Sacred Heart Hindsford R.C. Primary School

Mathematics Policy

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Accepted by Governors: *J. Carter* signed (chair)
S. McDermott signed (Head)

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Mission Statement:

By living out our Catholic faith

TOGETHER

we ENCOURAGE

and ACHIEVE.

I have called you by name.

This policy describes our values and philosophy in relation to meeting the needs of all mathematical learners at Sacred Heart 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 'Development Matters' EYFS document. 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, 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 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 children need to learn to make effective progress. Pupils 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 and communication technology (ICT)

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. Teachers should use their judgement about when ICT tools should be used.

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 others and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

School 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. 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 Appendix 1 (**Key Learning in Mathematics Year 1 -6)**

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.

See Appendix 2 (**PRIMARY National Curriculum Programme of Study**)

Key Stage 1

The principal focus of mathematics teaching in Key Stage 1 is 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 practical resources (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 know the number bonds to 20 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- 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.

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 5-6

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 ensures 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 practical resources. The maths working wall and the enabling table support the teaching and learning within the concept being covered and offer scaffolding with which the children can access the learning

At Sacred Heart we follow a five part lesson format:

- **REVIEW AND DO:** Teachers review previous days 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. Appropriate approaches and calculation strategies can be 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.
- **SUMMARY REVIEW:** Whole groups or whole class evaluating the outcome of the lesson. i.e. Self/peer assessment techniques. Addressing misconceptions.

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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.
This can take the form of

- Questioning – open and closed questions.
- Pupil discussion
- Observation of approaches and outcomes.

At the end of the lesson (Summary Review) further AfL will be used effectively to consolidate, assess and move learning forward. Children who need to consolidate their understanding before moving on can be identified for **immediate intervention.**

Immediate intervention or additional practice has a specified time within the timetable at Sacred Heart and takes place before the next maths lesson.

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 and Target Setting:

Three main types of assessment are used in Maths at Sacred Heart 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 within lessons above). Short term assessment informs short-term planning and gaps in learning.
- **Medium-term assessments** take place half termly and all staff use Rising Stars half termly tests, which again identify gaps in learning.
- **Long Term Assessments** take place in the summer term and are the final yearly Rising Stars and NFER tests as well as end of key stage SATs tests within year 2 and 6.

The Maths subject leader collects in Maths books throughout the year to monitor progress.
Half termly assessment results i.e. levels and criterion points scores are collated and recorded on a tracking grid 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 the child's end of year report and fed back to parents.
All of the above can then be used to set appropriate, yet challenging targets for the next school year.

Progression of calculation methods:

We have a policy for progression in calculation methods to ensure continuity and consistency throughout the school.

Differentiation and support:

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

This is incorporated into all mathematics lessons and is done in various ways, such as:

- 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 homework which is differentiated as appropriate.
- Intervention programmes/extra teacher support delivered where needed both in class and through extra sessions planned outside the sessions.
- Specialist support staff are also employed to develop and target pupils with specific learning needs further.

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.
- Holding Study Support Sessions in each class to help parents support their child at home with their learning.
- 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 homework.
- 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 Curriculum unit overviews and unit documents
- Learning and teaching policy
- Assessment and Marking policies.
- Special Educational Needs Policy
- ICT Policy
- Equal Opportunities Policy
- Health and Safety Policy

Appendices

Key Learning in Mathematics Year 1 -6
PRIMARY National Curriculum Programme of Study

Update to Policy Record Sheet

Date	Reference / aspect of policy to update	Suggested amendments to consider at next review.