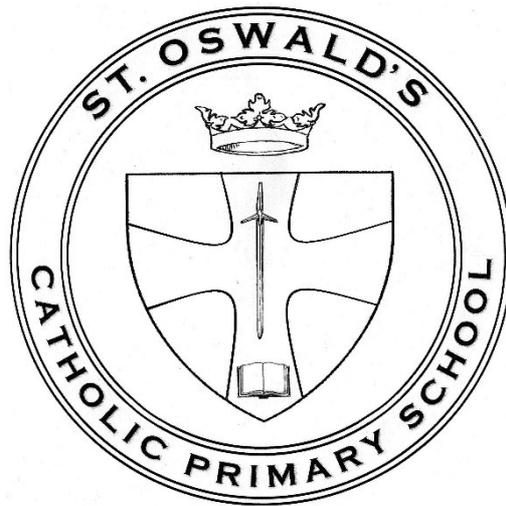


St Oswald's Catholic Primary School



Maths Policy

Approved by:	Approval date	Renewal date

This Maths Policy is set within the context of the whole school aims and mission statement:

*Together with Jesus,
We will Learn and Grow in Faith*

The policy should be read in conjunction with the National Curriculum, the Long Term Numeracy Overview, Year group half-termly overviews and the school Calculation and Bar Modelling Policies. These set out the rationale for teaching each area of the Mathematics Curriculum and specify the skills that will be developed for the pupils in each year group.

What is Mathematics?

Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces, and measures. (Statutory Framework for the Early Years, 2017)

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solutions 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. (National Curriculum 2014)

Mathematics Vision

At St. Oswald's Catholic Primary School, we want all our pupils to experience deep, sustained understanding so that they become happy and confident mathematicians, throughout their learning and into their adult life.

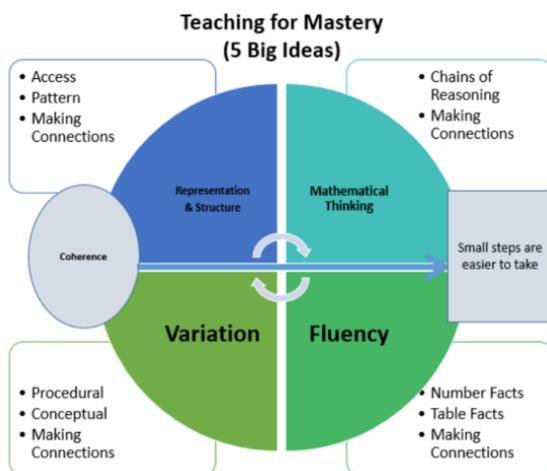
Through a positive, caring environment, we will nurture confidence in the subject and a love of mathematics, to enable every child to reach his/her full potential. We promote a 'can do' attitude to maths without a fear of making mistakes. Children will be given time, support and resources to develop a depth of understanding where children can express ideas fluently and talk about the subject using appropriate mathematical language. Mathematics equips pupils with the uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem solving skills and the ability to think in abstract ways. Mathematics is important in everyday life. It is integral to all aspects of life and we endeavour to ensure that children develop a positive and enthusiastic attitude towards mathematics that will stay with them.

Introduction

In September 2020, St. Oswald's Catholic Primary School started its journey towards a whole school mastery approach to the teaching and learning of mathematics. We understand that this will be a gradual process and may take time to fully embed. The rationale behind changing our school approach to teaching mathematics arose from our involvement in the NCETM Maths Hub and Teaching for Mastery Programme and our belief in the philosophy that all children can achieve, as well as the 2014 National Curriculum, which states:

- *The expectation is that most pupils will move through the programmes of study at broadly the same pace.*
- *Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content.*
- *Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on*

Our teaching for mastery is underpinned by the NCETM's 5 Big Ideas.



Mathematical Thinking allow children to make chains of reasoning connected with the other areas of their mathematics.

Representation and Structure ensures concepts are explored using concrete, pictorial and abstract representations, the children actively look for patterns as well as specialise and generalise whilst problem solving. **Coherence** is achieved through the planning of small connected steps to link every question and lesson within a topic.

Variation is used within lessons both in pictorial representations and abstract tasks.

Fluency relentlessly focuses on number and times table facts.

Intent

The intent of St. Oswald's Catholic Primary Mathematics curriculum is to deliver an engaging, balanced mathematics curriculum which is accessible to all and that will maximise the outcomes for every child so that they know more, remember more and understand more. Our aim is to deliver quality teaching that will produce individuals who are numerate, creative, independent, inquisitive, enquiring and confident.

It is vital that a positive attitude towards mathematics is encouraged amongst all our pupils to foster confidence and achievement in a skill that is essential in our society. At St. Oswald's, we use the new National Curriculum for Mathematics (2014) and the EYFS Statutory Framework 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 and the development of mathematical thinking and a rigorous approach to the development of teacher subject knowledge are therefore essential components of our whole school approach to this subject.

We aim that all pupils:

- Become fluent in the fundamentals of mathematics 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.
- Solve problems by applying their mathematics to a variety of problems with increasing sophistication including breaking them down into a series of simpler steps and persevering in seeking solutions.
- Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations and developing an argument, justification or proof using correct mathematical language and vocabulary

The 3 aims of the National Curriculum: Fluency – Reasoning – Problem Solving - should be addressed in each sequence of learning.

As a result, our pupils will:

- Be competent and confident in taking risks to apply mathematical knowledge, concepts and skills
- Be able to solve problems, reason mathematically and think logically and systematically
- Develop an understanding of the connectivity of patterns and relationships within mathematics.
- Be able to work independently and in cooperation with others and to develop personal qualities such as perseverance
- To be able to use and apply mathematics across the curriculum and to understand the application of mathematics in real life contexts and scenarios

Implementation

Curriculum Design : Teaching for Mastery principles

We believe that the vast majority of children can succeed in learning mathematics in line with national expectations:

- **It is achievable for all.** We have high expectations and encourage a positive ‘can do’ mindset towards mathematics in all pupils, creating learning experiences which develop children’s resilience in the face of a challenge and carefully scaffolding learning so everyone can make progress
- **The whole class is taught mathematics together,** with the expectation that every child will master the key concept, whilst some will work more deeply on challenging tasks
- **Deep and sustainable learning** – lessons are designed with careful small steps, questions and tasks in place
- **The ability to build on something that has already been sufficiently mastered** – pupils’ learning of concepts is seen as a continuum across the school

- **Conceptual and Procedural Fluency** – teachers move mathematics from one context to another, using objects, pictorial representations, equations and word problems. There are high expectations for pupils to learn times tables and key number facts and have a true sense of number. They are encouraged to think whether their method is appropriate, reliable and efficient.
- **Differentiation** is in the form of the amount of time that pupils will spend using concrete resources or pictorial representations to grasp concepts. It will be seen through targeted questioning and the feedback and scaffolding individual pupils receive in class as they work through problems.
- **Challenge through greater depth** – teachers set tasks to deepen knowledge and improve reasoning skills within the objectives of their year group.
- **The ability to reason about a concept and make connections** – pupils are encouraged to make connections and spot patterns between different concepts
- **Precise mathematical language**, often used in ‘stem sentences’, is used by teachers so that mathematical ideas are conveyed with clarity and precision
- **Sufficient time is spent on key concepts**, to ensure that learning is well developed and deeply embedded before moving on
- **Problem Solving is central** to apply their understanding

Planning

At St. Oswald’s Catholic Primary, there is a consistent approach to planning, which is undertaken at three levels:

Long Term Planning- is detailed in the programmes of study in the National Curriculum (2014) for Mathematics. These are set out for KS1 and KS2, as end of year key objectives to be taught in each year group. In Nursery and Reception, we follow the guidance outlined in the Statutory Framework for the Early Years Foundation Stage as children make progress towards and where appropriate beyond the Early Learning Goals.

Medium Term Planning- details the main teaching objectives for each term, ensuring that there is an appropriate balance and distribution of work across each term. Termly plans produced by White Rose Maths (‘Small Steps’) are documentations used to support this planning process

Short Term Planning- where lessons are collaboratively planned in year groups. Teachers are specifically asked to consider: learning objectives, basic skills, key questions, representations and resources, stem sentences and mathematical vocabulary and role of adult support. They are advised to refer to mastery resources such as White Rose, Third Space Learning, NCETM resources, Classroom Secrets for examples of tasks and scaffolding for learners who may struggle to grasp concepts.

Lesson Design

- The daily maths lesson should last between 40 and 60 minutes in KS1 and 60 minutes in KS2. In addition, all classes in KS1 and KS2 will deliver interactive daily Basic Skill sessions of approximately 15 minutes long. These sessions will focus on fluency practice and reinforcing key objectives which have already been taught.
- Lessons are sharply focused with one new objective introduced at a time.
- Difficult points and potential misconceptions are identified in advance and strategies to address them planned. Key questions are planned, to challenge thinking and develop learning for all pupils.
- Teaching sequences will involve review of prior learning, teacher input and teacher-led discussion interspersed with short tasks involving pupil-to-pupil discussion, independent work and challenges. Independent practice includes fluency practice, reasoning, problem solving and higher-order thinking activities.
- The use of high quality mastery materials and tasks to support learning and to provide access to the mathematics is integrated into lessons.
- Contexts and representations are carefully chosen to develop reasoning skills and to help pupils link concrete ideas to abstract mathematical concepts.
- Repetition of key ideas is used. This helps to verbalise and embed mathematical ideas and provides pupils with a shared language to think about and communicate mathematics.
- Formative assessment is carried out throughout the lesson; the teacher regularly checks pupils' knowledge and understanding and adjusts the lesson accordingly.
- Teachers discuss their mathematics teaching regularly in year group planning meetings, sharing teaching ideas and classroom experiences in detail and working together to improve their practice.

In the Foundation Stage, children are given the opportunity to develop their understanding of number, measurement and shape and space through a combination of short, formal teaching sessions as well as a range of planned structured play situations, where there is plenty of scope for exploration. Children will become competent 'counters' so that their fluency with the number system provides a foundation for mathematical understanding. Counting forwards and backwards from different starting and ending points is essential and opportunities for this will be planned for.

To give all children the best opportunities for effective development and learning in number and shape, space and measures, practitioners should give particular attention to:

- Providing opportunities for children to communicate thoughts, ideas and feelings and build up relationships with adults and each other;
- Teach discreet sessions on number and shape, space and measure, but also encourage children to use and apply their skills and knowledge in a range of areas;
- Providing differentiated support through adult-led activities to target children at their stage of development
- Planning an environment that reflects the importance of mathematics through signs, notices, and real-life examples;

- Ensuring continuous provision provides a range of engaging activities to develop mathematical skills
- Providing opportunities for children to see adults counting and using maths and for children to experiment with mathematics for themselves through recording and using a range of equipment.
- Providing time and opportunities to develop spoken language through conversations between children and adults, both one-to- one and in small groups, with particular awareness of, and sensitivity to, the needs of children for whom English is an additional language.

Special Educational Needs and Equal Opportunities

All children have equal access to the Mathematics curriculum, regardless of race, religion, ability or gender. Maths forms part of the school curriculum policy to provide a broad and balanced education for all children. Children access the curriculum at the level appropriate to them, ensuring rapid measurable progress. Resources and learning environments are planned and designed to enable all children access to the learning required.

Differentiated activities are provided to support struggling learners and challenge rapid graspers, so they are able to work at greater depth in mathematics. Where applicable, children's provision plans will incorporate suitable maths objectives from the National Curriculum and the class teacher will be responsible for identifying and planning for those needs, with help from the Maths Co-ordinator and/or SENDCO if applicable. 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.

SEND children also have the opportunity throughout the year to take part in appropriate Intervention programmes that support them further, fill in any gaps in their understanding and enable them to reach their full potential.

Children with English as an additional language (E.A.L.) will be given access to additional resources and teaching to support their learning and to ensure they make maximum progress from their individual starting points.

Maths across the curriculum

It is important for pupils to develop and apply their Mathematical skills across other subjects in the curriculum and to real life experiences, appropriate to their learning needs and development. Opportunities for developing their maths skills across other subject areas and to real life experiences will be planned for through the school year.

Impact

Feedback and Marking

Marking of mathematics books should be completed in line with the school Marking and Feedback Policy. It is essential that all marking picks up and addresses any misconceptions/mistakes and thorough questioning ensures children have clarified their thinking clearly. Teachers and Teaching Assistants are expected to use appropriate feedback methods during the lesson. Feedback should be effective in ensuring pupil progress throughout a lesson or unit of work. It is recognised that live feedback in addressing errors and misconceptions is the most effective.

Assessment

Formative assessment for learning should occur throughout the entire maths lesson, enabling teachers to adjust their teaching/input to address the needs of the children. Teachers assess children daily through:

- Regular marking of work
- Analysing errors and picking up on misconceptions
- Asking questions and listening to answers
- Facilitating and listening to discussions
- Making observations

These ongoing assessments inform future planning and teaching. Lessons are adapted readily and short term planning evaluated and edited in light of these assessments. Teachers complete the 'Maths Teacher Assessment' documents with evaluations and misconceptions noted and achievement of objectives taught. These documents inform teacher assessments of children against age related expectations.

Using the White Rose 'block' quizzes, pupils are assessed against their year group objectives before and after topics taught. These quizzes help inform planning, teaching, interventions, guided support and assessment of pupils. Regular moderation sessions are held within and across year groups. Staff also attend LA meetings and work with LA consultants and colleagues from schools within our network, to ensure accuracy in assessments. Teachers talk through the progress of their pupils at termly tracking progress meetings: this ensures targeted support can be given to those who need it.

National Curriculum tests are used at the end of KS1 and 2; teachers also use past and sample papers to inform their assessments as they prepare pupils for these assessments.

All children in Y4 will complete the 'Multiplication Check Test'

Within the EYFS all children are assessed against the Early Learning Goals at the end of Reception.

Resources

When introduced to a key new concept, pupils should have the opportunity to build competency in this topic by taking the following approach:

Concrete – children should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

Pictorial – pupils should then build on this concrete approach by using pictorial representations. These representations can then be used to reason and solve problems.

Abstract – with the foundations firmly laid, learners should be able to move to an abstract approach using numbers and key concepts with confidence.

Each class/year group has resources such as place value counters, dienes apparatus, Cuisenaire rods and numicon, with other mathematical resources stored in central areas in each Key Stage Phase.

Resources for staff are accessible on the ‘shared drive’ under ‘Maths Whole School’

Maths Working Walls

These should be designed to reinforce and consolidate children’s knowledge, understanding, and aid children in their learning. They must be up to date and display what is being covered in class at that time. For consistency across the school, all classes have the same following format for learning walls:

- All classes from Reception to Y6 should have a Maths Working Wall, with the appropriate headings :
We are learning to
Key Vocabulary and Stem Sentences
Examples
Problem Solving and Reasoning
Numeracy for Life Challenge
- Pictorial representations for the topic taught must be displayed
- Examples of children’s work must be included. Any written and mental strategies should be clearly displayed in line with the calculation policy.
- Must be changed regularly and in line with the topic taught
- Nursery must have appropriate maths displays and maths environments to support learning

Homework

There is the expectation that all pupils (Y2-Y6) will learn their times tables. Teachers should send additional homework to practise and consolidate their understanding as identified for their year group. (Refer to the Homework Policy)

- There are useful websites listed on the school website where children can access number facts and games at home.
- Time Table Rockstars should be set as regular weekly homework. All pupils from Y1-Y6 have their own login details
- All pupils from Y1-Y6 have their own MyMaths login details.

Home/School Links

At St. Oswald's we recognise that parents/carers can make a significant difference to a child's progress in Maths. We encourage parents to be actively involved by:

- Providing parent's evenings, which give them information on their child's progress and their targets for the future
- Providing an end of year report, which outlines progress and attainment
- Inviting parents to information events on how we teach mathematics and how they can help
- Holding parent-child workshops focusing on areas of mathematics to support homework activities
- Providing additional information, guidance and support via the school website
- Providing updates on individual class and year group events on Twitter

Computing and use of ICT

ICT is used in various ways to support teaching and motivate children's learning. Each classroom has a laptop connected to an interactive whiteboard. All teachers are provided with an I-pad to support their planning and provision and are encouraged to use ICT to enhance teaching and learning in mathematics where appropriate.

The maths policy and SOW adheres to the whole school E-safeguarding policies and procedures.

Monitoring and Evaluation

All teachers are responsible for monitoring standards but the subject co-ordinator, under the direction of the Head Teacher takes the lead in this. Monitoring activities are planned across the year. In summary these are:

- Monitoring of class teachers' medium term plans for maths
- Monitoring of teaching and learning taking the form of lesson observations, learning walks, book monitoring and pupil interviews
- Monitoring of assessment data, including Teacher Assessment sheets, statutory assessments,
- SENCO and Maths Co-ordinator to monitor progress of children on the SEND Register and agree support/interventions
- Monitoring delivery and impact of interventions

Training needs are identified as a result of whole school monitoring and evaluation, performance management and needs of children. These will be reflected in the Mathematics Action plan and School Development Plan.

The Role of the Mathematics Subject Leader is to:

Take the lead in policy development and the production of long and medium term planning, designed to ensure progression and continuity in Mathematics throughout the school. Ensure that these are kept under regular review.

Ensure teachers understand the requirements of the National Curriculum and EYFS Statutory Framework and support them to plan lessons. Lead by example by setting high standards in their own teaching.

Support colleagues with teaching as well as assessment and record keeping activities.

Analyse data from national and school assessments.

Take responsibility for managing own professional development by participating in external training. Keep up-to-date with developments in Mathematics education and disseminate information to colleagues as appropriate.

Lead continuing professional development and learning (CPDL) for the teachers and teaching assistants; provide coaching and feedback for teachers to improve pupil learning.

Lead the whole school monitoring and evaluation of teaching and learning in mathematics by observing teaching and learning in maths regularly; analysing assessment data in order to plan whole school improvement in mathematics; conducting work scrutiny to inform evaluation of progress; conducting pupil interviews and reporting to the Head teacher and Leadership.

Take responsibility for the purchase and organisation of mathematical resources.

Keeps parents informed about mathematical developments.

Ensure that the school's senior leaders and governors are kept informed about the quality of teaching and learning in mathematics.

Work in close partnership with the school's SENDCo and Intervention Lead to ensure the learning needs of all pupils in mathematics are met effectively and Interventions are planned carefully for identified children.

Ensure the 'Maths' section on the school website is kept up to date and reviewed regularly

Organise whole school 'Maths' events when applicable

Lead regular meetings with the Maths Team – the Maths Team will support the Maths Lead in some of the above responsibilities

Covid Appendum

Covid 19 Appendix

Missed objectives from Spring and Summer 2020 for all year groups have been identified by staff and a 'Catch-up' curriculum was introduced to ensure this missed content and gaps in learning were addressed. These objectives have been directly linked to the White Rose yearly framework and to the units of work where this knowledge is required, to ensure coverage at the appropriate time.

Through light-touch formative approaches such as diagnostic quizzes, informal questioning of pupil's understanding and observations, we identified the gaps which needed to be addressed and the children who would benefit from additional support and intervention.

The delivery of our maths curriculum has been modified to address these gaps in learning and to re-establish good progress. There is a focus on revisiting the key concepts from the previous year, which are necessary to build confidence and to ensure that they have achieved mastery of these key areas before moving forward successfully onto the next stage of their learning in the subject. There is a clear progression of learning, following the 'small step' teaching sequence of the White Rose Maths scheme and the new DFE Maths guidance, ensuring children build on their prior knowledge and meet the milestones necessary to progress through the National Curriculum.

Staff from each year group have had further training from School Improvement Liverpool in the Autumn and Spring Terms to assist them with their ongoing planning of a 'recovery curriculum' for mathematics. The training focused upon the non-statutory Guidance for Key Stages 1 and 2 published by the DFE in June 2020 as well as other recommendations set out by the Local Education Authority. The publication 'identifies the most important conceptual knowledge and understanding that pupils need as they progress from year 1 to year 6. These

important concepts are referred to as ‘ready-to-progress criteria’ and these are prioritised in our maths planning whilst still following the statutory requirements.

All teachers deliver daily basic skill sessions, to recap prior learning, prioritise key concepts, develop mathematical fluency and consolidate new learning. These fluency sessions have been vital in ensuring children have the secure foundations necessary, to enable them to build upon their mathematical knowledge and skills as the year progresses.

Teachers and practitioners in the Early Years will continue to follow The Early Years Foundation Stage curriculum while adopting the same philosophy and approach in their assessments and teaching during this ‘different’ year. Children will be taught in order to meet their needs and varying stages of development and this will be driven by ongoing assessments in a range of contexts.

January 2021 Lockdown

The Google Classroom online platform has been introduced to deliver remote learning during this period. Daily Maths lessons have been planned following our Medium term and Long term plans. All daily lessons have a teacher input, involving the White Rose videos, pre-recorded teacher videos, narrated presentations or explanatory PowerPoints. This is followed by independent differentiated online tasks. Work is marked online and feedback is given to the children. For those attending school during this period and for those who are unable to access online learning, the same tasks are replicated through ‘paper packs’ and within the school bubble.

Reviewed

This policy will be reviewed and updated biannually.

Mrs. S.L. McBrien May 2021