St Mary's Catholic Primary School

Maths Policy

We grow and learn in the footsteps of Jesus

Approved by	
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Introduction

Mathematics is one of the core subjects of the National Curriculum. This document is a statement of purpose, nature and management of the teaching of mathematics at St Mary's Catholic Primary School.
The National Curriculum for mathematics aims to ensure that all pupils:

- Become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **Reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- Can **solve problems** by applying their mathematics to a variety of routine and non- routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Why teach Mathematics

Mathematics is a creative and highly inter-connected 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, necessary for financial literacy and almost all 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.

Statement of Intent

At St Mary's Catholic Primary School our aim in teaching mathematics is:

1. To develop in each child mathematical skills and knowledge accompanied by mental recall of basic facts.

2. To ensure all pupils are confident using mathematical vocabulary when reasoning about mathematics.

3. To encourage each child to have an eager and positive attitude towards mathematics and to develop their curiosity.

4. To develop in each child the ability to think clearly, logically, independently and flexibly with increasing confidence.

5. To develop skills in reasoning and problem solving through setting out challenging goals and tasks.

6. To ensure that mathematical ideas are related to the everyday environment or linked to other curriculum areas wherever possible.

7. To encourage a mastery approach to teaching and learning through the use of concrete, pictorial and abstract methods.

8. To ensure that each child will experience the breadth and depth of mathematical activities, as laid down by the National Curriculum, matched to their individual abilities and previous experience whilst providing aspirations for their future.

9. To provide equal opportunities in mathematics for all groups of learners.

10. To positively encourage every child to fully participate in every lesson.

How Mathematics is organised and taught throughout the school

Our approach

Mathematics is a core subject in the National Curriculum and we use the National Curriculum as the basis for implementing the statutory requirements of the programme of study for mathematics. This ensures that there will be continuity and progression throughout the school.

Key Stage 1 and Key Stage 2

Planning

We carry out the curriculum planning in mathematics in three phases (long-term, medium-term and short-term). Our model for mathematics teaching and learning is based around the 'White Rose Maths Blocks' approach.
Opportunities for problem solving and reasoning are to be integrated into planning as often as possible. These should follow the sequence of learning.

Coverage of the curriculum is managed and monitored by the class teacher but has been checked by the subject leader to ensure full and correct curriculum coverage throughout the year.

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, and the class teacher and subject leader can discuss these on an informal basis. The plans are edited versions of those published in the 'Small-Steps' planning from White Rose Maths.
When resourcing and planning, teachers also choose resources which complement it and follow the Mastery Approach: Concrete, Pictorial and Abstract. Teachers have the flexibility to choose resources they feel are most effective to support the needs of all learners and ensure they achieve the aims of fluency, reasoning and problem solving.

Resources that may be used

White Rose Premium Resources
A range of 'Concrete' manipulates e.g. fraction walls, counting beads, place value counters etc.
Target Maths Textbooks
NCETM website
Testbase website
NRich
Twinkl website
Third Space Learning Resources
(This is not an exhaustive list)

Delivery

Maths lessons are taught daily for a minimum of 50 mins in KS1 and 1 hour in KS2.
Years 1 and 2 deliver the 'Mastering Number' programme for 20 minutes, 4 x weekly.

Children are taught in mixed ability classes appropriate to their age. Children should be grouped by ability. However, these groupings should not be a ceiling to their learning. The children may be moved to a different group depending on the class teacher's AfL.

The school uses a variety of teaching and learning styles in mathematics lessons and learning should be facilitated following the, 'Concrete, Pictorial, Abstract' model. We do this through a daily lesson that has a high proportion of whole class and group direct teaching. During these lessons we encourage children to ask as well as answer mathematical questions. As well as formal maths lessons, the children also meet maths through times tables and division challenges and Fluent Five Arithmetic.

During each lesson, teachers should aim to spend as much time as possible in direct teaching and questioning of the whole class, a group of pupils or individuals. Good direct teaching is achieved by using a balance of the following different elements as set out by the National Curriculum: Directing, Instructing, Demonstrating, Explaining and Illustrating, Questioning and Discussing, Consolidating, Evaluating pupil's responses and Summarising.
To encourage talk in mathematics, teachers may introduce concepts by including sentence structures (stem sentences- found in the WRM small steps planning). Pupils should be able to say not just what the answer is, but how they know it is right. This is key to building mathematical language and reasoning skills. This gives pupils the confidence to communicate their ideas clearly, before writing them down.

Example Stem Sentences:
The denominator is 5 because the whole has been divided into 5 equal parts.
The numerator is 3 because 3 equal parts have been shaded/circled.

Teachers then maintain a high expectation upon pupils to repeat and use the correct mathematical vocabulary to explain their understanding verbally, in their written answers and in their reflection comments. By also displaying the vocabulary during the lesson, pupils will be able to use this independently. When questioning and encouraging mathematical talk, teachers should provide regular, purposeful opportunities. For example:
- Show me how to complete the calculation

- Teach your friend how to complete the calculation
- How do you know which operation to use?
- Why have you chosen this method?
- How else can you represent this number?
- What have you learnt today?
- True or False - Odd one out
- Sometimes, always, Never

They have the opportunity to use a wide range of resources such as manipulatives, tens frames, Numicon, number lines, number squares, digit cards and other apparatus, as necessary, to support their work. Children and teachers use ICT in mathematics lessons where it will enhance their learning, and to assist with modelling ideas and methods. Wherever possible, we encourage the children to use and apply their learning in everyday situations.

Children at St Mary's follow a systematic approach to learning each of the 4 basic mathematical functions (addition, subtraction, multiplication and division), from expanded to compact methods. These are detailed in the school's Calculation Policy.

Work in Books

The work set out in the children's books should follow the presentation policy of the school. In Numeracy books the date should be written in the short form, underlined, followed by the title, underlined and then the Killer Question (K.Q.) which directly links to the learning that has taken place and the pupils' expected outcome.

If the children are given numbered questions to complete they should write the number and **circle it.** Putting a dot after the number becomes confusing when the children start using decimal numbers.

The children also have 'Maths Jotters'. These are to be used in the shared section of the lesson for children to calculate and work out. This benefits the children as they have them to refer back to during the independent part of the session. The children may also record in the jotters throughout the whole of the lesson if it is necessary and they are not moving into a formal presentation of their work. Recording may also be done using images as evidence- the images should include a K.Q.

Assessment

We constantly assess and review children's work in mathematics. We make short-term assessments (AFL) which we use to help us adjust our daily plans. These 'short-term' assessments are closely matched to the teaching objectives.

Marking follows the School Marking Policy.

At the end of each term, the children are all assessed using a formal test paper which is marked by the teacher. We use the national tests for children in years 2 and 6, plus the optional NFER tests for children in years 1, 3, 4 and 5. Analysis is carried out on these to identify gaps in learning and this information is used to inform intervention, focused arithmetic sessions, mental and oral starters. This is discussed with the maths leader at Pupil Progress Meetings and plans are put in place for the term ahead.
When these are at the end of the summer term, we can then set targets for the next school year and make a summary of each child's progress (Pupil Progress Meetings) before discussing it with parents and formally writing up for the end of term reports to parents. We pass this information on to the next teacher at the end of the year, so that they can plan for the new school year and gaps for individuals/cohorts are clear and can be addressed.

Progress is recorded termly on Insight. This shows an average scaled score for each child. The subject leader tracks this data on Insight and uses it to carry out Pupil Progress meetings with the class teacher to discuss individual children and where there may be additional need for support. Teachers will then use this information to inform teaching and intervention needs for the coming term.

Teachers sometimes meet to review individual examples of work against curriculum progression documents. This is to ensure high standards, progression and curriculum coverage which is age relevant.
The subject leader uses book looks to ensure progression, consistency of approach and full coverage of the curriculum.

Early Years Foundation Stage (EYFS)

Maths in the Foundation Stage is part of our bespoke curriculum which is based upon the requirements as set out by the Early Years Statutory Framework 2021, the educational programmes within it, the advice and guidance in the Development Matters as well as our whole school community assessment of the barriers our children face, their interests, needs and what they value and enjoy. They cover 3 areas within the arch of mathematics: Number, Numerical Patterns and Shape, Space and Measure, and children are assessed at the end of the Reception year against the Early Learning Goals which are in 'Number' and 'Numerical Patterns'. Children should be encouraged to use their natural curiosity and to explore, enjoy, learn, practice and talk about all elements of mathematics.

The children are given the opportunity to experience mathematics in an informal, play-centred manner on first arrival in the setting, the term after they turn 3. This then progresses and evolves to more formal focussed tasks and eventually whole class teaching as the children progress and become developmentally ready. The exact timing of this depends upon the needs on individual children and specific cohorts.

Much of the learning takes place themed around current topics within the department. The Nursery and Reception classrooms and outdoor areas both have a maths integrated across all areas of the provision where the children can access open ended resources to promote mathematical development appropriate for their age and developmental stage. The areas are planned to be numerate and to promote all elements of the Mathematics area of learning, over the course of the year - in that they have some element of problem solving, reasoning and numeracy learning planned for in their purpose.

Learning objectives for all EYFS children are derived from the EYFS 'Development Matters' age bands for the duration of the Nursery and Reception years, with the aim for children to work towards and achieve the Early Learning Goal by the end of Reception. Children in Reception follow the 'Mastering Number Programme', supplemented by the White Rose Maths Scheme of Learning. This is adapted to suit the topics and activities are derived to meet the needs of the learners.
Children in Nursery follow the 'Master the Curriculum' programme, specifically for nursery, which builds knowledge, skills and understanding in line with age related expectations from the Development Matters age bands.

In afternoon Nursery, where children attend when they first turn 3, mathematical development is promoted through the introduction of the daily routine, songs, games, adult supported play and access to mathematical provision within the indoor and outdoor classroom which can be both child-led learning or supported, scaffolded and carefully modelled by the adult.

In morning Nursery, children build on the above and are also taught maths through a short, daily 'Number Time' session, where the children are either taught as a full class or split into smaller ability-based groups with a key worker to lead their learning through a range of play based, practical tasks. Practitioner professional judgement is used to decide how to deliver sessions on a needs-based basis and all is derived from the progression plans from the Master the Curriculum programme.

The current practice for teaching Reception age children is to teach maths each day through whole class, group and individual activities. Children are grouped, where appropriate according to ability, and set play based, practical tasks to meet their needs.

In both Nursery and Reception activities from focused sessions then feed into activities provided within the continuous provision so children have the opportunity to apply what they have learnt, in other areas and contexts.

The aim is for a full daily maths lesson to be evident from the summer term of the Reception year. By the end of the Foundation Stage children should be ready to follow the basic lesson format for KS1. EYFS and KS1 staff will liaise and work closely together within the summer term to ensure a smooth transition where EYFS staff can begin to implement elements of the KS1 lesson format as well as the Year 1 staff being able to build upon EYFS good practice.

Ongoing assessment is based on 'Development Matters' using a range of evidence; observation, work product, closed tasks, questioning etc. on a daily basis, which is then recorded on the Insight paper tracker and used to inform planning for next steps. Evidence is recorded on the 'Tapestry' app for parents and other staff to see and as a means of documenting progress and attainment. This also forms the basis of evidence for moderation both internally and externally. Summative assessments are drawn from these and are recorded on the online Insight tracking system, on a termly basis.

Inclusion and Intervention

The teaching mathematics to children with SEND

We enjoy teaching mathematics to all children, whatever their ability. It is part of the school curriculum policy to provide a broad and balanced education to all children. We provide learning opportunities that are matched to the needs of children with SEND/additional needs. Work in mathematics takes into account the targets set for individual children in their IEPs and EHCPs, where relevant.

Adapted teaching in all aspects of the delivery of the maths curriculum should be made so that all the variety of children's needs are met.

The Special Needs Code of Practice is followed to identify individuals in need of additional support and to provide the appropriate support to enable them to progress.

Interventions

Interventions in Key Stage 1 and Key Stage 2 come from AFL. They are delivered on a needs basis to eradicate misconceptions and gaps in knowledge. They provide additional tuition for small groups of children outside the daily mathematics lesson.

Children are chosen to participate in the intervention according to AFL in daily lessons, and in some cases, teacher assessment of data, discussed with the maths leader during Pupil Progress Meetings.

Aims of intervention:

- To support the identified children and to remedy particular weaknesses in mathematics so that they are in a better position to access and benefit from the teaching programme in their year and beyond;
- To set the expectation that these children make improvements in their mathematical knowledge;
- To help teachers prepare a teaching programme enabling children to benefit fully from the main teaching programme for their year as soon as possible.

Teachers are expected to liaise carefully with the intervention provider to ensure the appropriate coverage.

Contribution of mathematics to teaching in other curriculum areas

English

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, we encourage children to read and interpret problems in order to identify the mathematics involved. The children explain and present their work to others during plenary sessions. They often write explanations and rules to accompany strategies. Younger children enjoy stories and rhyme that rely on counting and sequencing. Older children encounter mathematical vocabulary, graphs and charts when using non-fiction texts.

Science

During science lessons, children are able to use and apply their data handling skills when creating tables and graphs of scientific measurements. Whole class discussion of data also highlights the importance of clear recording of information. Children are also able to use a wide range of measuring devices in a real-life context. Children are required to read the scales on Newton meters, measuring cylinders, weighing scales and a variety of other instruments. They also work out averages during experiments.

Computing

Children use and apply mathematics in a variety of ways when solving problems using ICT. 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 use standard and non-standard measures for distance and angle. They use simulations to identify patterns and relationships. All pupils use the online programme 'Times Tables Rockstars' to consolidate their knowledge in this area.

Personal, social and health education (PSHE) and citizenship

Mathematics contributes to the teaching of personal, social and health education 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 as many areas of the curriculum as possible.

Spiritual, moral, social and cultural development

Spiritual Education

Use imagination and creativity to explore ideas while learning mathematics by: identifying and applying patterns and rules to everyday problem-solving; writing own problems and challenges that use those patterns or rules.

Moral Education

Understanding the consequences of actions: Eg. If you perform a particular action to one number, will the same outcome apply to other numbers? Is it always the case? 'Sometimes, always, never' statements.

Social Education

Developing personal qualities and using social skills: Working in pairs or groups to solve problems; Perseverance when struggling to answer questions; not being afraid to try – it's ok to be wrong, it's not ok not to try; taking turns when playing maths games. Participating, co-operating and resolving conflicts: as above, but also 'X thinks ___, Y thinks ___, who is right?' type questions.

Cultural Education

Understanding and appreciating personal influences: taking into account other people's views and understanding how to express own views. Eg. How to explain to someone where they may have gone wrong in a question.

British Values

Democracy
Take into account the views of others in shared activities. Voting when collecting data.
The Rule of Law
Undertake safe practices, following class rules during tasks and activities for the benefit of all. Understand the consequences if rules are not followed.
Individual Liberty
Work within boundaries to make safe choices during practical activities. Make own choices within data handling activities.
Tolerance of those with different faiths and beliefs
Use maths to learn about different faiths and cultures around the world. Eg. looking at patterns/shapes within Islam / Hindu religions.
Mutual Respect
To behave appropriately, allowing all participants the opportunity to work effectively. Take turns and share equipment. Review each other's work respectfully. Work collaboratively on projects/problems, help and advise others.

Monitoring and review

Monitoring of the standards of children's work and of the quality teaching in mathematics is the responsibility of the Senior Management Team and the Numeracy Subject Leader. A named member of the school's governing body is briefed to oversee the teaching of Numeracy. This governor meets regularly with the subject leader to review progress.

Promoting Maths

There will be a display board in the school to promote and celebrate mathematics. The children can be named 'Mathematician of the Week' during assembly and wear a special t-shirt/jumper.
The school website contains a 'Useful Websites' link, which is there to help parents in sharing their children's learning.