



## MATHS

### How this subject is taught

At Lammack we aim 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 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;
- 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.

At Lammack Primary School, the aim is for each child to be able to think and solve problems mathematically by using the appropriate skills, concepts and knowledge. We provide this within rich and enjoyable maths lessons and through a cross-curricular approach. Maths lessons take place from Foundation Stage to Year 6 based on EYFS and the National Curriculum for Mathematics. At Lammack, we aim to ensure that lessons are engaging and challenging, drawing upon a wide range of teaching styles and strategies in order to cater for individual learners.

Lammack has strong links with the National Centre for Excellence in Teaching of Maths (NCETM) and the North North West Maths Hub through the Teaching for Mastery work that Mrs McGregor currently leads, and as such is working with other schools across the North West to develop mathematics teaching and learning. We had the privilege of being a host school for the 2016-2017 Shanghai teacher Exchange programme and our maths policy is currently under review as we aim to develop teaching and learning for mastery in mathematics. As a result, in some lessons you may see examples of whole class teaching in line with the principles outlined in the 'Essence of teaching for Mastery' document published by the NCETM.

<https://www.ncetm.org.uk/files/37086535/The+Essence+of+Maths+Teaching+for+Mastery+june+2016.pdf>

We follow a clear policy for written calculations that is in line with the new National Curriculum and this includes the use of practical resources to aid understanding at every stage. We also have non-negotiables for each year group which cover the essential number skills required for mathematical fluency.

A typical lesson in Years 1 to 6 will usually include oral work and mental calculation. This will involve whole-class work to rehearse, sharpen and develop mental and oral skills. The main teaching activities will include both teaching input and pupil activities and a balance between whole class, grouped, paired and individual work. Teachers and teaching assistants intervene as needed to identify misconceptions and ensure progress. Each class are taught the objectives set out for their year and follow the medium term plans set out by The White Rose Maths Hub. In the upper juniors, classes are set according to ability to allow teachers to focus on specific targets and the needs of the children. Year 6 teachers follow the plans on Lancashire Grid for Learning and supplement these with those from White Rose Maths Hub. Teachers use a range of supporting documents and resources such as assessment materials from NCETM and The Maths No Problem Text books to supplement their planning as we work towards teaching for mastery in mathematics.

We aim for each child to:

- Have a positive attitude towards mathematics and self-confidence in their ability to deal with mathematics;
- Be able to work systematically, co-operatively and with perseverance;
- Be able to think logically and independently;
- Experience a sense of achievement regardless of age or ability;
- Understand the appropriate underlying skills, concepts and knowledge of number, measurement, shape, space and handling data;
- Be able to apply previously acquired concepts, skills, knowledge and understanding to new situations and problems; both in and out of school;
- Be able to communicate with peers and adults, ideas, experiences, questions, clearly and fluently, using the appropriate mathematical language;
- Be aware of the uses of mathematics beyond the classroom;
- Encourage the use of mental calculations and efficient strategies to work out the answers.

### **Foundation Stage**

In Foundation Stage we provide children with opportunities to develop and improve their skills in counting, understanding and using numbers and calculating simple addition and subtraction problems. Children are also given opportunities to explore and describe shape, space and measures. Learning takes place through a variety of well-planned experiences and children are encouraged to use and apply mathematical knowledge and vocabulary through practical and challenging activities. A mixture of whole class, group and independent learning opportunities are provided each day and the rich learning environment supports development in children's mathematical understanding.

Maths is taught in line with the EYFS framework and early learning goals. Teachers also use the non-negotiables and school calculation policy to ensure consistency and progress. The Baseline assessment takes place in the Autumn term using Eexba and following this, on-

going teacher assessments are made using the early learning goals and the 2 Simple software.

## **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 involves working with numerals, words and the four operations, and includes practical resources such as base ten, Numicon and real life objects.

Pupils develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching involves 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, we aim for all pupils to recall the number bonds and related addition and subtraction facts to 20 and be precise in using and understanding place value.

Mathematical vocabulary is taught within lessons, and children are encouraged to be precise in the use of vocabulary to explain their mathematical reasoning.

## **Key Stage 2**

### 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 ensures that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. We follow a clear written calculations policy to ensure consistency throughout the school.

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 use mathematical knowledge with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. Children are given opportunities to use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, we aim for pupils to have memorised their multiplication tables up to and including the 12 times table and show precision and fluency in their work.

Mathematical vocabulary is taught within lessons, and children are encouraged to be precise in the use of vocabulary to explain their mathematical reasoning.

## 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 develops the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, 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. 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 ensures 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, we aim for all pupils to be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

### **How this subject is assessed**

Teachers continually assess children's needs and developments and alter their planning and teaching accordingly. Teachers engage children in assessing their own work through the use of success criteria so children know what their next steps in learning are.

Teachers also use ongoing assessments to assess children each half term. We use assessment resources from Focus Education that are directly linked to the National Curriculum for mathematics; the assessment criteria can be found in the parent booklets for mathematics. We also use Rising Stars progress tests each term to identify areas for development for individual pupils. The results of these assessment procedures are used to inform teachers planning and track the progress of pupils. Progress is reported to parents at parents' evenings, through mid-year progress reports, in the end of year report and also through ongoing dialogue between home and school.

### **Priorities for Future Development**

- To further develop approaches to teaching and learning for mastery.
- To continue to work alongside NCETM, the Maths Hubs and other schools to develop teaching and learning.
- To embed the key aims of the new national curriculum (fluency, reasoning and problem solving).
- To ensure at least 85% of children achieve at or above year group expectations in mathematics.

