

**St Mary’s Catholic Primary and Nursery School**

**NUMERACY POLICY**

***“Inspiring children to love learning and live in the light of Christ”***

***St. Mary’s Catholic Primary School and Nursery values all children for their unique gifts and talents.***

***Each child is encouraged to reach his or her full potential, academically, socially and spiritually.***

***Children are nurtured and supported as they grow to become curious, confident and independent learners, who work hard and aim high.***

***All are welcomed into our happy caring catholic school community, which has the Christian values of love, patience, generosity, kindness and mutual respect at its heart.***

**Purpose of Study**

Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history’s most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

The National Curriculum for mathematics (2014) describes in detail what pupils must learn in each year group. Combined with our Calculation Policy, this ensures continuity, progression and high expectations for attainment in mathematics.

It is vital that a positive attitude towards mathematics is encouraged amongst all of our pupils in order to foster confidence and achievement in a skill that is essential in our society. At St Mary’s we use the National Curriculum for Mathematics (2014) as the basis of our mathematics programme. We are committed to ensuring 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. Assessment for Learning, an emphasis on investigation, problem solving, the development of mathematical thinking and development of teacher subject knowledge are therefore essential components of the St Mary’s approach to this subject.

Aims

* To foster a positive attitude to mathematics as an interesting and attractive part of the curriculum.
* To develop the ability to think clearly and logically, with confidence, flexibility and independence of thought.
* To develop a deeper understanding of mathematics through a process of enquiry and investigation.
* To develop an understanding of the connectivity of patterns and relationships within mathematics.
* To develop the ability to apply knowledge, skills and ideas in real life contexts outside the classroom, and become aware of the uses of mathematics in the wider world.
* To develop the ability to use mathematics as a means of communicating ideas.
* To develop an ability and inclination to work both alone and cooperatively to solve mathematical problems.
* To develop personal qualities such as perseverance, resilience, independent thinking, cooperation and self-confidence through a sense of achievement and success.
* To develop an appreciation of the creative aspects of mathematics and an awareness of its aesthetic appeal.

**Principles of Teaching and Learning in a Mastery Curriculum**

The school uses a variety of teaching and learning styles in mathematics lessons during each lesson.

Children are taught in year group sets. Pupils are seated in mixed ability groups as we believe that all

pupils can attain highly in mathematics and every pupil will have different strengths and development areas. Therefore groupings within classes are flexible and pupils will work in different groups dependent on their need.

The large majority of pupils progress through the curriculum content at the same pace. Differentiation is achieved by emphasising deep knowledge and through individual support and intervention. The questioning and scaffolding individual pupils receive in class as they work through problems will differ and pupils who grasp concepts rapidly are challenged through more demanding problems which deepen their knowledge further.

Practice and consolidation play a central role to mathematics learning. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts in tandem. Teachers use precise questioning in class to test conceptual and procedural knowledge, and assess pupils regularly to identify those requiring intervention so that all pupils keep up. Teachers ensure that concepts are modelled to pupils using multiple representations. This ensures that procedural and conceptual understanding are developed simultaneously.

***Curriculum design***

A detailed, structured curriculum is mapped out across all phases, ensuring continuity and supporting transition. Teachers follow the short, focused key objectives laid out in the Collins scheme of work. Effective mastery curricula in mathematics are designed in relatively small carefully sequenced steps, which must each be mastered before pupils move to the next stage. Fundamental skills and knowledge are secured first. This often entails focusing on curriculum content in considerable depth at early stages.

***Lesson design***

Lessons are crafted with similar care and are often perfected over time with input from other teachers, drawing on evidence from observations of pupils in class. Lesson designs set out in detail well-tested methods to teach a given mathematical topic. They include a variety of representations needed to introduce and explore a concept effectively and also set out related teacher explanations and questions to pupils.

In Key Stage 2, daily maths lessons are divided into a daily differentiated and progressive *3-minute-maths* session, marking of the daily differentiated and progressive *Schofield & Sims* 6–question-maths home learning followed by a separate maths lesson. The school has purchased ‘Arithmekits’ which support this aspect of the curriculum and promote reasoning skills about number work.

***Pupil support and differentiation***

Taking a mastery approach, differentiation occurs in the *support and intervention provided* to different pupils, *not in the topics taught,* particularly at earlier stages. There is no differentiation in content taught, but the questioning and scaffolding individual pupils receive in class as they work through problems will differ, with higher attainers challenged through more demanding problems which deepen their knowledge of the same content. Pupils’ difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support later the following day.

***Productivity and practice***

Fluency comes from deep knowledge and practice. Pupils work hard and are productive. At early stages, explicit learning of multiplication tables is important in the journey towards fluency and contributes to quick and efficient mental calculation. Practice leads to other number facts becoming second nature. The ability to recall facts from long term memory and manipulate them to work out other facts is also important. The school has purchased ‘Times Tables Rock Stars’ to support fluency and rapid recall, in readiness for the now statutory Multiplication Tables Check for Year 4.

Our pupils should:

• have a well-developed sense 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, doubles and halves

• use what they know by heart to figure out numbers mentally

• calculate accurately and efficiently, both mentally and in writing and paper,

• drawing on a range of calculation strategies

• make sense of number problems, including non-routine/’real’ problems and identify the operations needed to solve them

• explain their methods and reasoning, using correct mathematical terms

• judge whether their answers are reasonable and use and apply strategies for checking them where necessary

• 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 an understanding of the properties of 2D and 3D shapes

To provide adequate time for developing mathematics, maths is taught daily and discretely. However, application of skills are linked across the curriculum where appropriate.

**Maths Curriculum Planning**

Mathematics is a core subject in the National Curriculum and we use the objectives from this to support planning and to assess children’s progress. Staff use long term planning to ensure coverage of all areas of the National Curriculum and medium term planning to focus objectives according to the set which they teach. It is the class teacher who completes the weekly plans for the teaching of mathematics. These weekly plans list the specific learning objectives for each lesson and give details of how the lessons are to be taught. The class teacher keeps these individual plans, which they annotate according to the success of the lesson.

**Assessment**

This section details the various assessment methods and practices used in St Mary’s through which we ensure that children are making appropriate progress and that the activities they take part in are suitably matched to their ability and level of development.

**Formative Assessment (AfL)** - (monitoring children’s learning)

Assessment is an integral and continuous part of the teaching and learning process at St Mary’s and much of it is done informally as part of each teacher’s day to day work. Teachers integrate the use of formative assessment strategies such as: effective questioning, clear learning objectives, the use of success criteria, effective feedback and response in their teaching and marking and observing children participating in activities. Findings from these types of assessment are used to inform future planning.

**Summative Assessment** – (evaluating children’s learning)

More formal methods are used to determine the levels of achievement of children at various times during the school year:

Assessment Weeks:

Standardised Testing: Standardised tests (these are Puma tests from Rising Stars) are used once a term, towards the end of the term. They allow the school to measure each child’s attainment and progress in all areas of mathematics, and compare this with an “average” for children of that age. The results are used to monitor individual’s progress throughout the year, to rank order a class and to identify those children who have Special Needs in mathematics. Half-termly assessments are used throughout the year to inform planning.

**Statutory End of Key Stage Assessment**

The National Curriculum requires that each child is assessed, and assigned a Level of attainment for each of the 5 Attainment Targets in Mathematics. This is to be carried out at the end of Key Stage Two. The majority of children will be working at the expected level for their age.

**Early Years Foundation Stage (EYFS)**

Mathematics within the EYFS is developed through purposeful, play based experiences and will be

represented throughout the indoor and outdoor provision. The learning will be based on pupils’ interests and schemas or current themes and will focus on the expectations from Development Matters / Early Years Outcomes. As the pupils progress through, more focus is placed on representing their mathematical knowledge through more formal experiences. Pupils will be encouraged to record their mathematical thinking when ready and this will increase throughout the year.

**Resources**

A bank of essential mathematics resources are kept in each classroom. Teachers have been supplied with a range of mastery resources, such as: Maths on Target, Busy Ants, Inspire Maths, in order to ensure the best resources are used for each objective and no one scheme is followed.

**Information and Communication Technology**

Teachers should use their judgement about when ICT tools should be used, including the use of

calculators.

**Role of the Subject Leader**

· Ensures teachers understand the requirements of the National Curriculum. Leads by example by setting high standards in their own teaching.

· Prepares, organises and leads CPD and joint professional development.

· Works with the SENCO and SLT.

· Plan CPD with colleagues with a view to identifying the support they need.

· Discusses regularly with the Head teacher and governors, the progress of

implementing the National Curriculum for Mathematics in school.

· Monitors and evaluates mathematics provision in the school by conducting regular work scrutiny, lesson observations, learning walks and assessment data analysis.

· Responsible for maintaining Subject Leader/Link Governor link.

**Moderating and review**

This is the responsibility of the mathematics subject leader alongside members of the senior leadership team. The work of the mathematics subject leader also involves supporting colleagues in the teaching of mathematics, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school.

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