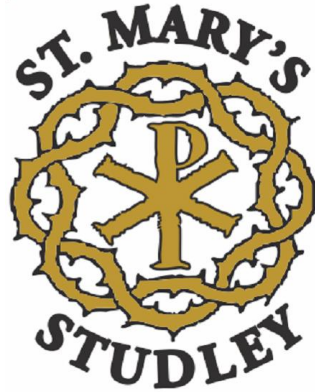


**ST. MARY'S CATHOLIC PRIMARY SCHOOL,  
STUDLEY**



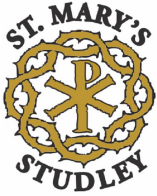
**Mathematics Policy**

**Headteacher**

O. Finnegan

**Chair of Governors**

S. Coyne



## Policy on Mathematics

### 1 Aims and objectives

- 1.1 Mathematics teaches children how to make sense of the world around them through developing their ability to calculate, reason and solve problems. It enables children to understand relationships and patterns in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.
- 1.2 Our objectives in the teaching of mathematics are:
- to promote enjoyment of learning through practical activity, exploration and discussion;
  - to promote confidence and competence with numbers and the number system;
  - to develop the ability to solve problems through decision-making and reasoning in a range of contexts;
  - 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 help children understand the importance of mathematics in everyday life;
  - to develop the cross-curricular use of mathematics in other subjects.

### 2 Teaching and learning style

- 2.1 The school uses a variety of teaching and learning styles in mathematics. Our principal aim is to develop children's knowledge, skills and understanding. During our daily lessons, we encourage children to ask as well as answer mathematical questions. They have the opportunity to use a wide range of resources, such as number lines, number squares, digit cards and small apparatus to support their work. Mathematical dictionaries are available in all classrooms. ICT is used in mathematics lessons for modelling ideas and methods. Wherever possible, we encourage the children to apply their learning to everyday situations.
- 2.2 In all classes, children have a wide range of mathematical abilities. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies – in some lessons through differentiated group work, and in other lessons by organising the children to work in pairs on open-ended problems or games. We use classroom assistants to support some children, and to ensure that work is matched to the needs of individuals.

### 3 Mathematics curriculum planning

- 3.1 Mathematics is a core subject in the National Curriculum, and we use the National Numeracy Strategy and the revised Primary Framework for literacy and mathematics as the basis for implementing the statutory requirements of the programme of study for mathematics.
- 3.2 We carry out the curriculum planning in mathematics in three phases (long-term, medium-term and short-term). The National Numeracy Strategy Framework for Teaching and the revised Primary Framework for literacy and mathematics give a detailed outline of what we teach in the long term, while our yearly teaching programme identifies the key objectives we teach to in each year.
- 3.3 Our medium-term mathematics plans, which are adopted from the Framework, and give details of the main teaching objectives for each term, define what we teach. They ensure

an appropriate balance and distribution of work across each term. These plans are kept and reviewed by the subject leader.

- 3.4 It is the class teacher who completes the weekly plans for the teaching of mathematics. These weekly plans list the specific learning objectives and expected outcomes 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 often discuss them on an informal basis.
- 3.5 We plan the activities in mathematics so that they build on the children's prior learning. While we give children of all abilities the opportunity to develop their skills, knowledge and understanding, we also plan progression into the scheme of work, so that there is an increasing challenge for the children as they move up through the school.

#### **4 The Foundation Stage**

- 4.1 We teach mathematics in our reception class. As the class is part of the Foundation Stage of the National Curriculum, we relate the mathematical aspects of the children's work to the objectives set out in the Early Learning Goals, which underpin the curriculum planning for children aged three to five. We give all the children ample opportunity to develop their understanding of number, measurement, pattern, shape and space, through varied activities that allow them to enjoy, explore, practise and talk confidently about mathematics.

#### **5 Contribution of mathematics to teaching in other curriculum areas**

##### **5.1 English**

The teaching of mathematics contributes significantly to children's understanding of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, in mathematics lessons, we expect children to read and interpret problems, in order to identify the mathematics involved. They are also improving their command of English when they explain and present their work to others during plenary sessions. In English lessons, too, maths can contribute: younger children enjoy stories and rhyme that rely on counting and sequencing, while older children encounter mathematical vocabulary, graphs and charts when reading non-fiction texts.

##### **5.2 Personal, social and health education (PSHE) and citizenship**

Mathematics contributes to the teaching of PSHE 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. We present older children with real-life situations in their mathematics work on the spending of money.

##### **5.3 Spiritual, moral, social and cultural development**

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. The study of famous mathematicians around the world contributes to the cultural development of our children.

#### **6 Mathematics and ICT**

- 6.1 Information and communication technology enhances the teaching of mathematics significantly, because ICT is particularly useful for mathematical tasks. It also offers ways of impacting on learning which are not possible with conventional methods. Teachers can use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. 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, such as tessellations. When working on control, children can use both standard and non-standard measures for

distance and angle. They can also use simulations to identify patterns and relationships. E-mail permits collaborative problem-solving.

## **7 Mathematics and inclusion**

- 7.1 At our school, we teach mathematics to all children, whatever their ability and individual needs. Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our mathematics teaching, we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents and those learning English as an additional language, and we take all reasonable steps to achieve this. For further details, see separate policies: Special Educational Needs; Disability Discrimination; Gifted and Talented Children; English as an Additional Language (EAL).
- 7.2 When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs.
- 7.3 Intervention through School Action and School Action Plus 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.
- 7.4 We enable all pupils to have access to the full range of activities involved in learning mathematics. Where children are to participate in activities outside the classroom (a 'maths trail', for example), we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

## **8 Assessment for learning**

- 8.1 Teachers will assess children's work in mathematics from three aspects (long-term, medium-term and short-term). We use short-term assessments to help us adjust our daily plans. These short-term assessments are closely matched to the teaching objectives.
- 8.2 We make medium-term assessments to measure progress against the key objectives, and to help us plan the next unit of work. We use the class record of the key objectives as the recording format for this.
- 8.3 We make long-term assessments towards the end of the school year, and we use these to assess progress against school and national targets. We can then set targets for the next school year and make a summary of each child's progress before discussing it with parents and carers. We pass this information on to the next teacher at the end of the year, so that s/he can plan for the new school year. We make the long-term assessments with the help of end-of-year tests and teacher assessments. We use the national tests for children in Year 2 and Year 6, plus the optional national tests for children at the end of Years 3, 4 and 5. These are all used to support final teacher assessments. We also make annual assessments of children's progress measured against the level descriptions of the National Curriculum.
- 8.4 Older children are encouraged to make judgements about how they can improve their own and each other's work.

## **9 Resources**

- 9.1 All classrooms have a number line and a wide range of appropriate small apparatus. Calculators and a variety of audio-visual aids are available from the central storage area. A range of software is available to support work with the computers.

## **10 Monitoring and review**

- 10.1 The coordination and planning of the mathematics curriculum are the responsibility of the subject leader, who also:
- supports colleagues in their teaching, by keeping informed about current developments in mathematics, and by providing a strategic lead and direction for this subject;
  - gives the headteacher an annual summary report in which he evaluates the strengths and weaknesses in mathematics, and indicates areas for further improvement;
  - uses specially allocated regular management time to review evidence of the children's work, and to observe mathematics lessons across the school.
- 10.2 The quality of teaching and learning in mathematics is monitored and evaluated by the headteacher as part of the school's agreed cycle of lesson observations.
- 10.3 A named member of the school's governing body is briefed to oversee the teaching of numeracy. The numeracy governor meets regularly with the subject leader to review progress.
- 10.4 This policy will be reviewed at least every two years.

## **11.0 Recording Work**

The purposes for which pupils record their work include:

- helping to clarify their own thinking - jottings in mental work
  - acting as a note for future reference
  - communicating with others
  - providing evidence of their work in Mathematics
- 11.1 In the early stages it is more important for children to talk about their Mathematics than to record what they are doing in writing. It is essential that the children are encouraged on a regular basis to express in words what they have done and to compare their methods with those of other children. Language needs to be developed so that children can think and communicate freely.
- 11.2 Recording should take different forms depending on the nature of the mathematical activity and the purpose of the record - it can be:
- symbolic
  - graphical
  - diagrammatic
  - pictorial
  - written
  - constructed (model)
  - verbal
- 11.3 The children work in Mathematics exercise books, on the computer or on paper where appropriate.

## **12.0 Special Educational Needs**

In accordance with the new Special Needs Code of Practice (2002) the needs of the majority of children will be met by differentiation within the classroom. Where children may be identified as having special educational needs in the area of Mathematics these children should be referred to the SENCO so that they can be placed at the school action level on the school's Special Needs Register in line with the new Code of Practice. Such

children will then work on small achievable targets recorded on Individual Education Programmes and target sheets. The strategies used should be in line with our overall approach to teaching mathematics and should complement and extend what is going on in the classroom.

- 12.1 Some activities will be differentiated by task, and others by outcome.
- 12.2 The less able child may work from the Scheme of Work for the Year group below that of his/her own. In KS2, once children have been identified as underachieving we use trained ancillary support for small booster groups following the Numeracy Springboard Schemes.
- 12.3 From KS1 SATS results and from optional SATS results and teachers' assessments, children in KS2 are set in ability classes.

## **13.0 Equal Opportunities**

Within Mathematics we aim to promote the whole school policy for equal opportunities.

## **14.0 Home/school partnership**

We recognise the importance of communicating to parents and understanding of how children develop mathematically. Parents curriculum meetings are held where parents have the opportunity to hear about our approach to teaching Mathematics. We have a home/school policy. Children are expected to complete one piece of Maths homework a week in Year 1 and 2, and two pieces in KS2

## **15.0 Gifted and More Able (G & MA)**

Gifted and More Able children in mathematics are identified when they:

- explore a range of strategies for solving a problem
- are naturally curious when working with numbers and investigating problems see solutions quickly without needing to try a range of options
- look beyond the question in order to hypothesise and explain
- work flexibly and establish their own strategies
- enjoy manipulating numbers in a variety of ways

15.1 The names of G & MA children are given to the school's coordinator for inclusion on the register. Teachers should be aware of students on the gifted and talented register. These students need explicit differentiation although not necessarily in every lesson and these students should be set high targets

15.2 Teachers look for opportunities to include the following to stretch the G & MA pupil:

- set high standards for gifted students to attain
- expect students to use precise mathematical language
- expect students to present written work clearly and accurately
- expect students to produce solutions at speed
- provide opportunities for students to pursue some topics in greater depth, for example using materials above their current level
- set problems that present students with greater cognitive challenge

- include proof within their lessons wherever possible
- set problems which require students to apply their mathematics in new situations
- pose questions that encourage students to think more deeply about mathematics (“What if...?” “What if not....?” “Why...?” “How do you know....?” )

15.3 These are excellent websites for gifted and talented students:

- [www.nrich.maths.org](http://www.nrich.maths.org) - this website is designed specifically for enriching mathematical thinking and has numerous maths problems, puzzles, games and articles.
- [www.cut-the-knot.org](http://www.cut-the-knot.org) - this is an amazing website with numerous proofs (43 proofs of Pythagoras' Theorem!), a good selection of games and puzzles and a vast supply of enrichment ideas by topic.

[www.1000problems.com](http://www.1000problems.com) - this is a supply of 1000 problems, arranged by topic and year group, with extension problems available. This is an excellent supply of problems for all classes and all abilities.