



## Mathematics Policy

### The Importance of Mathematics

At St Catherine of Siena Primary School, we understand that Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary in most forms of employment. A high-quality mathematics education, therefore, provides a foundation for understanding the world, the ability to reason mathematically and a sense of enjoyment and curiosity about the subject.

Mathematics is a proficiency which involves confidence and competence with numbers and measures. It requires an understanding of the number system, a repertoire of computational skills and an ability to solve number problems in a variety of ways in which information is gathered by counting and measuring and is presented in graphs, diagrams, charts and tables.

Mathematics gives children a way of coming to terms with their environment. Practical tasks and real life problems can be approached from a mathematical point of view. Mathematics provides children with imaginative areas of exploration and study and gives them the materials upon which to exercise their mathematical skills. These skills are a necessary tool of everyday life.

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Mathematics should help children to develop an appreciation of, and enjoyment in, the subject itself; as well as a realisation of its role in other curriculum areas.

**Purpose:**

The purpose of this policy is to describe our practice in Mathematics and the principles upon which this is based.

**Aim(s):**

We aim to develop lively, enquiring minds encouraging pupils to become self-motivated, confident and capable in order to solve problems that will become an integral part of their future.

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.

**Children deserve**

- To be set appropriate learning challenges

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- To be taught well and be given the opportunity to learn in ways that maximise their chances of success.
- To have adults working with them to tackle the specific barriers to progress they face.

### Outcomes

In Mathematics education at St. Catherine's School we aim to sustain and develop in all children:

- confidence, understanding and enjoyment in mathematics;
- an awareness of relationship and pattern, and how these can bring about a clearer understanding of a situation;
- an appreciation of mathematics as a means of communication through which they can analyse information and ideas;
- the ability to work systematically where the task requires a careful accurate approach, as well as the ability to show imagination, initiative and flexibility when appropriate; independence of thought and action as well as the ability to co-operate within a group; problem solving skills and strategies; the ability to use mathematics effectively as a tool in a wide variety of situations; the sensible use of factual recall, mental and written methods, calculators, micro-technology and other mathematical aids.

### School Curriculum - Programme of Study

#### Foundation Stage

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The programme of study for the Foundation stage is set out in the EYFS Framework 2012. 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 shape, spaces and measures. – HAS JUST CHANGED (NO SHAPE, SPACE AND MEASURE) – Shall we keep this in the policy though?

### Key Stage 1 and 2

The Programmes of study for mathematics are set out year by year for Key Stages 1 and 2 in the National Curriculum (2014). The programmes of study are organised in a distinct sequence and structured into separate domains. Pupils should make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. 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.

### 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

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

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.

### Cross curricular

Throughout the whole curriculum, opportunities to extend and promote Mathematics should be sought. Within every Science topic, children will also develop their mathematical skills. This will help children appreciate how to Work Scientifically but also practise discrete mathematical skills. Nevertheless the prime focus should be on ensuring mathematical progress delivered

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discretely or otherwise.

### Teaching and Learning

The approach to the teaching of mathematics within the school is based on:

- A mathematics lesson every day
- A clear focus on direct, instructional teaching and interactive oral work with both the whole class and smaller ability groups.

The curriculum is delivered by class teachers. All work is differentiated in order to give appropriate levels of work and children are taught in a variety of different ways (ability groups and mixed). At St. Catherine's we have 'adopted and adapted' the Herts Essentials Planning and whilst we understand that the plans are well written, the deliverance is key. Subsequently, Class Teachers are responsible for the relevant provision of their own classes and are aware of schema, which can be defined as a child's learning experiences 'so far'. Class Teachers ensure they understand a child's starting and end point, checking previous years plans, speaking with previous class teachers and assessing what the children already know. Although planned in advance, plans are adjusted on a daily basis to better suit the arising needs of a class and individual pupils.

Within a series of Maths lessons, we would expect to see evidence of Good practice, such as:

- Oral Mental starters (OMS)
- Revisiting Prior Learning
- Input (Child or teacher lead)
- Mini-plenaries
- Plenary
- Lesson sequencing – Concrete, Pictorial, Abstract

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- Engaged learners
- Basketball questioning
- Language rich curriculum, especially with regard to calculations. Children should be able to articulate their understanding of said calculations.

### Calculation Policy

The Calculation Policy (see Herts Essentials Written Calculations Policy October 2019) has been, like planning, adopted and adapted from Herts Essentials.

As a school we have made the following adaptations:

- Once the child is ready, they are to use formal written methods.
- The children will be expected not to use expanded methods
- Teachers and support staff must not try to 'un-teach' different methods of calculations – if a child has learnt a different method and it is correct then we will show them a formal written method and they can choose with method they prefer

Bar modelling may be used in conjunction with pictorial representations.

### Inclusion and 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.

### Entitlement

At St Catherine of Siena Catholic Primary School, we teach mathematics to all children, whatever their ability or individual need.

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Through our mathematics teaching, we provide learning opportunities that enable all pupils to make good progress.

### Special Educational Needs

All children will have their specific needs met through differentiated work in conjunction with targets. TA or one-to-one support time is planned for and provided in relation to identified needs for individuals and groups.

### Resources

All classrooms have a number of mathematical, age appropriate resources. Resources which are not used or required regularly are stored centrally and accessed by teachers at the beginning of a topic. We highly encourage children to use manipulatives to access the curriculum, as per our Calculations Policy.

### Displays

Each classroom / resource area should have a purposeful maths display relating to current work. The maths display should be updated regularly to reflect the pace of learning (Working Wall). Displays can include: key vocabulary, children's work, teacher modelling, visual prompts and questions to develop reasoning skills.

### Assessment

1. Children in the Foundation Stage are assessed in accordance with the EYFS curriculum. Teachers will highlight in different colours – depending on the time of year.
2. Stick Mark Boom (SMB) Curriculum Map is used in Years 1-6. Data is collected every half-term. Objectives from the National Curriculum are

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highlighted based on a child: 'Working Towards', 'Aged-Related', 'Above Aged-Related' and 'Working at Greater Depth'.

3. Using the SMB Curriculum Map, children who are significantly behind in terms of attainment and / or progress will be highlighted for staff to diminish the difference.

4. Marking – Refer to Marking Policy.

5. SAT's – These take place in Years 2 and 6 and should be analysed to inform planning.

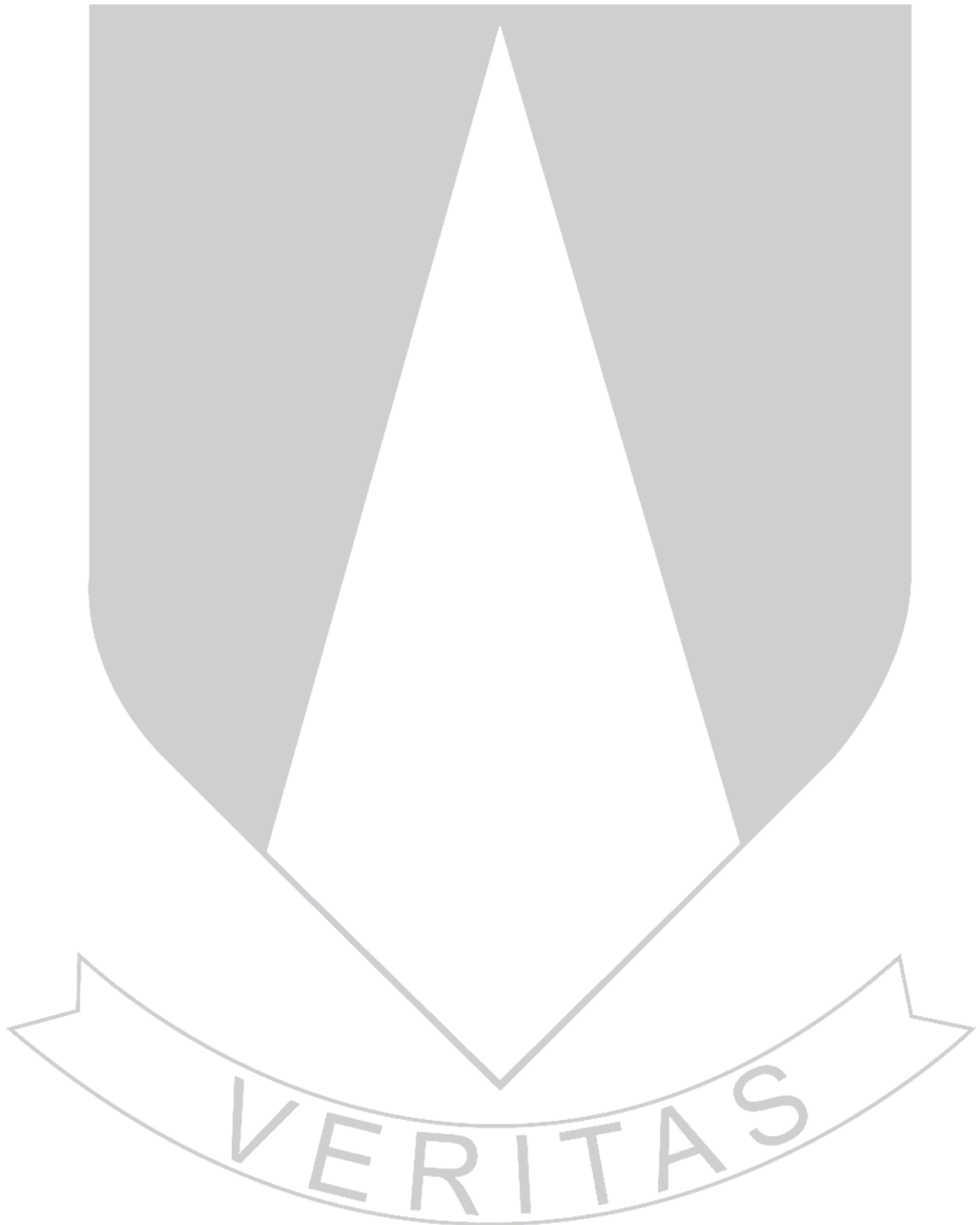
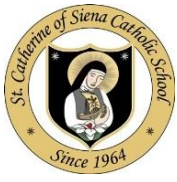
6. Summative assessment – within every term, children will undertake summative assessments, such as diagnostic testing. Class Teachers will be given a staff meeting to analyse this data and it will help inform planning for our Revisit and Revise weeks.

### Monitoring and Evaluation

The Curriculum leaders, alongside SLT, are responsible for monitoring and evaluating curriculum progress. This is done through book scrutiny, lesson observations, learning walks, pupil interviews, staff discussions and audit of resources, when appropriate.

### Review

The policy will be reviewed September 2020.



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