**Sacred Heart Hindsford R.C. Primary School**

**Mathematics Policy**

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Policy written by L. Delargy Updated Spring 2024

Accepted by Governors: J. Carter signed (chair)

I. McDermott signed (Head)

Shared with staff: 10th January 2024

‘With Christ as our guide, we inspire and thrive’.

**Statement of Intent**

This policy describes our values and philosophy in relation to meeting the needs of all mathematical learners at Sacred Heart RC Primary School.

**Introduction:**

This policy outlines the teaching, organisation and management of mathematics taught and learnt at Sacred Heart. The policy is based on the 2014 expectations and aims of the ‘New Curriculum’ for mathematics and the Early Years Framework. This ensures continuity and progression in the learning and teaching of mathematics. The policy has been drawn up by the mathematics leader, shared and discussed with all staff and has the full agreement of the Governing Body.

At Sacred Heart we are committed to ensuring that all pupils achieve mastery in the key concepts of mathematics, appropriate for their age group. This is in order that they make genuine progress and avoid gaps in their understanding that may provide barriers to learning as they move through education. The use of the DfE Ready To Progress Criteria, focussed and regular 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 approach to this subject.

**Aims:**

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 have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
* **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 a subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are organised in a distinct sequence and structured into separate domains.

These domains for KS1 are:

* Number and place value
* Addition and subtraction
* Multiplication and division
* Fractions
* Measures
* Geometry: properties of shape
* Geometry: position and direction
* Statistics (Year 2)

These domains for KS2 are:

* Number and place value
* Addition and subtraction
* Multiplication and division
* Fractions (including decimals and percentages)
* Ratio and proportion (Year 6)
* Measures
* Geometry: properties of shape
* Geometry: position and direction
* Statistics
* Algebra (Year 6)

The distinct domains highlight the important areas of mathematics that children need to learn to make effective progress. Children should make connections across the 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.

**Information technology (IT)**

IT is used in various ways to support teaching and motivate children’s learning. Each classroom has a laptop connected to an interactive whiteboard. Teachers are encouraged to use IT to enhance teaching and learning in mathematics where appropriate. 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.

**Spoken language**

The National Curriculum for mathematics reflects the importance of spoken language in pupils’ development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof. They must be assisted in making their thinking clear to themselves, as well as to others. Teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

At Sacred Heart an emphasis is placed on developing children’s mathematical vocabulary and encouraging purposeful ‘maths talk’ through:

* Mathematical vocabulary displayed on working walls
* Maths journals to record new and unfamiliar maths words, building up their own dictionary of vocabulary
* Recycling maths words through the week and over the term
* Open ended questions and differentiated levels of questioning
* Maths discussions and debates
* Sentence stems.

**School mathematics curriculum**

The programmes of study for mathematics are set out year-by-year for Key Stages 1 and 2. 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 (see RTPC - DfE). Pupils who grasp concepts rapidly should be challenged and given opportunities to develop their conceptual knowledge 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.

Within each key stage, schools therefore have the flexibility to introduce content earlier or later than set out in the programme of study. In addition, schools can introduce key stage content during an earlier key stage, if appropriate.

Sacred Heart school curriculum for mathematics is set out on a year-by-year basis and this information is available on the school website.

See - **Ready to Progress Criteria and Yearly Overviews**

**Attainment targets**

Schools are only **required** to teach the relevant programme of study **by the end of the key stage**.

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study and this information is available on the school website.

See - **PRIMARY National Curriculum Programme of Study**)

**Children at sacred Heart RC Primary School are taking part in Maths Hub North West Three Mastering Number project - Supporting pupils in Reception, Year 1 and Year 2 to develop good number sense.**

This programme aims to secure firm foundations in the development of good number sense for all children from Reception through to Year 1 and Year 2. The aim over time is that children will leave KS1 with fluency in calculation and a confidence and flexibility with number. Attention will be given to key knowledge and understanding needed in Reception classes, and progression through KS1 to support success in the future.

The benefits of the project are:

* Pupils will develop and demonstrate good number sense;
* Develops children’s mindset to look for mathematical relationships;
* Build both teachers’ and pupils’ confidence;
* Collaboration with other teachers.

Each class, in KS1, has a daily ‘Mastering Number’ session in addition to their daily maths lesson. Over the year, the children will experience using a range of resources and representations, including a small abacus-like piece of equipment called a rekenrek.

**Mathematics in EYFS**

Developing a strong grounding in number is essential so that all pupils develop the necessary building blocks to excel mathematically. Children in EYFS, should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers.

By providing frequent and varied opportunities to build and apply this understanding - such as using a range of manipulatives children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures.

It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, ‘have a go’, talk to adults and peers about what they notice and not be afraid to make mistakes.

**Key Stage 1**

The principal focus of mathematics teaching in Key Stage 1 is to continue to build on the positive attitudes and interests from EYFS and to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with a wider range of manipulatives (e.g. concrete objects and measuring tools).

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of Year 2, pupils should recall and use addition and subtraction facts to 20 fluently, using related facts to 100 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1.

**Lower Key Stage 2 – Years 3 and 4**

The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12-multiplication table and show precision and fluency in their work. This will ensure they are well prepared for the MTC (multiplication tables check) which is the online, on-screen assessment given to all pupils in year 4.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

**Upper Key Stage 2 – Years 5 and 6**

The principal focus of mathematics teaching in upper Key Stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

**Planning and organisation for learning and teaching:**

Planning and organisation at Sacred Heart ensures that children begin learning as soon as they enter the classroom.

All classes have a maths working wall and an enabling table with a range of images and manipulatives. The maths working wall and the enabling table support the teaching and learning within the concept being covered and offer scaffolding which allows **all** children to access the learning

At Sacred Heart we follow a five-part lesson format:

**REVIEW AND DO:** Teachers review prior teaching and learning and look for gaps in knowledge and understanding;

**LEARNING HOOK:** Teachers set tasks and ask a range of questions to challenge children’s reasoning and thinking skills. Children begin to work independently or in small groups in response to the learning hook whilst adults observe and listen to children’s responses, modelling and reinforcing appropriate mathematical vocabulary;

**TEACHING AND REFINING:** Teachers use assessment for learning and outcomes from the learning hook to unpick any misconceptions or errors. New learning can then be introduced and appropriate approaches and calculation strategies explored and practiced. Variations and adaptations to different learning styles and abilities can be explored and modelled. Connections can also be made between concepts;

I**NDEPENDENT PRACTICE**: Children now have the opportunity to practice approaches and

make connections more independently. This can be differentiated through level of support and types of resources provided.

**SUMMARY REVIEW:** Whole groups or whole class evaluate the outcome of the lesson. i.e. Self/peer assessment techniques. Misconceptions can be addressed.

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**Ongoing Assessment for Learning**

**Assessment for Learning** takes place throughout the lessons to ensure that the development and progression through activities is at the appropriate pace for each individual child and timely adjustments can be made to teaching within the lesson, at the start of the next lesson or during the gap analysis session (built into the timetable) based on their responses.

A range of strategies should be used:

* **Questioning** – as open-ended questions or higher-order thinking questions, to engage children in deeper thinking and to assess their understanding.
* **Observation of approaches and outcomes towards the WILF** which is shared and discussed with the children at the beginning of each lesson. This helps them understand what they are expected to learn and allows them to self-assess their progress towards those objectives.
* **Feedback loops** which provide timely and constructive feedback to children to guide their learning. Feedback can be oral, written, or through digital platforms, highlighting strengths, areas for improvement, and specific steps for growth.

Throughout the lesson children are engaged in **self-assessment** and recognising their next steps. Self-assessment nurtures children’s independence, fosters a lifelong love for learning, and equips them with valuable skills for their future academic success:

* **Ownership of learning**: Self-assessment empowers children to take ownership of their learning journey. By reflecting on their own progress and understanding, they become active participants in their educational experience.
* **Metacognitive skills**: Self-assessment cultivates metacognitive skills, such as self-reflection and self-regulation. Children learn to evaluate their own strengths and areas for improvement, identify strategies that work best for them, and set goals for their future learning.
* **Increased self-awareness**: Through self-assessment, children develop a deeper understanding of their own learning preferences, strengths, and challenges. This awareness helps them make informed decisions about their learning strategies and seek support when needed.
* **Growth mindset:** Self-assessment promotes a growth mindset by encouraging children to see mistakes and challenges as opportunities for growth. They develop resilience, embrace challenges, and persist in their learning, ultimately fostering a positive attitude towards learning.
* **Enhanced motivation and engagement**: When children are actively involved in assessing their own progress, they become more motivated and engaged in their learning. They see the value and purpose of their efforts, leading to increased enthusiasm and a desire to achieve.
* **Development of critical thinking skills**: Self-assessment requires children to think critically about their work, reflect on their understanding, and provide evidence to support their judgments. This develops their analytical skills and helps them develop a deeper understanding of concepts.

See – **Feedback Policy** available on the website.

Teaching assistants are an integral part of learning and teaching at Sacred Heart. Their role is planned and directed in every part of the mathematics lesson. They support, develop and assess pupil progress throughout. Oral and written feedback is shared with teaching staff and used to inform future planning to optimise learning.

**Assessment, Tracking and Target Setting:**

At Sacred Heart we employ three main types of assessment to effectively inform planning and teacher tracking documents i.e. long-term, medium-term and short-term:

* **Short term assessment** is the **ongoing** formative assessment which measures progress towards WALTs and WILF’s (see AfL/feedback within lessons). Short term assessment informs short-term planning and identifies gaps in learning for individual children, groups or whole class. These can then be addressed in the weekly gap task lesson. (see model plan on the website).
* **Medium-term assessments** take place each half term and all staff use White Rose assessments, these also help staff to identify any gaps in learning for gap tasks lessons and future planning.
* **Long Term Assessments** take place in the summer term: Year 1, Year 3 and Year 5 administer NFER end of year tests and end of key stage SATs tests are administered within year 2 and 6.

After formal assessmentsare completed, data is analysed (gap analysis) to identify areas of strengths and weaknesses to inform planning, teaching and learning:

* **Set goals**: Use the data to set specific, measurable goals for individual children as well as the whole class. These goals will ensure teachers know where children need to get to [clear expectations] and leaders can question, challenge and support if children are not on track.
* **Modify and adapt whole school provision and teaching**: Use the assessment data to provide the right targeted support/interventions and enrichment activities for individuals and groups, as well use the date to inform teaching and learning. Leaders consider the deployment of staff, for example, where significant catch up is needed.
* **Monitor progress**: Continuously track pupil progress to see if interventions and teaching strategies are effective. Regularly review the data to inform teaching decisions.
* **Communicate with stakeholders**: Share the assessment data with parents, children, and colleagues to foster a collaborative approach to children’s learning and ensure everyone is on the same page.

**Monitoring and Evaluation**

* Short term planning, books and outcomes of children’s work is collected and evaluated at given intervals throughout the year to monitor learning and teaching, and children’s progress.
* Termly assessment results i.e. levels and criterion points scores are collated and recorded onto the subject leader tracking grid. This is used to monitor progress and plan interventions at the earliest opportunity.
* End of Year assessments show a summary of each child’s progress. This helps support teachers in completing the child’s end of year report and feeding back to parents.

All of the above can then be used to set appropriate, yet challenging targets for developments in mathematics each new academic year.

**Progression of calculation methods:**

We have a policy for progression in calculation methods to ensure continuity and consistency throughout the school. This is available on the website

**Differentiation and support:**

(Including provision for SEND, G&T, E.A.L and PPG pupils)

This is an integral part of all mathematics teaching at Sacred Heart:

* Adapting learning and setting challenging age-related knowledge, reasoning and problem-solving tasks based on systematic, accurate assessment of pupils’ prior skills, knowledge and understanding.
* Small, differentiated target steps for all children to move through at a pace that suits their needs.
* Timely support and intervention; systematically and effectively checking pupils’ understanding throughout lessons.
* Ensuring that marking and constructive feedback is personal, frequent and of a consistently high quality - enabling pupils to understand how to improve and develop their work - with planned in time for children to respond to feedback.
* Real life, practical links throughout all knowledge, reasoning and problem-solving tasks, with whole class activities planned at the end of each unit.
* Range of practical-real life resources used to support all stages of learning within the class.
* Regular home learning which is differentiated as appropriate – see home learning policy.
* Additional adult support delivered where needed in class and, where appropriate, through additional sessions planned outside of lessons.
* An additional member of support staff is also employed to develop and target pupils with specific learning needs.

**Equal Opportunities**

All children are provided with equal access to the mathematics curriculum. We aim to provide suitable learning opportunities regardless of gender, ethnicity or home background.

**Role of the Subject Leader:**

The Subject Leader should be responsible for improving the standards of learning and teaching in maths through:

Monitoring and evaluating Maths:

* Planning for learning and teaching (including Intervention and Support programmes)
* Scrutiny of outcomes of learning and teaching
* The deployment and provision of support staff
* The quality of the Learning Environment
* Pupil progress

Taking the lead in policy development

Auditing and supporting colleagues in their CPD

Purchasing and organising resources

Keeping up to date with recent Maths developments

Reporting progress and developments within mathematics to the governing body.

**Parental Involvement:**

We believe that parents have a fundamental role to play in helping children to learn. We do all we can to inform parents about what and how their children are learning by:

* Holding parents’ evenings to discuss children’s progress.
* Sending an annual report to parents in which we explain the progress made by each child and indicate how the child can develop their learning.
* Explaining to parents how they can support their children with home learning.
* Publishing relevant documentation on the school website.

This policy must be read and used in conjunction with the:

* Calculations Policy
* New Maths Curriculum 2014 government documentation
* Maths Ready to Progress Criteria and Yearly Overviews document
* Learning and teaching policy
* Assessment and Marking policies
* Special Educational Needs Policy
* Computing Policy
* Equal Opportunities Policy
* Health and Safety Policy

**Update to Policy Record Sheet**

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| **Date** | **Reference / aspect of policy to update** | **Suggested amendments to consider at next review.** |
| Autumn 2023 | Mathematics in EYFS/KS1 | Number Sense/ Mastery In Number |
| Autumn 2023 | Effective use of Assessment, Tracking and Target Setting: | Explicit Steps   * Short Term - Check and Correct * Gap Analysis * Medium Term WR * Long Term NFER   How does this feed into tracking document (Tick sheet)? |
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