OUR LADY OF LOURDES CATHOLIC MULTI-ACADEMY TRUST

ST. HUGH'S CATHOLIC PRIMARY VOLUNTARY ACADEMY

CURRICULUM POLICY FOR MATHEMATICS

Completed and revised (2024) by Mr D. Ballard, ***Maths Subject Leader (MaST)***

SAINT HUGH'S CATHOLIC PRIMARY SCHOOL

Mr G Hughes – Headteacher

CURRICULUM POLICY FOR MATHEMATICS

Mission Statement

"Live, love and learn in the light of Christ"

St Hugh's Catholic Primary Voluntary Academy has a particular distinctiveness in that it seeks to represent the Gospel teachings of Jesus Christ and the teaching of the Catholic Church as we strive to develop the talents of every member of our community.

1 **Introduction**

1.1 Mathematics is a core subject within the National Curriculum. From 1999 the National Numeracy Strategy was implemented throughout the school, this was followed by the New Mathematics Framework in 2007. The New Mathematics Curriculum programmes of study, implemented into the school from September 2014 (Y2 and Y6 2015), provided the opportunity to review the practices that have been established since the frameworks were first introduced and refocus the drive to raise standards for all children.

We want all our children to succeed in mathematics and more children are doing so. We want them to be excited by mathematics and to continue to study the subject well beyond their primary education. We want children to see how mathematics can help them become better equipped for future life.

This policy outlines the purpose, nature and management of the mathematics taught and learned in our school through the Mathematics programmes of study for key stage 1 and 2, National Curriculum (Sept 2013).

1.2 The school policy for mathematics reflects the consensus of opinion of the whole teaching staff. It has been drawn up as a result of the implementation of the new Mathematics Curriculum (2014) and staff

discussion thereon. This policy has the full agreement of the Governing body and was discussed with the Governor for mathematics.

1.3 The implementation of this policy is the responsibility of all the teaching staff and will reflect our mission to allow children to reach their maximum potential within a happy, secure and Christian environment.

1.4 The implementation of the National Curriculum is delivered throughout the school via the White Rose Maths schemes of learning.

2 **The Nature Of Mathematics**

2.1 *'Mathematics is of central importance to modern society. It provides the vital underpinning of the knowledge economy. It is essential in the physical sciences, technology, business, financial services and many areas of ICT. It is also of growing importance in biology, medicine and many of the social sciences. Mathematics forms the basis of most scientific and industrial research and development. Increasingly, many complex systems and structures in the modern world can only be understood using mathematics and much of the design and control of high-technology systems depends on mathematical inputs and outputs.'*

Smith A, 2004 Making Mathematics Count

Mathematics is essential in everything we construct, everything we calculate and almost every problem which we have to solve in our daily lives. This is reflected in our school where the use of mathematical knowledge, skills and understanding are required throughout the curriculum. Children's knowledge, skills and understanding in mathematics are developed throughout the school as they use and apply them in practical activities, to solve relevant and meaningful problems, and to explore the patterns and relationships on which mathematical concepts depend.

2.2 Our chief aim is that all our pupils, both boys and girls, will develop a positive attitude to mathematics and learn to approach the subject with confidence, understanding and pleasure throughout their education. The primary mathematics curriculum is the point at which children's acquisition of basic mathematical skills starts and we, as a school, aim to make this a very successful experience. Through this positive experience in mathematics, we endeavour to provide children with every opportunity for their success in their future lives.

'The acquisition of at least basic mathematical skills – commonly referred to as "numeracy"– is vital to the life opportunities and achievements of individual citizens. Research shows that problems with basic skills have a continuing adverse effect on people's lives and that problems with numeracy lead to the greatest disadvantages for the individual in the labour market and in terms of general social exclusion. Individuals with limited basic mathematical skills are less likely to be employed and, if they are employed, are less likely to have been promoted or to have received further training.'

Smith A, 2004 Making Mathematics Count

2.3 Mathematics has the ability to develop and support children's thinking, reasoning and problem-solving skills. The skills embedded in mathematics and the discipline of learning and using mathematics provides children with other cognitive skills that they can use across and beyond the school curriculum. The training received through the study of mathematics provides children with skills that are in high demand. The ability to analyse information and to solve problems are key skills embedded in the primary curriculum, within which mathematics has a significant role to play.

'Mathematics provides a powerful universal language and intellectual toolkit for abstraction, generalisation and synthesis. It is the language of science and technology. It enables us to probe the natural universe and to develop new technologies that have helped us control and master our environment, and change societal expectations and standards of living. Mathematical skills are highly valued and sought after. Mathematical training disciplines the mind, develops logical and critical reasoning and develops analytical and problem-solving skills to a high degree.'

Smith A, 2004 Making Mathematics Count

In summary, mathematics makes a significant contribution to modern society; the basic skills of mathematics are vital for the life opportunities of our children; and mathematics develops the mind and those highly valued cognitive skills.

3 **Entitlement**

3.1 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.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.
The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. 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.

3.2. All children have an entitlement to access the National Curriculum programmes of study at an appropriate level in each year group (delivered through the White Rose Maths schemes of learning).

3.3. Children should use appropriate Mathematical language from Reception onwards as set out in the calculation policy.

3.4. Opportunities will be given where appropriate to develop, use and apply Information and Communication Technology within Mathematics as well as links to other parts of the curriculum.

4 **Implementation**

4.1.1 The National Curriculum for Mathematics is the basis for all mathematics teaching throughout the school.

4.1.2 The structure and delivery of the curriculum will be based on the 'White Rose Maths' schemes of work, focusing on fluency, reasoning and problem solving. Teachers should use these documents as a basis to plan based on the needs for their class. Alterations to the structure of this planning may be made at the teacher's discretion following discussion with the maths subject leader. Curriculum outlines will be recorded on teacher's long term plans.

4.1.3 In the foundation stage, Mathematics will be taught via appropriate targets for the EYFS structured and organised by the White Rose Schemes for learning.

4.2. Planning for mathematics will be undertaken based directly on 'White Rose Maths' schemes of learning and planning. Teachers are encouraged to alter plans in the short/medium term where needed based on the needs of their class (for example extending or shortening White Rose small steps to match the children's learning needs). Long term planning will largely follow the order set out by White Rose, however, teachers may restructure the order of the units and topics covered according to the needs of their class. In addition, mixed year group classes may reorder topics so that matching and overlapping content is taught together.

4.3.1 Computing will be used across the school to support teaching and learning in mathematics. Interactive Whiteboards/iPads are used throughout the school to promote interactive teaching and a range of mathematics programs are available to support this. Children also have access to Chromebooks, and iPads to allow personal learning with the aforementioned programs as and when appropriate. Children also have access to a range of other digital device resources including Roamer, Beebot, cameras/video, calculators and sound recording equipment to support learning in mathematics where appropriate.

4.3.2. The National Curriculum states that 'Calculators should not be used as a substitute for good written and mental arithmetic. They should therefore only be introduced near the end of key stage 2 to support pupils' conceptual understanding and exploration of more complex number problems, if written and mental arithmetic are secure. In both primary and secondary schools, teachers should use their judgement about when ICT tools should be used.'
Our school has decided that, in the context of exploring numbers and the number system, calculators may be used with any age groups as a teaching and learning tool at the discretion of the teacher, if it is felt that it can enhance learning (eg. To provide a tool with which children can explore patterns in numbers and identify properties and relationships or to consolidate children's learning of number facts and calculation strategies).

4.4 Links to other curriculum subjects should be made where appropriate in order to strengthen and consolidate understanding of maths in a broader context (eg. Graph work in science,

4.5 Calculation will be supported throughout the school with a clear progression in the four operations throughout, following the agreed calculation policy. Calculation strategies will be used as appropriate to age related expectations. Children will be introduced to the processes of calculation through practical, oral and mental activities. Children will learn how to use models and images, such as empty number lines, to support their mental and informal written methods of calculation leading to efficient written methods that can be used more generally. When faced with a calculation, children should be able to decide which method is most appropriate and have strategies to check its accuracy.

4.6 The reasoning strand of mathematics has been identified as a particular focus of development for teaching and learning. This should be delivered through the use of the 'White Rose Maths' schemes of learning with additional supplemental material used where required at the teacher's discretion (eg. the NCETM mastery materials). The 'Tiny' character from White Rose Maths and the 'Captain Conjecture'

character from the NCETM documents will be used in the school to identify and highlight extended reasoning activities and opportunities.

4.7.1 Mental calculation and arithmetic work should be carried out regularly in mathematics lessons in order to provide sufficient opportunity to consolidate the mathematics teaching children have received previously and develop new techniques and skills. This will take the form of a starter task at the beginning of the lesson and/or as part of the main lesson and group activities. These activities should also include regular work and practice on multiplication tables or the steps leading up to multiplication tables. Teachers may draw upon resources such as 'Fluent in Five' (Third Space Learning) and 'Flashback 4' (White Rose Maths) to support these starter activities. Classes preparing for SATs assessment (Y2 & Y6) may also use this starter time for the purpose of test style revision questions.

The importance of calculation/arithmetic fluency practice and related discussion in the mathematics lesson is to help children to use the language of mathematics and to practise and secure their arithmetic fluency, recall, thinking and reasoning skills. Children need opportunities to listen to and use mathematical language and to explain their methods, ideas and reasoning and this should be planned for during the main part of the lesson. The starter is a key point in the lesson where whole-class oral and mental work and arithmetical fluency practice takes place and children are expected to listen, speak and think about mathematics before they move on to the main teaching activity.

4.7.2 Overview planning for arithmetic fluency and starter work should be shown on teachers' long term plans.

4.7.3 Planning oral and mental work into a lesson involves deciding when it is appropriate and for what purpose. It may draw on carefully planned, direct or prompting questions to support discussion with children and between children. It might be an assessment of all or some children's learning, that has taken place during or before the lesson, where the planning involves identifying more probing questions that seek to elicit what is limiting progress or to establish that learning has been secured. It might be that the children's learning is ready to be moved on and the questions and accompanying dialogue are intended to promote explanation or reasoning, to stimulate new lines of enquiry, to evaluate alternative strategies or to propose hypotheses to test further. Building some opportunity into the lesson for children to engage in oral work and dialogue is also important.

4.8 Planning and teaching should follow the learning objectives as defined in the National Curriculum delivered through the 'White Rose Maths' schemes of learning and their small steps guidance. Other resources may be used, where appropriate, to support or broaden the teaching of these objectives as long as teachers ensure that they are suitably matched to the relevant learning outcomes and expectations.

4.9 Mathematics equipment appropriate to each year group should be easily accessible to all children within each classroom. Additional mathematics resources are also available from the central mathematics resource area in the school (Mr Ballard's classroom) and may be used as required.

4.10 Mathematics homework should be provided weekly throughout the school and should coincide, where possible, with associated objectives/small steps covered in the daily mathematics lesson. Additional and alternative homework may also be provided at the teacher's discretion according to the needs of the class. From Year 2, children will also be provided with Times Tables Rockstars logins to complete times tables practice. Homework may be issued in a range of formats at the discretion of the teacher in line with children's learning needs (for example an activity sheet, an online video, MyMaths, TTRockstars etc.).

4.11 Children should record mathematics work in a mathematics book(s) appropriate to each age group (eg. Size of squares, availability of plain paper where appropriate etc.) at KS2. For KS1 White Rose Workbooks are used to record the majority of maths learning. Additional books may include provision for mental mathematics, working out/calculation jottings and investigation activities. A range of worksheets

and book work will be used. In general, as children progress through KS2, particularly upper KS2, we encourage children to record calculations more regularly in books in order to promote increasing presentational standards . Each piece of work should be dated and have reference to the associated learning objective/small step in learning.

4.12 The NCETM Mastering Number Programme will be used in FS/KS1 in addition to the main maths lesson as a daily short session to practice and consolidate key skills in number.

5 Assessment

5.1.1 Teachers should regularly assess the areas taught in mathematics each term using both summative (Assessment of learning (AoL)) and formative assessment (Assessment for learning (AfL)) techniques and keep associated records.

The definitions of formative and summative assessment are given below:

Assessment of learning (AoL) - summative assessment
Assessment of learning is any assessment that summarises where learners are at a given point in time - it provides a snapshot of what has been learned (in terms of both attainment and achievement).

Assessment for learning (AfL) - formative assessment
Assessment for learning is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there.

Teachers should provide summative assessment via the White Rose end of block mini-assessments, White Rose end term assessments, fluency starter assessments (Flashback 4/Fluent in Five), times-table checks and any additional mental mathematics tests where appropriate throughout the course of the term. Records of end of block mini-assessments and end of term assessments should be recorded on the schools' maths tracking sheets.

Formative assessment should be used day to day by teachers in order to inform planning, teaching and learning. Evidence of such assessment is recorded on whole class lesson feedback forms.

Inside the Black Box (Black and Wiliam, 1998) identifies five key factors that improve learning through assessment, these being:

- providing effective feedback to children
- actively involving children in their own learning
- adjusting teaching to take account of the results of assessment
- recognising the profound influence assessment has on the motivation and self-esteem of children, both of which are crucial to learning
- considering the need for children to be able to assess themselves and to understand how to improve.

5.1.2
Teachers should record children's ongoing progress in maths on whole class lesson feedback forms. Feedback should then be given to the class in response to findings and/or individual feedback and/or support given to individuals/smaller groups as required. Formal maths marking of books is not required, although teachers may still make pertinent comments if felt necessary eg. Number formation, presentation, reasoning development. Where possible feedback should be verbal. In KS2 children are also encouraged to develop skills in self-marking in maths in order to provide instant feedback to many of the tasks that they take part in. Year 2 children may also be encouraged to begin self-marking later in the academic year if the class teachers feels it is suitable to do so.

6 Curriculum access, opportunity and inclusion

6.1 All children should be given equality of access and opportunity to engage in the whole mathematics curriculum regardless of gender, culture and needs. Differentiation in each class should focus on supporting all children to access the curriculum suitable for their year group rather than many different tasks. Where children's individual needs mean they can't access the curriculum for their age related expectations then appropriate classroom intervention should be used to provide suitable learning experiences as well as additional support and intervention as required (see below).

6.2 In those cases where normal class differentiation for support and provision does not meet the needs of a child due to lower attainment, children may be given additional support in line with the school's SEND policy. The NCETM mastering number programme and 'Number Sense Maths' are available to support those children who need additional security of understanding in number facts and fluency. Number sense maths also provides additional support for those children who as less secure in their understanding of multiplication and division facts and strategies.

6.3 In those cases where normal class differentiation for support and provision does not meet the needs of a child due to higher attainment, children may be given additional extension activities to broaden their understanding and promote higher levels of mastery. 'Fast Finishers' cards, linked to White Rose maths topics are available as a resource to facilitate these extension tasks from Y1-Y6.

7 Staffing responsibilities

7.1 Individual class teachers are responsible for the planning, teaching and assessing/monitoring of their class. Queries regarding mathematics curriculum and provision should be directed to mathematics subject leader, a member of the senior management team or appropriate mentor (for ECT provision). Support staff (where available) are responsible for supporting the learning of children in mathematics under the direction of the class teacher.

7.2 Additional provision for mathematics in the areas of SEND and higher attainers will be carried out by both support staff and teaching staff under the direction of the mathematics subject leader and the SENDCO.

7.3 The mathematics subject leader will share overall management and responsibility of the subject with the headteacher. The subject leader will liaise with the head regularly in order to ensure effective communication is maintained.
The responsibilities of the mathematics subject leader are:

- To review the current mathematics policy and scheme of work in relation to the requirements of the National Curriculum and the needs of the school.
- Release time from class responsibility for this aspect of the role to be negotiated and included in the SDP.
- To maintain an overview of the mathematics curriculum throughout the school through discussions with the senior management team, colleagues, attendance at meetings and informal contacts.
- To have access to the long term planning (linked to White Rose Maths schemes of learning for more detailed medium and short term plans) completed by all members of staff and review them to ensure there is progression and continuity in planning and evaluation of the mathematics teaching throughout the school.
- To act as subject leader and give guidance to relevant members of staff to: support the development of Early Years curriculum; support the development of the curriculum at both key stages.
- To monitor the effective teaching of mathematics throughout the school. The focus of this work to be identified in the SDP (*See 8.4*) and in consultation with the senior management team. Appropriate classroom release time will be given for the undertaking of observations as well a subject leader days for the general monitoring of the subject.

- To liaise with the SENDCO on issued relating to special needs and mathematics.
- To assist newly qualified, early career teachers and newly appointed staff as required.
- To advise staff about SATs and to give guidance about appropriate preparation of children.
- To lead member of staff in inservice training in mathematics. This may be carried out informally at mutually arranged times and formally on day closures, staff meetings and other times agreed.
- To have entitlement to appropriate inservice training and support as agreed with the head and senior management team and within the SDP (*See 8.4*).
- To advise staff on health and safety issues in the area of mathematics.
- To maintain a list of resources and equipment for mathematics annually.
- To advise the headteacher of future budget requirements to maintain and develop the human and physical resourcing of mathematics.
- To be responsible for managing the resource budget for mathematics in collaboration with the head.
- To post information on courses and other opportunities for staff development in mathematics.
- To remain informed of local and national issues and to keep abreast of current developments in the subject.

(*Job description – proforma, adapted from*
'Coordinating mathematics across the primary school' by T Brown 1998)

8 **Curriculum Evaluation**

8.1 Observations and/or lesson studies of the teaching of mathematics throughout the school should be carried out annually as part of core subject appraisals. Additional observations may also be made if required to in line with the SDP for mathematics (*See 8.4*) or for the purposes of mentoring/training (for example for an ECT). Appropriate release time for observations and feedback to be provided (*See 7.3*).

8.2 Scrutiny of planning and assessment throughout school should be carried out at a time agreed with the staff, senior management team and head teacher. Feedback should be given to the headteacher and staff at an agreed time.

8.3 Scrutiny of children's work throughout school should be carried out at a time agreed with the staff, senior management team and head teacher. Feedback should be given to the headteacher and staff at an agreed time.

8.4 The SDP (school development plan) should be reviewed annually be the headteacher and mathematics subject leader. Targets made in the SDP should reflect the needs of the curriculum, drawing on evidence from the year's observations and scrutiny and adapting to suit various developments in education as appropriate.

9 **Staff development and training**

9.1 Opportunities for staff development in mathematics should be provided in line with the SIP for mathematics (*see 8.4*) both in and out of school as required. The mathematics subject leader and the head teacher and deputy head teacher should liaise in order to provide suitable opportunities as required.

10 **Background Documentation**

10.1 The following documents were consulted in drawing up this policy:

- The National Curriculum (DfE 2014)
- White Rose Planning Documents (2016)
- White Rose Assessments (2016)

- NCETM Mastery Document (NCETM 2015)
- Making Mathematics Count (Smith A, 2004)
- Coordinating mathematics across the primary school (Brown T, 1998)
- Ten approaches to the teaching of mathematics (DCSF 2007)
- Guidance Paper: Calculation (DCSF 2007)
- Guidance Paper: The use of calculators in the teaching and learning of mathematics (DCSF 2007)
- Guidance Paper: Using and applying mathematics (DCSF 2007)
- Guidance Paper: Oral and mental work in mathematics (DCSF 2007)
- Guidance Paper: Day-to-day assessment in mathematics (DCSF 2007)
- Guidance Paper: Mathematics and the Primary Curriculum (DCSF 2007)
- Mathematical Vocabulary Book (DFEE 2000)
- White Rose Maths small steps documents (2022)
- White Rose Maths key changes documentation (2022)
- White Rose Maths Calculation Policies (2021)
- White Rose Schemes of Learning V2 (2019)
- White Rose Schemes of Leaning V3 (2022)

11 Review

11.1 The effectiveness of this policy will be reviewed annually, taking into consideration the requirements of the National Curriculum

11.2 The Governors will be informed of revisions to the policy.

12 Change and approval

12.1 The policy has been amended to account for new maths intervention schemes (NCETM mastering number and Number Sense maths) and changes to White Rose Schemes of learning V2 to V3.

12.2 Approval:

Approved by:	Mr G Hughes and Governing Body	**Date:** September 2024
Last reviewed on:	September 2024	
Next review due by:	Autumn 2025	