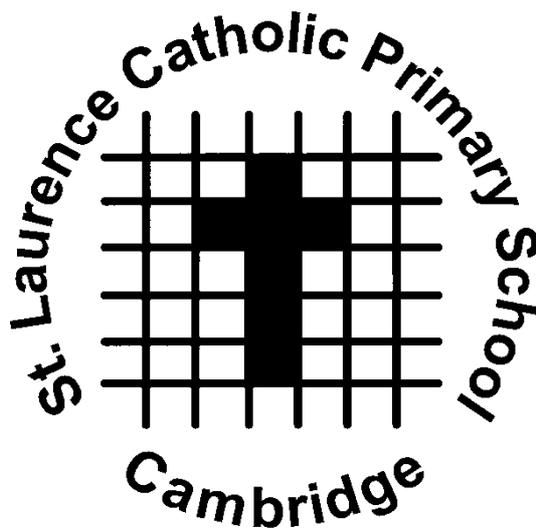


# St Laurence Catholic Primary School



***Through God's Grace a community growing in  
love and understanding***

## **Mathematics Policy**

## St Laurence Catholic Primary School Mathematics Policy

### Introduction

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. This revised policy takes into account the new National Curriculum (2014).

### **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.

Fluency requires the quick and accurate mental recall of facts that pupils have learned up to that point; precision and confidence in using mathematical concepts, properties and symbols, and the competent and flexible selection and application of methods in different contexts. Solving problems requires analysing information presented in different forms, recognising what is given in the information and what additional information is needed; identifying and conjecturing patterns, relationships, and generalisations; testing, inducing, deducing, and proving; and communicating ideas effectively. Mathematical reasoning requires breaking down problems into a series of simpler problems or steps; making decisions about gathering, processing and calculating to acquire new information; and showing perseverance in finding solutions.

The Programmes of Study are organised in a distinct sequence and structured into separate domains. However, mathematics is a highly inter-connected discipline. Pupils should therefore be taught to practise and then apply their mathematics to a range of problems. They should also be encouraged to make connections across mathematical procedures and concepts to ensure fluency, mathematical reasoning and competence in solving problems. They should also apply their mathematical knowledge in science and other subjects.

## **Organisation and Environment**

### **Teaching and learning style**

The school understands that children learn in different ways, and so uses a variety of teaching styles in mathematics, adapting to the needs of the children as necessary and appropriate. During our daily lessons we encourage children to ask as well as answer mathematical questions. We develop their ability to independently select and use appropriate concrete apparatus to support their conceptual understanding and build procedural fluency. They have the opportunity to independently access and use a wide range of resources, such as bead frames, bead strings, number lines, Dienes/ Base 10 apparatus, place value counters, Numicon, multilink, place value cards, Cuisinaire rods and other small apparatus to support their work. We develop the children's ability to represent problems using visualisation skills, jottings and pictorial representations such as Empty Number Lines and their own ideas. ICT is used in mathematics lessons for modelling ideas and methods. Wherever possible, we provide meaningful contexts and encourage the children to apply their learning to everyday situations. At all times the policy aims are the drivers behind the planning and delivery of lessons.

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 will always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly will be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material will consolidate their understanding, including through additional practice, before moving on. We achieve this through a range of strategies, such as the use of differentiated work, booster programmes (such as 1stClass@Number and Success@Arithmetic) and SEN intervention programmes (such as Numicon). There is also the use of peer-support pairs and guided or targeted input from the teacher and teaching assistant.

Planning is based upon the new National Curriculum (2014). Programmes of Study should inform medium term plans and subsequently weekly planning. Class teachers are responsible for the relevant provision of their own classes and individually develop weekly plans which give details of learning objectives and appropriate differentiated activities. Although planned in advance they are adjusted on a daily basis to better suit the arising needs of a class and individual pupils.

### **School Curriculum**

Mathematics is a core subject in the National Curriculum, and we use the new Mathematics Programmes of Study: Key stages 1 and 2 (dated September 2013) as the basis for our school curriculum, ensuring we teach the relevant statutory content.

The school's **calculation policy** (created in June 2014) has been created to provide continuity throughout the school with all four operations, which in turn will facilitate measured progress for children in school.

Please note - For the year 2014/15 Year 2 and Year 6 are required to teach the programmes of study from the existing curriculum (2000), but will incorporate relevant areas of the new curriculum into their planning.

### *Foundation Stage*

The programme of study for the Foundation stage is set out in the EYFS Framework. 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.

### *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 new 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.

### **Links with other curriculum areas**

Throughout the whole curriculum, opportunities to extend and promote Mathematics should be sought. Nevertheless the prime focus should be on ensuring mathematical progress delivered discretely or otherwise.

#### *Mathematics and Computing:*

Information and communication technology enhances the teaching of mathematics significantly. It also offers ways of impacting on learning which are not possible with conventional methods. Teachers can use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. Children may use ICT in order to learn or apply mathematical concepts and skills either within maths lessons or in other curriculum areas.

### **Maths Learning Environment**

The school aims to provide a mathematically stimulating environment:

- through displays that promote mathematical thinking and discussion
- through displays of pupils' work that celebrate achievement
- by providing a good range of resources for teacher and pupil use. In every classroom, resources such as number lines, hundred square, place value charts and multiplication squares are displayed as appropriate and used as resources for whole class or individual work, for children to become confident in their use and understanding of the number system.

### **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 group children so that they work together, provide opportunities and structure for collaborative learning, and we give them the chance to discuss their ideas and results.

### **Home/school links**

Guidance and information about Maths is provided on the school website, along with links to apps, games, Maths websites and other useful documents and resources. Homework will be sent home when appropriate in order to reinforce concepts and skills being learned in school.

## **Equal Opportunities**

At St Laurence we believe that every child, irrespective of gender, race or ability should have access to a broad and challenging maths curriculum. The monitoring of our National Test results for performance by boys and girls and Black and Bilingual children takes place each year. We endeavour to adapt our teaching if the findings point to any changes that should take place. Additional information about equal opportunities and the curriculum can be found in the Equality Policy.

## **Assessment**

### **Marking** (see also Marking, Reporting & Assessment Policy)

All teachers will give pupils regular, positive feedback. When marking work, encouragement and support is given to each child in addition to clear guidance on how to improve using next step marking.

In Reception and Year 1 the children will do most of their number work in practical activities. Some practice is needed in number formation and this is carefully taught. Recording is more informal. Work should be marked wherever possible with the child present as verbal feedback is very important. Correct answers should be ticked. Incorrect answers should be marked with a dot and the teacher may draw a ← or a \_\_\_\_\_ for the correction. If a number is formed incorrectly the teacher may write it correctly. Children should be encouraged to use a numberline to check number formation.

By Year 2 most children are able to form their numbers correctly and support is given to those still needing help. Recording is becoming more formal but still with an emphasis on practical work.

In Key Stage 2 children should:

- show the stages of their thinking, particularly with problem exercises
- complete corrections when required. The teacher's judgement should be used regarding the siting of corrections, i.e. beside the wrong answer or on a fresh page.
- sometimes mark their own work, or that of a partner

Not all wrong sums need to be corrected, depending on the nature of the error, i.e. one digit wrong in a sequence of otherwise correct answers. In this case the teacher may simply circle the incorrect digit in the answer.

Our positive marking policy includes giving verbal praise, team points and stars.

### **Assessment for learning**

Assessment for learning is embedded into each lesson and teachers use assessment for learning techniques and strategies on a daily basis in order to identify pupils' strengths and difficulties, inform the next steps for each child's learning and improve the learning outcomes for each child. Short-term planning is constantly reviewed and modified on the basis of these assessments.

### **Summative assessment**

We make termly summative judgements of each child's achievement. Up to the end of 2013/14 this has been in terms of National Curriculum levels and sublevels in Years 1 to 6. This will continue to be the case in 2014/5 for Year 2 and Year 6. However, during 2014/15 we will be developing and moving towards a new system of assessing without these levels in line with the new curriculum, as is the national requirement. During this transitional period National Curriculum levels may still be used until the new system is ready to be fully implemented and embedded. In 2015/16 Year 2 and Year 6 will also move to the new system.

Some of the evidence base for these assessments may come from day-to-day class work, but there is an emphasis on evidence that comes from specific tasks and tests used to assess the degree of retention, independence and breadth of application shown. We use these judgements to assess progress and achievement against individual, school and national targets. We identify and target those children not making expected progress and intervene accordingly.

Levels are updated terming in Target tracker and we pass all assessment and tracking information on to the next teacher at the end of the year, so that s/he can plan for the new school year.

In 2014/15 Teachers in Year 2 will also use the statutory End of Key Stage National Curriculum tasks and tests (as directed in the Assessment and Reporting Arrangements booklet) as one part of the assessment picture for each child.

In the autumn and spring terms we give parents the opportunity to discuss their child's progress and attainment in a teacher/parent meeting. In summer we write a summary of each child's progress and achievement in the Annual Report for parents.

## **Conclusion**

As a core subject mathematics will continue to be central to the work in school. We therefore have a Subject Leader for Mathematics. The Subject Leader leads, manages and develops mathematics across the whole school. The Subject Leader takes responsibility for developing the monitoring of the curriculum and prioritises the purchasing of resources from the limited funds available. Following the Resources Audit made every autumn, lists of current resources in the classrooms and communal areas are available on the server.

The Subject Leader and other members of staff will regularly attend courses run locally. Senior management meetings, staff meetings and Key Stage meetings will take place to discuss the on-going development of maths and our commitment to refining and improving the quality of our maths teaching and the standards achieved by the children. These formal settings are in addition to informal support, advice and feedback opportunities throughout the school year.

We will continue to evaluate our practice in mathematics teaching and learning, and to improve it in order to prepare St Laurence children for End of Key Stage SATs, progression to secondary education, and for the use of mathematics in adult life.