**SAINT MARYS CATHOLIC PRIMARY SCHOOL**

**MATHEMATICS POLICY**

**July 2019**

**School Mission Statement**

**St. Mary’s School is a community wherein Christ is present amongst all its members. Supported by the parents and parish community the children live out their Christian and Catholic faith in their relationships with others. A full and enriched education is offered to all children meeting their needs, enabling them to embrace future challenges and responsibilities and encouraging them to play a full part in society.**

**INTRODUCTION**

This policy outlines the teaching, organisation and management of the mathematics taught at Saint Mary’s Catholic Voluntary Academy. The policy has been drawn up as result of staff discussion and has full agreement of the Governing Body. The implementation of this policy is the responsibility of all the teaching staff.

**AIMS**

At St Mary’s, mathematics is taught through a “Mastery” approach that enables children to make sense of the world around them by understanding relationships, patterns and changes in, quantity, space, shape and measure in everyday life.

We aim to:

* To foster a positive attitude to mathematics as an interesting and attractive part of the curriculum.
* Develop this understanding through a structured, practical and fun curriculum which fosters and celebrates each child’s contribution and achievements.
* Enable our children to be fluent in the fundamentals of maths, including through varied and frequent practice with increasingly complex problems, so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
* Build on the earliest perceptual and cognitive learning through to problem solving and reasoning in real life situations.
* Ensure that all pupils achieve mastery in the key concepts of mathematics, appropriate for their age group, in order that they make genuine progress and avoid gaps in their understanding that provide barriers to learning as they move through education.
* Enable our pupils to use their learning to become as independent as possible in their adult lives.

**TEACHING AND LEARNING**

**Planning**

Mathematics is a core subject of the National Curriculum and we use objectives based on the New National Curriculum 2014 as the basis for our implementation of our Programme of Study. Planning is done in three phases – long term, medium term and short term. The latter take the form of Learning Journeys, with small steps within and between lessons to maximize progression and attainment across all abilities.

Pupils are provided with a variety of opportunities to develop and extend their mathematical skills in and across each phase of education. Appropriate mathematical terminology is used in our teaching and children are also expected to use it in their verbal and written explanations.

Although children are still sometimes taught in differentiated groups, more mixed-ability teaching is now happening in line with the mastery approach our school has adopted. This allows most children to access the appropriate objectives and to be involved in a high level of problem-solving and reasoning discussions. In both cases, skills and activities maximize developing skills.

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 real contexts helps the children to realise that mathematics is important in the real world.

**The lesson format** we follow ties in with the 5 Big Ideas of mastery teaching. As such, it may include a mental/oral starter to develop fluency, a main, whole-class teaching input, developed over the lesson in small-steps with a series of activities and discussions to acquire the skill being taught (ping-pong approach). Children are encouraged to work in mixed-ability groups and/or pairs. The teaching and use of explicit **stem sentences** are recommended to improve our children’s mathematical explanations and vocabulary. The teaching of mathematics at St Mary’s Primary School provides opportunities for:

* Group work
* Paired work
* Individual work
* Whole class teaching

**Within maths’ lessons**, through careful planning and preparation, pupils engage in:

* The development of mental strategies
* Written methods
* Practical activities and mathematical games
* Investigational work
* Problem solving with a focus on written **mathematical** explanations
* Reasoning
* Mathematical discussion
* Consolidation of basic skills and number facts, with frequent rehearsal, predominantly in times tables and number bonds.

At St Mary’s Catholic Primary School, we recognise the importance of establishing a secure foundation in mental calculation and recall of number facts before standard written methods are introduced. We use the appropriate mathematical terminology in our teaching and children are also expected to use it in their verbal and written explanations. 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 real contexts helps the children to realise that mathematics is important in the real world.

We endeavor to set work that is challenging, motivating and encourages the pupils to talk about what they have been doing. It is intended that the primary focus of our mathematics should be based upon calculation, in order to lay strong foundations for the using and applying of mathematics in real-life situations.

**Teaching time**

To provide adequate time for developing mathematical skills each class teacher will usually provide daily mathematics lessons, though these may be blocked, as appropriate. This may vary in length but will usually last for about 45 to 60 minutes, dependent upon the age of the pupils. Additional mathematics may be taught within other subject lessons when appropriate: for example, science and data collection.

Teachers of the **Foundation Stage** children base their teaching on objectives from the Development Matters in Early Years Foundation Stage (EYFS) framework; this ensures that they are working towards the ‘Early Learning Goals for Mathematical Development’. (ELG), that come under the headings of:

* 1.Number
* 2.Shape, space and measures.

Towards the end of the Foundation Stage, teachers aim to draw the elements of a daily mathematics lesson together so that by the time children move into year 1 they are familiar with a more structured lesson.

**Class Organisation**

From year 1, all pupils will have dedicated mathematics lessons for the appropriate proportion of the timetable. Within these lessons there will be a good balance between whole-class work, group teaching and individual practice.

A Typical Lesson

A typical 45 - 60-minute lesson in years 1 to 6 may be structured like this:

* 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.
* A plenary or series of “mini-plenaries” throughout the lesson. 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**.**

**Resources for the Teaching of Mathematics**

There is a range of resources to support the teaching of mathematics across the school. These include a wide range of manipulatives with each class having their own set of Numicon, Dienes and Cuisenaire, in addition to specific, age-appropriate materials. In addition, there are games, measuring equipment and other practical apparatus. Staff are encouraged to use the resources they need but to ensure that they are returned to the appropriate place when finished with so that other classes can make use of them.

All classrooms have a number line and a wide range of appropriate small apparatus (e.g. number squares, numeral cards, cubes, dice and dominoes). Within the classroom resources are readily accessible to children who are encouraged to select materials that are suitable to their task.

In the early years this selection of resources will need guidance from the class teacher but as pupils’ progress through the school they should become increasingly independent in their selection.

**CALCULATIONS POLICY**

We believe that too great a diversity of calculation strategies can be confusing to many children and therefore have a ‘Calculation Policy’ to demonstrate our beliefs and teaching approaches. This is also available for parents to access on the school website. In light of new research and the “5 Big Ideas” of mastery teaching, this policy is to be reviewed and updated this coming academic year.

**RECORDING**

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 method of recording.

Children are encouraged to use mental strategies before resorting to a written solution.

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 whether recording their actual answer or making jottings. Both form important evidence for the teacher.

**SKILLS**

Our pupils should:

* have a deep understanding of the size of a number and where it fits into the number system (place value)
* know by heart number facts such as number bonds, multiplication tables (including the division inverses), doubles and halves and common fractions including their decimal and percentage equivalents
* use what they know by heart to efficiently mentally calculate
* calculate accurately and efficiently, both mentally and in writing, drawing on a range of calculation strategies
* recognise when it is appropriate to use a calculator and be able to do so effectively
* make sense of number problems, including non-routine/’real’ problems and identify the operations needed to solve them
* reason and justify their ideas using a wide range of appropriate mathematical vocabulary
* judge whether their answers are reasonable/correct and have strategies for checking them
* suggest suitable units for measuring and make sensible estimates of measurements
* explain and make predictions from the numbers in graphs, diagrams, charts and tables
* develop spatial awareness and a deep understanding of the properties of 2D and 3D shapes

In addition to a secure understanding of number and calculation facts, the other essential skills for high quality mathematical learning are:

* **Problem Solving** – knowing the strategies and resources that need to be used to solve a problem and using these efficiently
* **Fluency** – being able to explain methods and reasoning verbally and in written form using appropriate mathematical language and symbols, including recognizing many different representations of number
* **Reasoning** – being able to think logically and justify ideas e.g. “prove it/convince me” scenarios, with a focus on relating these justifications to what is already known and what can be deduced

**SPECIAL EDUCATIONAL NEEDS (SEND)**

At Saint Marys we recognise that Quality First Teaching is paramount. Accordingly, within the daily mathematics lesson, all teachers aim to provide activities to support children who find mathematics difficult.

Children with SEND are taught within the daily mathematics lesson and are encouraged to take part when and where possible. Where applicable children’s IEPs targets are kept in mind when planning work, with appropriate differentiation, if required for the SEND child, incorporated into all mathematics lessons to ensure that every child can access the lesson meets their full potential.

When educational support staff are available to support groups or individual children they work collaboratively with the class teacher. The support teacher feeds back to the class teacher when appropriate to inform evaluations, assessment and future planning.

More able children at mathematics will be taught with their own class and stretched through **depth of challenge within a task** so that a skill is truly embedded and can be applied in novel situations rather than simply moving to “bigger” numbers with only a superficial knowledge of the skill involved. Staff must ensure that there are opportunities for Gifted and Talented children, and these should be noted within planning where appropriate. When working with the whole class, teachers will differentiate questions so that all children are genuinely challenged and progress. When possible, outside agencies, e.g. secondary schools, will be involved.

**EQUAL OPPORTUNITIES**

All children have equal access to the mathematics curriculum regardless of gender, social context or special needs. This is monitored by analysing pupil performance throughout the school to ensure that any disparity between the groups is minimized and a plan of action devised to improve this.

We incorporate mathematics into a wide range of cross-curricular subjects and seek to take advantage of multi-cultural aspects of mathematics. In the daily mathematics lesson, we support children with English as an additional language in a variety of ways. E.g. repeating instructions, speaking clearly, emphasizing and explaining key words, using picture cues, playing mathematical games, encouraging children to join in counting, etc.

**I.C.T.**

ICT will be used in various ways to support teaching and motivate children’s learning. However, it only be used in the daily mathematics lesson when it is the most efficient and effective way of meeting the lesson objective.

**ASSESSMENT AND REPORTING**

Assessment will take place at three connected levels:

* short-term
* medium-term
* long-term.

These assessments will be used to inform teaching in a continuous cycle of planning, teaching and assessment.

**Short-term assessment** should be an ongoing part of every lesson. The teacher will share the objectives for the lesson with the children and make sure they are clear what is being expected of them to successfully achieve the objective. This is a necessary part of assessment for learning and helps the children take ownership for their own learning. The short-term assessment will also involve the teacher checking the children’s understanding throughout the session, such that where pupils have grasped the objective they are encouraged to delve into the deeper mathematics involved and to highlight gaps in learning which can be immediately addressed as the lesson progresses and be used to inform future planning. AfL questions should be included in the daily plans.

Children will be encouraged to peer and self-assess their understanding through several appropriate systems, e.g. the use of their “purple pens” to mark and assess or, in KS2, WWW(What Went Well) and EBI (Even Better If) statements.

**Medium-term assessment** will take place on a termly basis and will cover the objectives taught during the term. The outcomes of this assessments will be recorded by the class teacher and used to inform and update Target Tracker every half term.

**Long-term assessment** will take place once during the year. This assessment will take place towards the end of the school year to assess and review pupils’ progress and attainment. These will be made through compulsory National Curriculum mathematics tests for pupils at the end of Year 2 and 6, the Times-tables test for pupils at the end of Year 4, (from 2020) and supplemented by a range of other tests across all year groups. Teachers will also draw upon their own records of attainment, supplementary notes and knowledge about their class to produce an accurate summative record.

Pupil progress is discussed with parents /carers at Parent’s Evenings throughout the year and in a formal written report at the end of the year.

All end-of-year SATs results are analysed and appropriate measures taken to address any issues that may have arisen. Each teacher is also given feedback on their class’ performance and a summary of results passed to the next teacher in transition meetings so that a full picture of the class’ strengths and weaknesses can be identified from the beginning of every year.

**MARKING OF MATHEMATICS WORK**

Children’s written work is marked on completion of a lesson or a task through a variety of different methods dependent on task, year group and support.

Children are actively encouraged to be involved in marking through opportunities for self or peer assessment.

For further details on marking of pupils’ work in mathematics please refer to the school **Marking Policy.**

**EVALUATION AND MONITORING**

Maths will be monitored regularly throughout the school through by the Maths Coordinator and Head teacher, through the regular use of:

* Learning Walks
* Lesson observations
* Book scrutinies
* Planning audits
* Work scrutinies
* Pupil interviews
* Assessment and analysis of data

Where possible, these are carried out in a coaching style, in line with school and CMAT guidance.

**GOVERNORING BODY**

At St Mary’s, we submit regular reports about the development of numeracy within the school to the full governing body.

This policy will be reviewed in 2019-2020 to reflect changes in curriculum planning and development.

**ROLE OF THE MATHS COORDINATOR**

The work of the maths Coordinator involves, being informed about, and providing a strategic lead and direction for the subject in the school.

**The Coordinator will:**

* Ensure teachers are familiar with the framework, helping them to plan lessons and supporting colleagues, where necessary, in the teaching of mathematics
* Lead by example in the way they teach in their own classroom
* Prepare, organise and lead appropriate INSET, with the support of the Headteacher
* Work co-operatively with the SENCO and SLT
* Observe colleagues regularly with a view to identifying the support they need and monitoring the quality of teaching and learning in the classroom
* Attend relevant INSET and CPD to keep up to date with current developments in the subject
* Inform parents
* Discuss with the Head teacher and appropriate governors the progress of implementing the Strategy in the school.
* Moderate, monitor and evaluate the standards of children’s work and of the quality of teaching in the school by conducting regular work and planning scrutinies, learning walks, pupil interviews and assessment data analysis.

**The Head teacher will**

* Lead, manage and monitor the implementation of the framework, including monitoring teaching plans and the quality of teaching in the classrooms
* Keep the governing body informed about the progress of the framework
* Ensure that mathematics remains a high profile in the school’s development work
* Deploy support staff to maximise support for the framework.