning.

The use of calculators in class is described in detail on the school website under the curriculum page/mathematics/specific year groups (http://www.st-marys.richmond.sch.uk/SHTM%20Files/CurriculumMATHS.shtm )

**Pupils' records of their work**

Pupils record their work to:

- help clarify their thinking
- act as a note for future reference
- communicate with others
- provide evidence of their work
- practise skills.

Pupils are introduced to various ways in which mathematics can be recorded and are then encouraged to choose and use appropriate forms of recording, such as:

- symbolic
- diagrammatic
- pictorial
- written
- constructed (a model).

When solving problems mentally, there are occasions when pupils are encouraged to work with an absence, or minimal amount of recording. Children also learn to use informal jottings to support their mental calculations.

**Display**

Display is used to inform teaching and support children's learning through the use of number lines, 100 square, vocabulary lists, etc.

The display of children's mathematical work gives them pride in their achievements.

**The full range of pupil attainment and inclusion**

Teaching is planned to provide for the full range of prior attainment within each class. Throughout the lesson the teacher has these needs in mind and directs questions and provides activities to cater for this range of pupils. It is normally satisfactory to think in terms of three broad levels of understanding and to plan accordingly.

There are opportunities for both able pupils and those with specific difficulties to work in smaller groups, usually focusing on the same objectives but at a differentiated level.

Able pupils normally work on the same topics as the rest of the class, but activities are planned to stretch their abilities and enrich their mathematical experiences. This may be done by providing more demanding questions and investigations, often with a more open-ended approach.

Lower attaining pupils normally work on the same topics as the rest of the class, but activities are planned to enable them to succeed. They may at times be working from the objectives from the previous year group. Those children with an Individual Education Plan have specific targets each term for mathematics where appropriate.

**Equal opportunities**

All children have equal access to mathematical activities. We pay particular attention to ensuring there is no gender bias in materials or in access to resources, including ICT. Teachers aim to ensure an equal distribution of their questions across all groups. Any displays and references to mathematics in society show positive role models of gender, race, ethnicity and disabilities.

St Mary's CE School is committed to valuing diversity and to equality of opportunity. We aim to create and promote an environment in which pupils, parents and staff are treated fairly and with respect, and feel able to contribute to the best of their abilities.

The Governing Body recognises that it is unlawful to take into account anyone's gender, marital status, colour, race, nationality, ethnic or national origin, disability, religious beliefs, age or sexual orientation. Full consideration has been given to this during the formulation of this policy as it is the governors' aim that no-one at St Mary's school should suffer discrimination, either directly or indirectly, or harassment on any of these grounds.

**ICT**

The use of ICT is an integral part of mathematics teaching and learning. The school attaches a great deal of emphasis and importance to the teaching of computer literacy and expertise and mathematical knowledge through access to and use of a range of mathematical programmes. These opportunities are developed both within mathematics lessons themselves and across the broader curriculum. Class groups from year 1 to year 6 are taught with an interactive whiteboard and all pupils have regular access to computers.

**E -Safety**

Before every lesson the teachers will remind children about how to use the internet safely during mathematics lessons and refer to the poster on display if using the computers in the ICT suite. Teachers will monitor and report e-safety incidents in line with the AUP (Acceptable Use Policy).

Teachers will monitor and report all e-safety incidents (eg. misuse of internet) to the e-safety officer and keep a log in a book.

**Homework**

Homework is given as a consolidation or extension of work covered in school through mathematical activities, games and puzzles as described in the Home Learning Policy.

There are opportunities for pupils from Year 1 to Year 6 to borrow a mathematical game from St. Mary's *Maths Games Library* regularly and play it at home with their family.

**Spiritual, moral, social and cultural aspects**

There are many opportunities to develop a sense of wonder in mathematics, e.g. in structure and patterns of shape and number, in concepts such as probability and infinity. Teaching also emphasises that the mathematics we know and use today is the result of human activity over a very long time and in many diverse cultures across the world.

**Planning**

Long term and medium term planning is structured following guidelines set out in the Primary Framework for Mathematics.

The planning structure for each year is organised into five blocks. The structure is the same for each year group. A block is designed to cover the equivalent of 6 weeks or 9 weeks of teaching. Each block has incorporated into it objectives from the Using and Applying mathematics strand and from two or three of the other core strands.

| Block A: Counting, partitioning and calculating (6 weeks) | Block B: Securing number facts, understanding shape (9 weeks) | Block C: Handling data and measures (6 weeks) | Block D: Calculating, measuring and understanding shape (6 weeks) | Block E: Securing number facts, relationships and calculating (9 Weeks) |
|---|---|---|---|---|
| Unit A1 | Unit B1 | Unit C1 | Unit D1 | Unit E1 |
| Unit A2 | Unit B2 | Unit C2 | Unit D2 | Unit E2 |
| Unit A3 | Unit B3 | Unit C3 | Unit D3 | Unit E3 |

Short term plans are plans for each block (2 or 3 weeks). These may include examples from the New Primary Framework, other published resources or the teachers own ideas. These will be adapted to meet the needs of the class. Planning should include notes on objectives, tasks, activities and grouping, success criteria, resources and use of support.

Teachers will use 'I can' statements in planning and emphasise the success criteria at the beginning of each lesson.

**Cross-Curricular Links**
Cross curricular links will be made whenever appropriate, for example, the use of measurement in science, model making and design, the use of graphs, geometric patterns in art, use of space and direction in PE and other aspects of topic work. As far as possible we will attempt to provide 'real life' situations which enable children to use their mathematical skills.

**Assessment**
Teachers will assess children's work in Mathematics from three aspects (short-term, medium-term and long-term). There will be a heavy focus on Assessment for Learning (AfL) and children will be encouraged to assess their own work where appropriate.

**Formative Assessment (short-term)**
Assessment is carried out informally during the course of teaching. It enables the teacher to identify a child's understanding and progress in particular aspects, to inform their immediate teaching and to plan for their coming lessons. This can take the form of:

- small group discussions in the context of a practical task
- specific assignments for individual children
- individual discussions with children to evaluate progress and to set new targets.

**Medium-term assessment (medium-term)**
This is planned into the work as discrete assessment opportunities, each half term. The assessment often takes the form of a short test or task and serves to show the teacher the extent to which learning objectives have been met. This is recorded onto the class key objectives sheet and is used to inform planning future lessons and activities.

**Summative assessment (long-term)**
This takes the form of the Foundation Stage Profile which is completed for each child at the end of Reception. In year 2 there is end of key stage testing. In years 3, 4 and 5 there are annual QCA optional tests and then end of key stage testing at year 6. Teachers provide an overall assessment of each child's national curriculum level in mathematics termly during each school year, starting in year 1 and will discuss this information with the standards leader, Headteacher and SENCO to assess the needs of each individual learner. This information is recorded in the Pupil Progress documents.

**Assessment for Learning (AfL)**

Assessment for Learning involves using assessment in the classroom to raise pupils' mathematical achievement. It is based on the idea that pupils will improve most if they understand the aim of their learning, where they are in relation to this aim and how they can achieve the aim (or close the gap in their knowledge).

Effective assessment for mathematical learning will happen all the time in the classroom. It will involve:

- sharing learning goals with pupils
- helping pupils know and recognise the standards to aim for
- providing feedback that helps pupils to identify how to improve
- believing that every pupil can improve in comparison with previous achievements
- both the teacher and pupils reviewing and reflecting on pupils' performance and progress
- pupils learning self-assessment techniques to discover areas they need to improve
- recognising that both motivation and self-esteem, crucial for effective learning and progress, can be increased by effective assessment techniques.

**Self-Assessment**
Children should be involved in assessing their own work and the work of their peers. This might include:

- Traffic Lights- How did they find their work? (red/yellow/green)
- Identifying objectives/success criteria.
- Thumbs up/down

**Marking**
Where-ever possible, the child should be present whilst their work is marked and this should only be for the learning objective. Effective marking of pupils' work identifies what they have done well and highlights any misconceptions that have been found. It sees short term targets for what they need to do next and for improvement. The children are given feedback as soon as possible and this does not always need to take a written form and can be verbal. The intention is to encourage and to give guidance for future work.

Work that is right should be marked and crosses for incorrect answers should be avoided. Ticks and written comments should be clear. It is not necessary to mark every calculation. Teacher judgements can be made accurately from an overview of a piece of work.

Some marking is immediate, depending on the activity and the age of the children. Time is allowed for some marking to be done with each pupil, so that discussion, explanation and praise can take place. Where appropriate, children can self- mark work with the use of a checklist.

**Record keeping - Assessing Pupils' Progress (APP)**

APP is a structured approach to periodically assessing mathematics so teachers can:

- track pupils' progress from Year 1 through to the end of Year 6
- use diagnostic information about pupils' strengths and weaknesses.

Teachers will use APP materials to make level judgments for each of the following National Curriculum attainment targets (ATs):

- using and applying mathematics
- number
- shape, space and measures
- handling data.

Teachers are to assess pupils' progress (APP). The primary tool for this assessment will be Target Tracker. This is to be used in conjunction with pupil progress meetings with the Headteacher, SENCO and Assessment Coordinator.

Results of end of key stage testing and QCA optional tests are recorded on spreadsheets for each year group on the shared drive network.

**Target setting**

All children have a quantitative target for the national curriculum level they are expected to achieve by the end of the school year. This is based on their level at the start of the year. Children also have a target for the level they are expected to attain by the end of the key stage. The Headteacher and class teachers agree these targets, making use of national curriculum assessments, teacher assessments and expectations for the individual child. Teachers also set qualitative targets for what they expect children to learn in the short term.

**Reporting to parents**

Pupils' progress is reported to parents through the regular parent/teacher consultation meetings and annually through the written report. Parents are kept informed of teacher assessments and the results of optional national curriculum testing. They are provided with information on children's areas of strength and weakness and on their rate of progress in mathematics.

**Monitoring and evaluation**

The purpose of monitoring and evaluation activities is to raise the overall quality of teaching and levels of pupil attainment. The mathematics coordinator and Headteacher monitor the quality of teaching and learning as part of the school's self-evaluation policy. Monitoring focuses on:

- scrutiny of planning
- quality of teaching through lesson observation and feedback
- moderation of standards in children's work
- evaluation of children's attainment against targets.

The quality of mathematics in the school will also be inspected as part of any OFSTED inspection of the school as a whole.

**The role of the mathematics coordinator**

- to take the lead in policy development and review, including the continuing successful implementation of the Primary Framework for Mathematics
- to support colleagues in the development of weekly plans from the Primary Framework for Mathematics and in assessment and record-keeping activities
- to keep up-to-date on local and national initiatives and disseminate information
- to take responsibility for the purchase and organisation of mathematical resources
- to analyse pupils' test results to inform future policy, set school targets for mathematics in conjunction with the senior management team and advise staff in setting individual pupil and group targets
- to take the lead in writing the mathematics section of the School Development Plan
- to encourage the professional development of staff.

**The role of teaching assistants**

- to sit with an identified group of children and model what the teacher is doing using similar or adapted resources.
- to assist a group of children to complete a piece of work planned by the teacher
- to encourage pupils to feed back and contribute to the overall session during plenaries
- to work with different groups of pupils because all the children have an equal entitlement to teaching time from the teacher
- it may be appropriate on some occasions for a group to be withdrawn with the teaching assistant during group work.