

# ST MARY'S CATHOLIC PRIMARY SCHOOL

## Mathematics Policy

Reviewed by Donna Carey  
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### Mission Statement

St Mary's school community follows the teachings of Jesus Christ, working together to develop the whole child, in a spiritual, moral, academic, physical, social and emotional way, within a caring and supportive environment.

### Aims

Mathematics is a tool for life. To function in society, we all need to be able to communicate mathematically. We must ensure that the children in our care leave our school with high standards of numeracy as well as literacy.

In our teaching of mathematics at St Mary's, we hope to:

- inculcate an enjoyment and love of maths;
- ensure numeracy;
- enable pupils to have opportunities for mathematical thinking and discussion;
- provide opportunities for pupils to demonstrate and use their mathematics;
- provide a role model by using mathematics for practical purposes, organisational and administrative tasks;
- give pupils opportunities to use mathematics in everyday situations;
- help pupils to understand that mathematics is a powerful tool for communication;
- instill confidence at using mathematics;
- help pupils to be unafraid of and to be able to use new technology;
- help pupils recognise that mathematics is a search for pattern and relationship;
- instill a fascination of mathematics and the manipulation of numbers;
- encourage pupils to take responsibility for their own learning;

### Planning and Delivery

A large part (20% - 25%) of the time that children are in school is spent on mathematical activities. These activities are concerned with fulfilling and extending the requirements and the New Curriculum with the EYFS Profile in Early Years. The activities may be taught to whole classes, groups or groups of similar ability.

All the children will have opportunities to:

- work at their own ability level;
- discuss and reinforce what they have learnt;
- work in pairs and in small and large groups;
- work in the areas of number, measure, shape, space and data handling;
- use a range of information communication technology, e.g. interactive boards, ICT Suite;
- use a wide range of mathematical tools/instruments;
- rehearse mental strategies and skills;

Children should take part in a lot of practical activities to use and apply the skills they have learnt.

Lesson should be linked to other areas in the curriculum and this should be evident in planning.

### Introduction

The Headteacher, Miss Creed, will have overall responsibility for the provision of the mathematics curriculum within the school. The day-to-day implementation of the policy is the responsibility of the maths subject leader, Donna Carey. The policy will be reviewed every three years.

### Description of policy formation and consultation process

The policy outlines the teaching, organisation and management of the mathematics taught and learnt at St Mary's Primary School.

We are teaching from the New Curriculum 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 the teaching staff.

### The legal position

Mathematics is a core subject in the basic curriculum to which all pupils are entitled, in accordance with the 1988 Education Reform Act.

## General principles

Mathematics will be taught to all pupils throughout the school in ways appropriate to their ability. It will be taught as a single subject and in cross-curricular topics. The school Equal Opportunities Policy applies to the teaching of Mathematics, as to all other subjects. All pupils will be encouraged to work to the limit of their abilities. All children are working towards age related targets therefore all children should be given the opportunity to achieve these levels.

Children should only be taught the objectives for their year group and then deepen their understanding through mastery not moving onto the next year groups objectives.

### **The tasks or activities:**

- will bring together different areas of mathematics;
- will be balanced between those which develop knowledge, skills and understanding and those which develop the ability to tackle practical problems;
- will be balanced between those of short duration and those which have scope for development over an extended period;
- will promote constantly the use of mental calculation;
- encourage confidence in the use of mathematical tools;
- will involve both independent and co-operative work;
- will be both of the kind that have exact results/answers and those that have many possible outcomes;
- will encourage a positive attitude;
- will be balanced between different modes of learning:
  - ❖ listening/looking (understanding explanations, instructions, questions, answers)
  - ❖ reading (using textbooks, work-sheets, reference books; comparing methods or solutions)
  - ❖ writing (making jottings; pencil and paper calculations; drawing sketches and diagrams; recording results; reporting on an investigation)
  - ❖ talking (oral work; describing; reporting; explaining; clarifying ideas; giving examples; predicting; questioning; discussion with the teacher and peers)
  - ❖ reflecting (considering approaches to problems; thinking about own work in relation to what has already been learned)
  - ❖ carrying out practical work (sorting, counting, measuring, constructing models, making a survey, etc)
  - ❖ observing (spotting patterns; watching what is happening; noting similarities or differences; looking for consistencies or inconsistencies)
  - ❖ drafting (plotting a series of steps needed for a particular assignment).
- should help children to develop their personal qualities, including:
  - ❖ motivation and willingness to 'have a go'
  - ❖ flexibility and creative thinking
  - ❖ perseverance, reliability and accuracy
  - ❖ willingness to check, monitor and control their own work
  - ❖ independence of thought and action

- ❖ ability to co-operate within a group
- ❖ systematic work habits
- ❖ expectation to use a known fact to help work out unknown facts.

**When communicating their mathematics, pupils need to:**

- understand what needs to be done in broad terms
- follow instructions
- discuss difficulties and ask questions
- debate possible courses of action with others
- use reference material as appropriate
- present and explain results to others
- make a report
- discuss the implications and accuracy of the conclusions reached
- discuss other possible interpretations of the conclusions
- relate results sensibly to every day life.

Mathematics is used in other curriculum areas wherever possible or appropriate. This helps to expand and consolidate mathematical concepts and using maths in a purposeful way in everyday contexts helps the children to realise that mathematics is important in the real world.

Classroom Organisation and Expectations

Classroom organisation for mathematics will be such that the children are encouraged to show independence in choosing the resources/materials needed for a task and to promote self-motivation/organisation.

We will endeavour to:

- ensure the environment is stimulating and supportive
- create challenging activities in which children can experience success
- value the achievement of each child
- build upon the knowledge and skills which children have gained formally and informally
- give the children mathematical experiences which match their ability and stage of development, are structured and maintain a good pace
- organise both collaborative and individual activities
- make clear to the children the purpose and relevance of any mathematical activity
- keep records of the children's progress and achievements and set realistic targets
- encourage independent use of a variety of apparatus and equipment
- use maths in cross-curricular topics wherever appropriate
- value the contributions made to mathematics by all cultures, both nowadays and in the past
- help children reflect on each new experience
- stress the importance of, and encourage the use of, mental calculation as a first resort to any problem

- ensure children meet the same mathematical ideas in a wide variety of contexts
- establish routines to help children structure the organisation of an activity
- rehearse skills and strategies daily.

### **Pupils with special educational needs and individual education plans**

Teachers will aim to include all pupils fully in their daily mathematics lessons. All children benefit from the emphasis on oral and mental work and participating in watching and listening to other children demonstrating and explaining their methods. However a pupil whose difficulties are severe or complex may need to be supported with an individualised programme in the main part of the lesson.

### **Format of Lessons**

Some Numeracy Lessons may include a mental and oral starter, main activity and a plenary but often lessons will have different group work, teaching small groups and independent work and mini plenaries.

Children should be active in lessons, therefore teacher talk should not be too long without some activity e.g (whiteboards, talk partners).

Here is an example of how some numeracy lessons can be taught but lessons will depend on the objective and the levels of the children in the class.

- Oral work and mental calculation  
This will involve whole-class work to rehearse, sharpen and develop mental and oral skills.
- The main teaching activity  
This will include both teaching input and pupil activities and a balance between whole class, grouped, paired and individual work.
- Mini Plenary during the lesson – talk about good work or misconceptions.
- A plenary This will involve work with the whole class to sort out misconceptions, identify progress, to summarise key facts and ideas and what to remember, to make links to other work and to discuss next steps.

### **Oral and Mental Starter**

- All lessons will begin with a whole class session of approximately 10 minutes, designed to focus attention on numeracy and to rehearse and revisit skills in number work. Objectives for this session are taken from the New Curriculum 2014.
- Equipment, activity and teaching repertoire must be varied over time in order to maximise impact on learning and it is imperative that interactive activities are used so as to involve all the children in the class.

### **Main Activity**

- It is recommended that all children work on the same topic and the same objective differentiated according to ability. It is only in exceptional circumstances that a child

would work on objectives out of their year group and then only after consultation with the Maths and SEN Subject leaders.

- A substantial part of the teacher's role is to explain, demonstrate and model examples to the whole class. Children may also assist in this. It is vital that teachers rehearse and use correct mathematical language and methods at such times – the Numeracy subject leader will advise in any cases of uncertainty. Vocabulary lists are located on the k drive.
- Medium Term planning from Enfield are all saved on k drive in a folder called New Curriculum 2014.
- There is now a Calculation Policy provided by Enfield, which all members of staff have in their classrooms to refer to. A copy is in the Staff Handbooks on the K Drive.
- Work set to consolidate learning will be differentiated according to ability – children may be grouped in a variety of ways and may work independently, in pairs or small groups. There will be occasions, such as when undertaking practical work on measures, when the children would benefit from working in mixed ability groups. Teachers will need to track the groups with which they work to ensure balanced class coverage. At times, teachers will need to use this part of the lesson to assess understanding and progress against the key learning objectives as detailed in the New Curriculum 2014. At the end of each half term, time should be set aside to assess the individual child's progress against the objectives that have been covered.

#### Plenary/Assessment for Learning/Min Plenary

- Each lesson can end with a plenary session in which key points of the lesson will be emphasised, misconceptions dealt with, links will be made to other areas in maths or to everyday situations, the next step of learning indicated or homework set and explained. Assessment for Learning questions are on each unit of work. However mini plenaries can be used throughout the lesson to do the same.

#### Out-of-class work and homework

The daily mathematics lessons will provide opportunities for children to practice and consolidate their skills and knowledge, to develop and extend their techniques and strategies, and to prepare for their future learning. These will be extended through out-of-class activities or homework. (As stated in the Homework Policy)

These activities will be short and focused and will be referred to and valued in future lessons.

#### Teaching Strategies

Mathematics teaching at all levels should include opportunities for

- Exposition by the teacher (using board, interactive whiteboards, computer or OHP) to include:
  - directing – sharing the teaching and learning objectives, drawing attention to particular points;
  - instructing – giving information on how to do a particular process/activity;
  - demonstrating – showing, describing and modelling mathematics;

- explaining and illustrating – accurate, well-paced explanations referring to previous work or methods;
- evaluating pupils’ responses – identifying mistakes and using them as positive teaching points;
- summarising – reviewing during the lesson what is being taught/learned.
- Discussion between teacher and pupils.
- Interactive involvement of pupils through carefully planned questioning.
- Appropriate practical work.
- Consolidation and practice of fundamental skills, vocabulary and routines.
- Problem-solving, including the application of maths to everyday situations.
- Investigational work.
- Rehearsal of mental strategies.
- Use of ICT and other curriculum links
- Agile teaching- teacher works with different ability groups to move them on throughout the lessons.

Mathematics is a search for patterns and relationships

We will endeavour to:

- provide opportunities to discover and investigate patterns and describe and record relationships;
- encourage exploration and experiment, trying things out in as many different ways as possible;
- encourage ways of ordering or arranging, combining or separating, looking for similarities or differences;
- help children generalise from their discoveries using correct vocabulary;
- help children understand and see connections between mathematical ideas.

Mathematics is a creative activity, involving imagination, intuition and discovery

We will endeavour to:

- value and allow time for trial-and-adjustment approaches;
- view unexpected results as a source of further enquiry rather than mistakes;
- encourage the creation of mathematical structures and designs
- encourage the formation and manipulation of mental images
- foster initiative, originality and divergent thinking
- encourage questions, conjectures and predictions
- encourage children to find and explain their own methods.

Mathematics is a way of solving problems

We will endeavour to

- help children identify information and ways to obtain it;
- encourage logical reasoning, consistency and systematic working;

- ensure the development and use of skills and knowledge necessary for solving problems;
- help children know how and when to use different mathematical tools;
- help children discover and invent their own mathematical problems.

Mathematics is a means of communicating information or ideas

We will endeavour to:

- make time for both informal conversation and formal discussion about mathematical ideas;
- introduce appropriate and varied mathematical vocabulary;
- create opportunities for describing properties, for giving examples, for clarifying or explaining, for predicting results .....
- encourage reading and writing about maths, and representing and structuring ideas using pictures, symbols, diagrams, graphs....
- value and support the diverse cultural and linguistic backgrounds of all.

Foundation Stage (Nursery & Reception)

The development of mathematical thought is an important area of experience for children in the Early Years. Learning in mathematics should be primarily first-hand, experiential and active, bearing in mind the requirements of the EYFS Profile. Play and experiences are essential to the learning process.

Of particular importance will be the development of skills in:

- appropriate mathematical language;
- making comparisons;
- sorting;
- understanding one to one correspondence;
- conservation of numbers;
- recognition of numbers;
- writing numbers correctly;
- basic ordinal language;
- early use of estimation;
- naming basic 2D and 3D shapes;
- copying and recognising patterns;
- early use of conventional time units;
- early use of non-standard and standard measures;
- use of calculator;
- reading and recognising simple graphs;
- early use of appropriate IT.

## Years 1 – 6

Pupils will follow the requirements of the National Curriculum (New Curriculum 2014). The sections of the programmes of study interrelate. Developing mathematical language, reasoning and skills in applying mathematics should be set in the context of the other areas of mathematics. The areas covered a place value, addition and subtraction, multiplication and division, fractions, measurement and geometry. Speaking and Listening skills should take part in every lesson. Mastery should be taught to all abilities, to master the skills they have been learning and allow for a deeper understanding.

### Pupil's Records of Work

As stated in the Marking and Presentation Policy.

Mental work does not exclude a written record of methods or results. It should be noted that jottings and rough workings do not need to be set out with the same formality as standard written methods. However, children should always be encouraged to form numerals correctly and legibly and reversals should always be pointed out and corrected by the child. As the children move through KS2, they will be taught to record their work in a variety of forms, including standard written algorithms.

The children use books, paper, worksheets and workbooks for mathematics. They will be encouraged to have good work habits, to set work out neatly and to show their method of working out (algorithm) so that the work can easily be talked through. When using squared paper, children will be expected to write one digit per square. Work will be marked with a tick if correct and a dot if incorrect. A question mark will indicate that a teacher cannot understand the solution.

The children's books/folders will demonstrate the wide variety of mathematics work undertaken throughout the year. These may contain examples of symbolic, graphical, diagrammatic, pictorial, written, annotated photographs and group (photocopied) work. They may also contain a teacher's note about oral work.

Teachers' keep records to show the results of tests and assessments through the school tracking system.

### Assessment and Recording

Assessment will take place each half term, through assertive mentoring tests. Children take a test at the beginning of each half term and the same test at the need to show the progress they have made. This also helps teachers to plan what the children need and not teach them what they already know. These assessments will be used to inform teaching in a continuous cycle of planning, teaching and assessment.

Each child has an assertive mentoring folder with the stage they are currently working at. Each half term the teacher will set targets for the child and review it the following term and refer to this target in the children's books through marking.

Short-term assessments will be an informal part of every lesson to check their understanding and give you information, which will help you to adjust day-to-day lesson plans. These assessments can be reflected on the comment in a child's book and teachers will annotate their planning.

Long term assessments will take place towards the end of the school year to assess and SATs for pupils in Years 2 and 6 and supplemented by the optional QCA tests for children in Years 3, 4 & 5. Teachers will also draw upon their class record of attainment against key objectives and supplementary notes and knowledge about their class. Accurate information will then be reported to parents and the child's next teacher. The assertive mentoring assessments will help form teacher assessments.

Year 2 and 6 have interim frameworks that the children must meet by the end of the year and evidence of these statements must be in the child's book to allow them to get the grade at the end of the year.

#### The role of the Subject Leader

The subject leader will endeavour to:

- ensure understanding of the requirements of the new Curriculum (2014)
- keep up to date with developments in maths teaching;
- teach demonstration lessons;
- observe colleagues and monitor plans and quality of teaching with the Headteacher;
- lead by example in the way of teaching in own classroom;
- prepare policy documents and schemes of work as necessary;
- advise colleagues, help develop expertise and monitor the teaching of maths throughout the school;
- encourage the development of valid maths activities that are appropriate, differentiated and enable progression;
- encourage use of ICT as appropriate in supporting teaching/motivating pupils;
- liaise with Key Stage 1 and 2 staff, Headteacher, Governors, parents and advisers as necessary;
- work co-operatively with the SENCO;
- discuss regularly with the Headteacher and the Numeracy Governor the progress of implementing the Numeracy Strategy in the school;
- use maths budget to buy appropriate resources and equipment;
- collect and maintain resources and ensure accessibility;
- contribute to the in-service training of staff.