



Mathematics POLICY

Intent

Maths is more than a school subject. A solid mathematical knowledge and understanding can be seen in the fields of science, engineering and technology but is an element in most forms of employment, as well as being a crucial part of personal financial literacy and household management. A child's ability to calculate; apply knowledge; to communicate fluently; to reason and to solve problems mathematically, forms the backbone of their education for life. As the children implement their mathematical skills, they should be able to identify the practical relevance of this subject and be able to apply their knowledge in an ever wider set of familiar and new contexts. Yet, this will only be possible if the children's appreciation of the subject is also nurtured, such that they gain a sense of enjoyment and a curiosity about maths.

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. (National Curriculum July 2014)

At St. Clare's Catholic Primary School our intention is to help children:

- enjoy maths through practical activity, exploration and discussion
- understand the importance of mathematics in everyday life
- become confident and competent with numbers and the number system
- become fluent in the fundamentals of mathematics
- develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- reason mathematically by following a line of enquiry
- spot relationships across domains, make generalisations and express an opinion using mathematical language
- solve problems by applying their mathematics to a variety of routine and non-routine problems, including breaking down problems into a series of simpler steps
- keep persevering in seeking solutions and be aware that there are often many or even no solution
- develop an appreciation of the creative aspects of maths; awareness of its aesthetic appeal

- see the historic context and present day relevance of mathematics

Implementation

Maths is a core subject, given significant time on the timetable, with a daily lesson in every class and a designated Maths Meeting session. The school follows a Mathematics Mastery curriculum developed by Ark Curriculum+ for Years 1-6 and Master the curriculum for Nursery and Reception. The Mathematics Mastery programme has been adopted as it is rigorous, promotes and facilitates a broad number sense and follows the pedagogical approach of concrete-pictorial-abstract to enable all pupils to access the curriculum. Teaching for mastery allows pupils to communicate using a rich mathematical vocabulary which promotes understanding and reasoning.

We use the three 'Dimensions of Depth' (mathematical thinking; language and communication; and conceptual understanding) to deepen pupils' understanding, which enables problem solving across mathematical domains.

The Mathematics Mastery curriculum is cumulative. Concepts and mathematical skills are built upon throughout each year and across year groups. This allows for concepts to be embedded and revisited regularly to promote recall, retention and application of skills.

The subject is well resourced with practical materials which enable pupils to learn mathematical concepts using concrete apparatus before transitioning to pictorial and abstract methods. Pupils over time identify which calculations need a practical tool for support; which should be completed using a formal method; and which should be done mentally or with jottings. Teachers use and emphasise mathematical vocabulary throughout each stage of the lesson, and link the teaching to real-life situations.

Class teachers adapt each lesson to suit the needs of the learners in their class. This is achieved through adult support; the use of equipment and the adapting of tasks given to pupils to scaffold or challenge them in their learning.

Assessment takes place before each unit of mathematical learning through 'pre tasks'. Teachers use these tasks to evaluate pupils' prior knowledge and make adaptations to the unit to scaffold and provide challenge to all pupils. At the end of each unit, a 'post task' assessment is completed by pupils. Teachers use this to assess progress and inform future planning. At the end of each term, pupils are assessed using NFER tests and SATs tests at the end of a Key Stage.

Impact

The impact and success of maths teaching is seen in the monitored progress of each child; the positive outcomes of the pupil voice questionnaires and interviews; and the children's independence in lessons. Mathematical confidence, the ability to take on new challenges and yet draw on previous experience, ensures that the children are ready to face the mathematical realities of everyday life.

Curriculum Planning of Mathematics

Mathematics is a core subject in the National Curriculum.

The National Curriculum materials are all available online at:

<https://www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study>

Planning is undertaken at three levels:

Long term plans are the detailed specifications of the National Curriculum Framework. The teaching programme identifies year on year the statutory teaching requirements in the four domains of Number, Measurement, Geometry and Statistics, as well as offering non-statutory guidance in each area.

Medium term plans follow the Mathematics Mastery planning scheme. These identify the specific teaching required on a termly basis, for each year group, to meet the long term specifications, and provide examples of the methods and applications of each requirement.

Short term plans list the specific learning objectives and details of how the lessons are to be taught, including key vocabulary and resources required. Planning is informed by the 'pre task' assessments completed by pupils before a unit of work commences and adaptations are made to the short term planning to ensure all learners make progress.

Teaching and Learning Styles

The school uses a six part structure for the teaching of mathematics from Y1-6. This sequence is as follows;

- Do Now
- New learning
- Talk task/let's explore
- Develop learning
- Independent task
- Plenary

By teaching mathematics in this way, pupils are given chance to internalise and practise the key skills and knowledge during a talk task with their peers, before applying their skills independently.

In all classes there are children of differing mathematical ability, but the aim is for all children to be working through the programmes of study at broadly the same pace. We recognise this fact and therefore provide suitable learning opportunities for all children at the correct level of support or challenge. On each topic we achieve this through a range of strategies – in some lessons through adapted group work, through the application of the calculation sequence, through open ended extension activities verses consolidation activities, and in other lessons by organising the children to work in pairs on open-ended

problems or games. We use teaching assistants to provide appropriate support to individuals or to groups of pupils.

Teaching assistants within St. Clare's Catholic Primary School are viewed as an important 'asset' to the school and, as such, are appropriately involved in the delivery of the mathematics curriculum. During the introduction they can either support a group of children or make observations and notes for children who they will focus upon during the session. In the main teaching activity, they should support either a group or an individual child, annotating work if required but certainly identifying where and how help has been given, so that the teacher is aware of this when marking.

Please see the separate Calculation Policy for the progression and guidance in mental and written strategies for calculations.

The teaching of mathematics, through the Mathematics Mastery curriculum, provides opportunities for pupils to engage in:

- The development of mental strategies
- Written methods
- Practical work
- Investigative work
- Problem solving
- Mathematical discussion

Maths Meeting sessions - At St. Clare's we recognise the importance of establishing a secure foundation in mental calculation and the recall of number facts throughout the year groups.

To support this, these concepts are embedded in the Maths Meeting (basic skills) sessions at an age-appropriate level:

- Counting
- Place value
- Times tables recall
- Mental calculations
- Four operation arithmetic practise
- Revision of previous concepts
- Pre – teaching upcoming vocabulary

We also plan for the mathematical vocabulary to be used when teaching and expect the children to use this in their verbal and written explanations.

Mathematics contributes towards many subjects and it is important that the children are given opportunities to apply and use mathematics in real contexts. We endeavour to set

work that challenges, deepens understanding, motivates and encourages the pupils to talk about what they have been doing.

We recognise the importance of developing teachers' and teaching assistants' skills in teaching maths and keeping abreast of developments in the numeracy curriculum. Through staff meetings, monitoring of the children's work and lesson observations, needs can be highlighted and planned for by the Mathematics Mastery Lead and the Senior Management Team.

Additional support

Interventions are used outside of the daily maths lesson to support pupils who have been identified through teacher assessment as having gaps in mathematical understanding. Interventions are reviewed regularly so that their impact can be assessed.

Current maths interventions include:

- Becoming First Class at Number (Y1)
- First Class at Number 1 (Y2)
- First Class at Number 2 (Y3)
- Bespoke 'Catch –up' Interventions (Y3-6)
- Plus One and Power of Two Precision Teaching (SEND pupils across the school)

Children with Special Educational Needs (SEND)

Children with SEND are always included in the daily mathematics lesson so that they benefit from the emphasis on oral and mental work and by listening and participating with other children in demonstrating and explaining their methods.

Teachers will, in consultation with the Special Educational Needs Co-ordinator (SENDCO), the parents and the pupil, decide upon a plan for each child. This is detailed within the child's SEND Pupil Profile. When planning, teachers will address every child's needs through adapted tasks, the use of support staff or a bespoke curriculum that meets the individual child's needs if they are working significantly below the expectations of their current year group. Under teacher direction, teaching assistants can support small groups and individual children with specific outcomes to achieve. This should take place in the classroom, during the main maths lesson.

Children who are achieving above the expectations of the school's curriculum

Children working at greater depth will be taught within their own class and challenged through adapted group work and investigative tasks. The aim is to vary the context of questions, to set more open ended challenges and to allow the children to investigate a topic from different perspectives. When working with the whole class, teachers will direct

certain questions towards learners who are working above the expectations of the curriculum to maintain their involvement and interest.

Early Years

Mathematics is taught in Nursery and Reception according to guidance for the Early Years Foundation Stage (EYFS) Curriculum – Early Learning Goal ‘Numbers and numerical patterns. The children are given rich opportunities through the ‘Mastering the curriculum’ scheme to develop their understanding of number, calculating, measurement, pattern, shape and space through structured and child initiated play-based activities both indoors and out. This enables the children to enjoy, explore, learn, practise and talk about their developing understanding of mathematics.

In Reception, a teacher led mathematics learning experience is planned every day and children are involved in subsequent adult-led guided group work, as well as using and applying their mathematical skills and understanding within continuous provision areas. When learning a new number or concept, an emphasis is placed on exploring the number in many forms in order to develop a deeper meaning of the value of each digit.

Children’s progress is charted on the Early Years Outcomes and by the end of the Reception year, judgements can be made on whether children are working towards, met or exceeded the learning goals for this area on the EYFSP.

Cross Curricular Links

Mathematical understanding, knowledge and use has implications across the whole curriculum. Our aim is to plan for, and encourage, as many opportunities as possible for children to apply and use their mathematical knowledge across the curriculum whenever the opportunity arises.

English – EYFS and KS1 children enjoy stories and rhyme that rely on counting and sequencing. Older children encounter mathematical vocabulary, graphs and charts when using non-fiction texts.

Geography/History/DT/Art - Children use co-ordinates and other mapping skills with increasing accuracy as they move through KS2. In KS1 teaching also includes the vocabulary of direction, initial compass points and the terms clockwise and anti-clockwise. Within the history and design topics teachers should always look for ways of incorporating mathematical knowledge eg: Roman numerals; the date and days and times of events; drawing designs to scale; or measuring when creating models.

Science - In KS2 it is expected that children would be able to read and interpret graphs, moving on to spotting errors or omissions, and drafting their own charts, tables and graphs to represent the results of experiments they themselves have carried out.

P.E -In Key Stage 1, the children are expected to recognise and use simple scoring systems within team and individual games. They are also expected to follow simple instructions such

as 'perform 2 balances' in gymnastics. The children also encounter shape and measure in P.E sessions, being asked to create shapes with their bodies and compare the distances they have moved or travelled across a space using mathematical vocabulary. In Key Stage 2, the children use their mathematical knowledge to create their own, more complex, scoring systems as well as using more traditional systems such as in tennis and volley ball. The children also use timers and stop watches to time their actions as well as measuring the length of their jumps in standard measurements.

SMSC in Mathematics

Spiritual

- Sequences, patterns, symmetry, and scale in mathematics around the world. Islamic Art, meaning of the shapes in the Artwork. Heaven, Earth etc.
- Looking at the diet of different countries and relating it to the population of various religions. (percentages, ratios etc).

Cultural

- Mathematics around the world. Islamic art, colour shape. Arabic numbers. Chinese abacus.
- Elections, % of votes.
- World populations, density.
- Minimum wage/ legal age for working in different countries.
- Comparisons of Custodial sentences verses crime around the world.
- Different methods from different countries

Moral

- Effect of waste/ amount of waste on the planet.
- Minimum wage/ legal age for working in different countries.
- Problem solving and choices
- Analysing data for bias

Social

- To handle money efficiently in order to become independent adults.
- To research mathematics on the internet to promote independent learners and confidence.
- Healthy Diet. Daily recommended amount, percentages, weight, vitamins, fat etc

- Investigating what is a healthy portion of fat, salt? etc
- Project on healthy eating.
- To explain concepts and support each other in their learning
- To become more independent and resilient learner

As a school we are constantly looking at ways to make mathematical connections within the National Curriculum and across the broader curriculum for life, and the above points are not exclusive or finite.

Resources

The Mathematics Mastery approach encourages the use of mathematical equipment to support pupils conceptual understanding. Resources for the delivery of the mathematics curriculum are stored both centrally and in classrooms. Everyday mathematical equipment is kept in classrooms, where it can be accessed by the children. Larger additional equipment and topic-specific items are stored centrally.

The Mathematics Mastery teaching and planning materials are regularly updated in line with current research and mathematical developments. The Mathematics lead orders new resources to support teaching and learning after consultation with staff.

Calculators and ICT

In focussing on good written and mental arithmetic, and ensuring the children's understanding of mathematical processes, the use of calculators is not seen as a necessary requirement. However, calculators are introduced at the end of year six when exploring more complex number problems, and in preparation for year seven.

Homework

All homework given reflects work covered in class and the needs and abilities of the children. Children are usually given at least one piece of mathematics homework every week. This can be digitally through an online platform such as Purple Mash or TT Rockstars or in a written form. The format of the homework will be at the discretion of the class teacher. Not all homework is written work. Feedback will be given to pupils, as appropriate.

Changes to this will be at the discretion of the class teacher, for example, during the SATs period in Years 2 and 6.

Marking and feedback

Feedback is given to pupils in line with the Marking Policy. Feedback is used to encourage, praise and support learners. It is also used to identify misconceptions or address gaps in

pupils' learning. Children are encouraged to respond to feedback and/or corrections in their work, leading to a dialogue between the teacher and pupil.

Assessment and Recording

At St. Clare's, we continually assess our pupils and record their progress. We see assessment as an integral part of the teaching process and endeavour to make our assessment purposeful, allowing us to match the correct work and amount/type of support to meet the needs of the pupils, thus benefiting the pupils and ensuring progress.

Assessment takes place before each unit of mathematical learning through 'pre tasks'. Teachers use these tasks to evaluate pupils' prior knowledge and make adaptations to the unit to scaffold and provide challenge to all pupils. At the end of each unit, a 'post task' assessment is completed by pupils. Teachers use this to assess progress and inform future planning. Summative assessments are undertaken at the end of each term. The purpose of these assessments is to set targets for the following term. NFER tests for each year group, alongside end of Key Stage tests for years 2 and 6, are used and analysed termly to monitor the attainment and progress of pupils. The work and progress of the child in their daily maths lessons throughout the term is also taken into consideration when making termly judgements about a child's attainment.

Reporting

All parents receive an invitation to a parents evening twice a year, where teachers detail their child's current level of progress in maths, and an annual written report on which there is a summary of their child's attainment and progress in mathematics over the year. At the end of Key Stage 2 each pupil's level of achievement in the Mathematics SAT test is included as part of their annual written report.

Presentation

The neat presentation of work shows that the children are taking pride in their work and also shows clear calculation methods, which produces fewer errors. Teachers are able to support learners in this by modelling the expectations into work book on the visualiser. This creates a clear example for pupils to follow.

Display

Display, including working walls, should play an important part in the education process. They should support the current learning in class and be a celebration and part of the process of ensuring that the children recognise the importance of maths. A working wall is the public display of the learning process and may include: objectives, success criteria/steps to success, models and images, challenge, vocabulary or examples of good work.

Extra-Curricular Activities

Booster sessions are provided for children in years 2 and 6 in the Spring term. These sessions are run by teachers from across the Key Stage and seek to consolidate pupil's learning through maths games, activities and revision exercises. Booster sessions are often planned based on feedback from pupils, and focus on their specific areas of need and targets.

Other extra - curricular activities include 'Maths-games club'. This club aims to encourage and challenge pupils from across different year groups to use their mathematical skills in a social context to play board games. Parents are invited to join the sessions and pupils are given the opportunity to borrow games to take home.

Specific mathematics focus days are also integrated throughout the year. These include TT Rockstars day, Maths Party Day and Census days.

Health and safety

The general teaching requirement for health and safety applies in this subject. We encourage the children to consider their own safety and the safety of others at all times.

Our Statement of SMSC

Through our varied curriculum our children will have...

- A sense of enjoyment and fascination in learning about themselves, others and the world around them, including the intangible
- imagination and creativity in their learning
- A willingness to reflect on their experiences.
- The ability to recognise the difference between right and wrong and their readiness to apply this understanding in their own lives
- An understanding of the consequences of their actions
- A willingness to participate in a variety of social settings, cooperating well with others and being able to resolve conflicts effectively
- A willingness to participate in, and respond to, for example, artistic, musical, sporting, mathematical, technological, scientific and cultural opportunities

Date:

Date of next review:

Chair of Governors: