



## Mathematics Intent, Implementation and Impact

### Intent

At Lytchett Matravers Primary School, we believe that our children deserve an effective and challenging mathematics curriculum, which provides opportunities to develop their skills and knowledge through provoking inquisitiveness. This will allow them to develop their mathematical ideas; through fluency, problem solving and deeper reasoning problems. We aspire for all children to love maths through the experiences we provide them through an engaging curriculum. At LMPS, we develop children's ability to work both independently and as part of a team collaboratively.

In Mathematics, our objectives align with the National Curriculum in that we aim to ensure all pupils:

- ◇ become **fluent** in the fundamentals of mathematics, including varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- ◇ **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.

Through Mathematics, children will:

- ◇ promote confidence and competence with numbers and the number system;
- ◇ develop the ability to solve problems through decision-making and reasoning in a range of contexts;
- ◇ develop a practical understanding of the ways in which information is gathered and presented;
- ◇ explore features of shape and space, and develop measuring skills in a range of contexts;
- ◇ understand the importance of mathematics in everyday life.

Teachers will:

- ◇ have good knowledge of the mathematics they are teaching, and understand the progression through the school and beyond, using the school policy consistently;
- ◇ are well prepared and consider the needs of all the pupils in their class;
- ◇ promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion;
- ◇ use a range of modelling techniques, particularly following a concrete- pictorial- abstract approach;
- ◇ question effectively, creating opportunities for discussion and explanation (with the support of STEM sentences);
- ◇ use a range of resources, including ICT and manipulatives, both to model/ demonstrate;
- ◇ be flexible, responding to needs as they arise;
- ◇ make links between ideas (subtraction/ addition inverse, money/ place value, measures and place value, fractions/ decimals/place value);
- ◇ use assessment to inform the 'next step' (through baselines and end assessments).

**EYFS:** The most relevant statements for mathematics are taken from the following areas of learning: Communication and Language, and Mathematics. Children in EYFS will explore maths daily through a wide range of experiences. Looking at mathematical vocabulary, number and place value, identify, represent and estimate (through subtising), reading and writing, comparing and ordering numbers, and using this to solve problems. They will also explore mental calculations for addition and subtraction, recognise 2D and 3D shapes and their properties and copy repeated patterns.

*Key Stage 1:* Pupils develop confidence and mental fluency with whole numbers, counting and place value. They work with numerals, words and the four operations, with extensive use of concrete objects and measuring tools. At this stage, pupils develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching also involves using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

*Lower Key Stage 2:* Pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. Pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. At this stage, pupils develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching ensures 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. 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.

*Upper Key Stage 2:* Pupils extend their understanding of the number system and place value to include larger integers. They develop connections between multiplication and division with fractions, decimals, percentages and ratio. Pupils 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. Pupils are introduced to algebra solving a variety of problems. 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.

## Implementation

Each objective is planned from a central question: What does an age-related child need to be able to independently answer? From there, lessons and tasks are developed, using a range of resources to support representation and structure, fluency, variation, mathematical thinking and coherence.

- ◇ Schemes available, resources and location: We have devised our own school scheme, which is supported using a variety of resources (such as WhiteRose, NCETM and NRICH). Each class has their own provision of practical resources which are relevant to the curriculum guidance for that particular year group on a Maths Table. Other resources are kept centrally in Room 15.
- ◇ Teaching sequence: Please see our 'Long Term Mathematics Plan' and 'Progression Map' for objectives and small steps covered in each year group.
- ◇ Starters: To support children in knowing more and remembering more, all maths lessons begin with a brief 'fluent in five'; recapping previously taught skills.
- ◇ Lessons: As a school, we have developed a mastery approach curriculum for our children from EYFS to Year 6, where all pupils can achieve. A concept is deemed mastered when learners can represent it in multiple ways, communicate solutions using mathematical language and independently apply the concept to new problems. For example, we aim to teach children with concrete, pictorial and written/ abstract examples of mathematical strategies. When new content is introduced, it is built on small steps to progress through their learning which is suitable for them. 'I do, you do' sessions model skills in a variety of ways for children to practise the skill themselves. As the children become more confident and competent, they progress onto fully independent questions, which are used as an assessment of their mastery and understanding of the skill. They will then finally, explore stretch and challenge tasks, which are a greater complexity, usually requiring exploration of mathematical structures and contexts, where answers need to be communicated clearly and accurately.
- ◇ Vocabulary and Misconception: It is essential that children are exposed to the correct mathematical vocabulary and possible misconceptions, through constant mathematical talk, and opportunities to articulate and discuss their thinking and understanding. Teachers use questioning to elicit feedback from all students to expose and address any misconceptions in learning. Where these misconceptions are seen, they are readdressed through supported practice to enable all children to succeed.
- ◇ Resources: The Concrete Pictorial Abstract (CPA) approach is a system of learning that uses physical and visual aids to build a child's understanding of abstract topics. We use a range of

resources; including Mastering Maths displays (with STEM sentences, key questions and vocabulary), manipulatives and Maths dictionaries

- ◇ Cross Curricular Opportunities: We see the virtues of cross-curricular lessons and believe that making cross curricular links with maths provides children with more context and relevance to the subject.

### **Impact**

At LMPS, our children will learn to make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in problem solving; and will learn to live and love maths as they understand its importance within our world. They will be engaged and challenged by maths, further developing their independence and communication skills. Our children will be fluent in the fundamentals of mathematics with a conceptual understanding, and the ability to recall and apply knowledge rapidly and accurately. They will be able to reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.

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