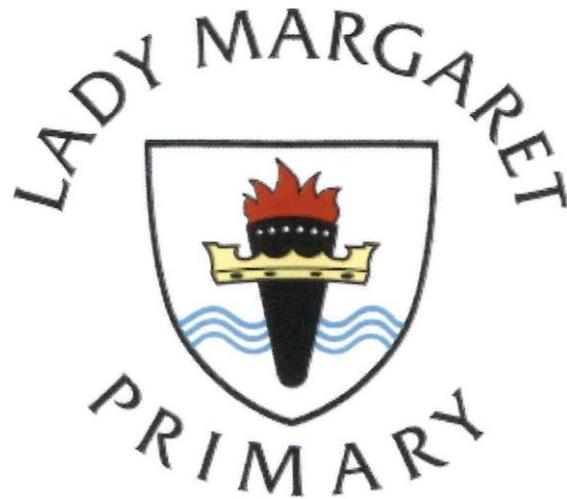# Lady Margaret Primary School

Where children come FIRST

Mathematics Policy

Approved by:	Teaching & Learning Committee	Date: Autumn 2020
Last reviewed on:	Jul-20	
Next review due by:	Jul-21	

Curriculum Information

At Lady Margaret Primary School, we believe that 'children come first'. We value every pupil and the contributions they make to our school. We aim to inspire all children to develop a secure understanding of key mathematical concepts that will equip and prepare them with the key skills they need for their future.

 In mathematics, this means providing children with an enriching curriculum that:

- Develops children's knowledge and understanding of key mathematical concepts.
- Provides every child with challenging opportunities to use their problem solving and reasoning skills to explain their thinking.
- Relates children's mathematical learning and skills to other areas of the curriculum.
- Links children's learning to real-life concepts so that they understand how maths is useful in our everyday lives.

Maths is integral to all aspects of life and with this in mind, we endeavour to ensure that children develop confidence in their mathematical ability by providing them with valuable learning opportunities through carefully planned lessons and out-of-school experiences.

How is Maths Planned?

At LMPS, we teach maths using a scheme called Power Maths. This is the only mastery programme perfectly aligned to the White Rose Maths progressions and schemes of learning, it is written specifically for UK classrooms by leading mastery experts, and is recommended by the DfE.

How is maths taught in school?

Power Maths is taught in Reception – Year 6 for one hour each day. Maths topics are taught in units/weekly blocks and follow a specific lesson sequence (see the next page for a detailed overview).

Each Power Maths lesson starts with a whole-class 'Power Up!' activity, designed to support fluency in all key number facts.

POWER UP!

Hands-on problems spark curiosity and provide opportunities for deeper questioning. Children share, reason and learn from misconceptions through whole-class discussion.

DISCOVER & SHARE

At this point, scaffolding is carefully reduced to prepare children for independent practice. Children consider solutions as a class, with partners and independently.

THINK TOGETHER

Designed to be completed independently, this practice uses conceptual and procedural variation to build fluency and develop deeper understanding of underlying mathematical concepts. A challenge question and links to other areas of maths encourages children to take their understanding to a greater level of depth.

PRACTICE

This is an opportunity for children to review, reason, and reflect on learning and to help you to gauge depth of understanding.

REFLECT

## How is maths taught in during the COVID- 19 pandemic?

Maths is taught on an online platform (J2E). Teachers plan 3 activities using Power Maths and White Rose Mastery materials, all linked to the National Curriculum. Tasks set are revision based and is differentiated for children with SEN and EHCP plans in accordance with their learning needs. All work is marked by on J2E and feedback and support is provided to pupils after they complete each lesson. Videos are attached to each lesson to further clarify expectations and model methods for solving. Children who do not have access to the online platform are provided with a paper copy of the same tasks available on J2E. In addition to work set on J2E, each week children are set a Maths Challenge that encourages children to get creative and think logically.

Current and past Power Maths practice books have been sent home, so children can also work through additional pages and revise previous topics.

Topics that have not yet been taught due to school closures will be taught in the following year with a revised curriculum for maths to ensure that the curriculum takes into account any gaps in learning. This means that more time will be dedicated to teaching topics that were not covered and some topics may be shortened to allow for this.

What is taught in each term and year group?

An overview of the topics and objectives that will be covered in each term is given to parents at the beginning of the year (see below for an example). This ensures that parents know which topics are going to be covered each term, as well as the expectations for pupils at the end of each term and year. Further information can also be found on the school website.
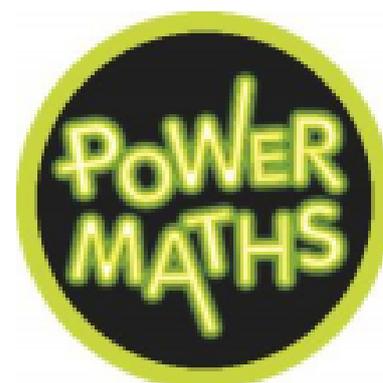
Meaningful Learning opportunities and strong Motivation leads to rapid Progress and high levels of Success.

LMPS Maths Termly Overview for Parents		
YEAR 3		
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.		
Autumn Term	**Spring Term**	**Summer Term**
Times table focus this term: Recall multiples of 3 up to 12x3 in any order, including missing numbers and related division facts with growing fluency. Count in multiples of 4 to 12x4 in order from 0 with growing fluency. Introduce (relating to x4) and begin to count in multiples of 8 from 0 to 12x8.	Times table focus this term: Recall multiples of 3 up to 12x3 in any order, including missing numbers and related division facts fluently. Count in multiples of 4 to 12x4 in order from 0 with fluently. Count in multiples of 8 to 12x8 in order from 0 with growing fluency. Recall multiples of 4 up to 12x4 in any order, including missing numbers and related division facts with growing fluency. Count in multiples of 8 to 12x8 in order from 0 fluently.	Times table focus this term: Recall multiples of 4 up to 12x4 in any order, including missing numbers and related division facts fluently. Recall multiples of 8 up to 12x8 in any order, including missing numbers and related division facts with fluency.
Unit 1. Place value within 1,000 (11 Lessons) **Number** - number and place value - count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number - recognise the place value of each digit in a three-digit number (hundreds, tens, ones) - compare and order numbers up to 1000	Unit 5. Multiplication and division (2) (14 Lessons) **Number** - multiplication and division - write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods	Unit 10. Fractions (2) (9 Lessons) **Number** – fractions - recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators - recognise and show, using diagrams, equivalent fractions with small denominators

How is maths taught at LMPS in Nursery?

The Statutory Framework for the Early Years Foundation Stage states that children should be taught to:

- Count reliably with numbers from 1 to 20
- Place them in order and say which number is one more or one less than a given number.
- Using quantities and objects, add and subtract two single-digit numbers and count on or back to find the answer.
- Solve problems, including doubling, halving and sharing.
- Use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems.
- Recognise, create and describe patterns.
- Explore characteristics of everyday objects and shapes and use mathematical language to describe them.

Teachers and Learning Support Assistants support children in developing their understanding of mathematics in a broad range of contexts in which they can explore, enjoy, learn, practise and talk about their developing understanding. This area of development includes seeking patterns, making connections, recognising relationships, working with numbers, shapes and measures, and counting, sorting and matching. Children use their knowledge and skills in these areas to solve problems, generate new questions and make connections across other areas of learning and development.

Children in the EYFS learn by playing and exploring, being active, and through creative and critical thinking which takes place both indoors and outside. Mathematical understanding is also developed through stories, songs, games, routine, questioning, imaginative play, child initiated learning and structured teaching using Numberblocks: *a* BBC television series aimed at introducing children to early number. Snappy animation and loveable characters combine with engaging storylines to gently introduce concepts of number to support early mathematical understanding - https://www.ncetm.org.uk/resources/52060

How are children assessed in maths?

Assessment has two main purposes: **assessment of learning** (also known as summative assessment) and **assessment for learning** (also known as formative assessment).

Assessment of learning (AoL) – summative assessment

Assessment of learning is any assessment that summarises where learners are at a given point in time. At LMPS, pupil sit assessments at the end of each half-term. This is completed in test conditions and provides the teacher with a raw score. The result from the assessment is used to measure the attainment and progress of the class. Pupils who are identified as requiring additional support may be offered an additional booster class, which can take place at lunchtime or afterschool. Alternatively, they may be supported further through

quality-first teaching and/or an intervention that takes places during the school day. Further guidance can be provided by the class teacher.

Assessment for learning (AfL) – formative assessment

"Assessment for learning is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to get to and how best to get there"

At LMPS, pupils are assessed daily on their understanding of the lesson question, which is linked directly to the National Curriculum. Please refer to the Feedback and Marking policy for more information regarding formative assessment in maths.

Inclusion, Rights Respecting and Equal Opportunities

At LMPS, all pupils have access to the mathematics curriculum regardless of their gender, race or any disability. As we are a Rights Respecting School, we believe that every child has the right to an education (Article 28). We ensure that appropriate provisions are made to ensure that children with disabilities and/or special needs can participate and experience success in maths. Teachers have support of a Learning Support Assistant at times to work with groups of pupils or an individual pupil to provide extra support.

By the end of Primary School, in Year 6, your child will have a good understanding of all the times table facts up to 12 x 12 and the following NC objectives:

Number and Place Value

♣ read, write, order and compare numbers up to 10 000 000 and determine the value of each digit

♣ round any whole number to a required degree of accuracy

 ♣ use negative numbers in context, and calculate intervals across zero

♣ solve number and practical problems that involve all of the above.

Addition, Subtraction, Multiplication and Division

♣ multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication

♣ divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

♣ divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context

♣ perform mental calculations, including with mixed operations and large numbers

♣ identify common factors, common multiples and prime numbers

♣ use their knowledge of the order of operations to carry out calculations involving the four operations

♣ solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

♣ solve problems involving addition, subtraction, multiplication and division

♣ use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Fractions (including decimals and percentages)

♣ use common factors to simplify fractions; use common multiples to express fractions in the same denomination

♣ compare and order fractions, including fractions > 1

♣ add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions

♣ multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, 1/4 × 1/2 = 1/8].

♣ divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6]

♣ associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8]

♣ identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places

♣ multiply one-digit numbers with up to two decimal places by whole numbers

♣ use written division methods in cases where the answer has up to two decimal places

♣ solve problems which require answers to be rounded to specified degrees of accuracy

♣ recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

Ratio and Proportion

♣ solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts

♣ solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison

♣ solve problems involving similar shapes where the scale factor is known or can be found

♣ solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Algebra

♣ use simple formulae

♣ generate and describe linear number sequences

♣ express missing number problems algebraically

♣ find pairs of numbers that satisfy an equation with two unknowns

♣ enumerate possibilities of combinations of two variables.

Measurement

♣ solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

♣ use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places

♣ convert between miles and kilometres

♣ recognise that shapes with the same areas can have different perimeters and vice versa

♣ recognise when it is possible to use formulae for area and volume of shapes

♣ calculate the area of parallelograms and triangles

♣ calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [for example, mm^3 and km^3].

Geometry – Properties of Shapes

♣ draw 2-D shapes using given dimensions and angles

♣ recognise, describe and build simple 3-D shapes, including making nets

♣ compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons

♣ illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

♣ recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Geometry – Position and Direction

♣ describe positions on the full coordinate grid (all four quadrants)

♣ draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

Statistics

♣ interpret and construct pie charts and line graphs and use these to solve problems

♣ calculate and interpret the mean as an average.