



# Maths Policy

## **St Cuthbert's Mission Statement**

God made us all unique  
To learn, live and grow  
To show care, concern and friendship  
To be the best we can  
Showing Christ's love in all we do.

<b>Date of policy</b>	<b>September 2022</b>
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<b>Reviewed by</b>	<b>Local Governing Committee</b>
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## Mathematics Policy

### Rationale

*At St Cuthbert's Catholic Primary School, we believe that Mathematics is a key skill that helps us to make sense of the world around us. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to understand and apply their knowledge to solve real life problems.*

*We also believe that Mathematics equips children with a 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, many forms of employment, science and technology, medicine, the economy, the environment and development and in public decision-making. Different cultures have contributed to the development and application of mathematics. Today, the subject transcends cultural boundaries, and its importance is universally recognised.*

### AIMS

- *Have a sense of the size of a number and where it fits into the number system*
- *Know by heart number facts, such as number bonds, multiplication tables*
- *Use what they know by heart to figure out answers mentally*
- *Calculate accurately and efficiently, both mentally and with pencil and paper, drawing on a range of calculation strategies*
- *Make sense of number problems, including non-routine problems, and recognise the operations needed to solve them*
- *Explain their methods and reasoning, using correct mathematical terms*
- *Judge whether their answers are reasonable, and have strategies for checking them where necessary*
- *Suggest suitable units for measuring, and make sensible estimates of measurements*
- *Explain and make predictions from the numbers in graphs, diagrams, charts and tables.*

## Implementation of Policy

At St Cuthbert's Catholic Primary School, we use a variety of teaching and learning styles in mathematics lessons. Our principal aim is to develop children's knowledge, skills and understanding in mathematics.

We do this through a daily lesson that has a mix of whole-class and group teaching. During these lessons we encourage children to ask as well as answer mathematical questions. At St Cuthbert's, we use the concrete, pictorial, abstract approach which helps children develop mastery across all the operations in an efficient and reliable way. Based on Jerome Bruner's work, pupils learn new concepts initially using concrete examples, such as counters, then progress to drawing pictorial representations before finally using more abstract symbols. They have the opportunity to use a wide range of resources such as number lines, number squares, digit cards and small apparatus to support their work appropriate to their age and ability level.

At St Cuthbert's Catholic Primary School, children use ICT in mathematics lessons where it will enhance learning, as in modelling ideas and methods. Wherever possible, we encourage the children to use and apply their learning in everyday situations.

In all classes there are children of differing mathematical ability. We recognise this fact and provide suitable learning opportunities for all children. We achieve this through a range of strategies – in some lessons through adapted group work and in other lessons by organising the children to work in pairs on open-ended problems or games. We provide scaffolds to support children with their work and there are always resources available to support learning. We use teaching assistants to support targeted groups and to provide in situ feedback to ensure that work is matched to the needs of individuals.

We do this through careful planning and preparation, ensuring that throughout the school,

- *children are given opportunities for: practical activities, role play and mathematical games*
- *the concrete, pictorial, abstract approach is used consistently*
- *the development of mental and oral strategies with an emphasis on speed recall of number bonds and multiplication tables*
- *the development of mathematical vocabulary*
- *problem solving*
- *individual, group and whole class discussions and activities*

- *open and closed tasks*
- *a range of methods of calculating e.g. mental, pencil and paper*
- *understand mathematics through a process of enquiry and experiment*
- *regular use of ICT games to reinforce, develop and enthuse learning*

## **THE NATIONAL CURRICULUM**

The National Curriculum for mathematics describes what must be taught in each key stage. St Cuthbert's Catholic Primary School follows the primary mathematics framework, which provides detailed guidance for the implementation of the orders and ensures continuity and progression in the teaching of mathematics.

Every teacher in St Cuthbert's has access to the framework for teaching mathematics and the curriculum map outlining progression, which has been designed by the subject leader to meet the needs of children in our school. In early years, the curriculum is guided by the Early Learning Goals.

### **Early Years Foundation Stage**

At St Cuthbert's, children follow the early years foundation stage curriculum. We give all children the opportunity to talk and communicate in a widening range of situation and to practise and extend their range of vocabulary and numeracy skills. They have the opportunity to explore, enjoy, learn about, and use mathematics in a range of situations. Mathematics is planned on a half termly basis and assessed using the criteria from the early learning goals. Mathematics is taught both as a discrete subject and within the whole early years curriculum to give children opportunities to use their Numeracy skills in real life situations.

### **Key Stages 1 and 2**

In Key Stages 1 and 2, daily maths lessons take place. All classes in Key Stages 1 and 2 follow the same sequence starting with number and place value.

### **Key Stage 1**

Throughout Key Stage 1, our Mathematics curriculum will provide many opportunities for children to develop confidence and fluency with whole numbers, counting and place value. The use of practical equipment, such as concrete objects and measuring tools, will support the children to gain a deeper conceptual understanding before being challenged through tasks and questions to explain their reasoning and solve a range of problems. The children

are equipped with the skills to recognise shapes and their properties and measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

## **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. The children develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. At this stage, children develop their ability to solve a range of problems, including with simple fractions and decimal place value. Children draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. The children can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, the children should have learnt their multiplication tables up to and including the 12-multiplication table and show precision and fluency in their work. Children 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 the children extend their understanding of the number system and place value to include larger integers. They develop the connections made between multiplication and division with fractions, decimals, percentages and ratio. The children also 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 consolidates and extends knowledge developed in number. Teaching also ensures that children classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. By the end of year 6, children are fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

## **Teaching Methods and Approaches**

At St Cuthbert's, we teach maths using a mastery approach; this sparks curiosity and excitement and helps nurture children's confidence in maths. We use a range of resources to support the teaching and learning of mastery in mathematics including textbooks as well as NCETM and White Rose resources. We use Times Tables Rockstars across the school as we believe that it is important that all children to become fluent and have a rapid recall of times table facts. This challenges children on age relevant multiplication and division facts and it allows children to practice and compete with their peers across the school.

When teaching maths for mastery, the whole class moves through topics at broadly the same pace. Each topic is studied in depth and the teacher does not move to the next stage until all children demonstrate they have a secure understanding of mathematical concepts. Ideas are revisited at high levels as the curriculum spirals through the years.

Teaching maths for mastery ensures all pupils access the full maths curriculum. This inclusive approach, and its emphasis on promoting multiple methods of solving a problem, builds self-confidence and resilience in pupils.

Though the whole class goes through the same content at the same pace, there is still plenty of opportunity for adaptive teaching and learning. Unlike the old model, where advanced learners are accelerated through new content, those pupils who grasp concepts quickly are challenged with rich and sophisticated problems within the topic. Those children who are not sufficiently fluent are provided with additional support to consolidate their learning before moving on.

## **Parental Involvement**

At St Cuthbert's Catholic Primary School, we recognise that parental involvement is an important factor in helping children achieve their best and actively encourage parents to become involved with their children's development in Mathematics through:

- *Parents' / Carers' meetings twice a year, along with opportunities to look at children's work*
- *Use of the Homework Materials – Timestables Rockstars*
- *Class newsletters informing them of curriculum information*

We also recognise the important role display has in the teaching and learning of mathematics by having maths work displayed in the school. Every class has visual aids displaying key information and vocabulary to support children with their work.

## **Resources**

At St Cuthbert's Catholic Primary School, resources for the delivery of the maths curriculum are stored in classrooms.

We use a variety of materials to facilitate the teaching of mathematics but also recognise the need for the teaching of maths to be investigative and grounded in real life circumstances wherever possible.

## **Contribution in Mathematics to Teaching in Other Curriculum Areas**

### **English**

At St Cuthbert's Catholic Primary School, mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening.

### **Computing**

The effective use of computing can enhance the teaching and learning of mathematics when used appropriately. When considering its use, we take into account the following points:

- *Computing should enhance good mathematics teaching. It should be used in lessons only if it supports good practice in teaching mathematics;*
- *Any decision about using computing in a particular lesson or sequence of lessons must be directly related to the teaching and learning objectives for those lessons.*
- *Computing should be used if the teacher and/or the children can achieve something more effectively with it than without it.*

## **Science**

At St Cuthbert's, almost every scientific investigation or experiment is likely to require one or more of the mathematical skills of classifying, counting, measuring, calculating, estimating and recording in tables and graphs. In science children will for example order numbers, including decimals, calculate simple means and percentages, use negative numbers when taking temperatures, decide whether it is more appropriate to use a line graph or bar chart, and plot, interpret and predict from graphs.

## **Art, Design and Technology**

Measurements are often needed in art and design and technology. Many patterns and constructions are based on spatial ideas and properties of shapes, including symmetry. Designs may need enlarging or reducing, introducing ideas of multiplication and ratio. When food is prepared a great deal of measurement occurs, including working out times and calculating cost; this may not be straightforward if only part of a packet of ingredients has been used.

## **History, Geography and Religious Education**

At St Cuthbert's, in history and geography children will collect data by counting and measuring and make use of measurements of many kinds. The study of maps includes the use of co-ordinates and ideas of angle, direction, position, scale and ratio. The pattern of the days of the week, the calendar and recurring annual festivals all have a mathematical basis. For older children historical ideas require understanding of the passage of time, which can be illustrated on a timeline, similar to the number line that they already know.

## **Physical Education and Music**

Athletic activities require measurement of height, distance and time, while ideas of counting, time, symmetry, movement, position and direction are used extensively in music, dance, gymnastics and ball games.



## **Spiritual, moral, social and cultural development**

The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We often group children so that they can work together, and we give them a chance to discuss their ideas and results.

## **Assessment and Record Keeping**

At St Cuthbert's, we are continually assessing our children and recording their progress. We see assessment as an integral part of the teaching process and endeavour to make our assessment purposeful, allowing us to match the correct level of work to the needs of the children, thus benefiting the children and ensuring progress.

## **Reporting**

At St Cuthbert's, all parents / carers have opportunities to discuss progress at two parents' evenings and they receive an annual written report on which there is a summary of their child's effort and progress in mathematics over the year. Within curriculum newsletters parents /carers will receive information on areas of study in mathematics for their child.

## **Equal Opportunities**

At St Cuthbert's, as a staff we endeavour to maintain an awareness of, and to provide for equal opportunities for all our children in mathematics. We aim to take into account cultural background, gender and special needs, both in our teaching attitudes and in the published materials we use with our children.

## **Special Educational Needs**

Wherever possible we aim to fully include SEND children in the daily mathematics lesson so that they benefit from the emphasis on oral and mental work and by listening and participating with other children in demonstrating and explaining their methods.

Where necessary teachers will, in consultation with the SENCO, draw up a target within a person centred plan for a child. When planning teachers will try to address the child's needs through simplified or modified tasks or the use of support staff.

## **Role and Responsibilities of Mathematics Subject Leader**

- *Monitor planning, teaching and learning in mathematics, to ensure continuity and progression.*
- *Ensure there is a well sequenced and progressive curriculum map which contains the key knowledge, skills and vocabulary children need to be procedurally fluent in mathematics.*
- *Monitor standards in mathematics throughout the school, including SEND, more able, PP, EAL etc.*
- *Identify strengths and areas for improvement and to lead and drive improvements within the school.*
- *Keep up to date with new initiatives and train staff on these (also to facilitate in or out of school training for staff).*
- *Feed back to the Headteacher on standards in mathematics*

## **Monitoring and Review**

At St Cuthbert's Catholic Primary School, the subject leader supports colleagues in their teaching, by keeping informed about current developments in mathematics, and by providing a strategic lead and direction for this subject; evaluates the strengths and weaknesses in mathematics and indicates areas for further improvement.

The subject leader uses allocated management time to review evidence of the children's work, and to observe mathematics lessons across the school. The quality of teaching and learning in mathematics is monitored and evaluated as part of the school's agreed cycle of lesson observations.

## **Disability Equality Impact Assessment**

This policy has been written with reference to and in consideration of the school's Disability Equality Scheme. Assessment will include consideration of issues identified by the involvement of disabled children, staff and parents and any information the school holds on disabled children, staff and parents.