



Policy Title: Mathematics

Policy Folder: Subjects

Last Review: March 2022

Next Review: March 2025

Led By: Katherine Roberts/Marie Prowse

Responsible Committee: SD Committee

Introduction

Our CARE values (confidence, achievement, respect, enthusiasm) underpin everything that we do as a school. We all aim for our school to be a happy place where good behaviour is expected and all children enjoy their educational journey.

At Lantern Lane, we aim to be a Dyslexia Friendly School. It is our intention that pupils will be able to achieve their cognitive potential in maths, regardless of any difficulties spelling, reading, writing or any other traits commonly associated with Dyslexia. In order to achieve this potential, teaching will apply principles of quality first teaching such as reducing cognitive load and providing scaffolding. When working with questions and problems where there is text, appropriate support will be given to the child: a reader will be made available whether this is in a lesson or to assist the child in an assessment.

This policy has been written to formally record the teaching, monitoring and assessment of mathematics at Lantern Lane Primary & Nursery School.

The policy aims to:

- Identify what is intended to be taught and how it should be implemented.
- Identify the overall structure and framework of the maths curriculum in the school.
- Identify the ways in which we will ensure that children make progress in this subject throughout their time at the school.
- Describe how attainment and progress are assessed and analysed within the school.
- Identify school procedures to monitor and evaluate the maths curriculum.

This policy will be reviewed every three years by the subject co-ordinator, as part of the school's policy review cycle. The policy will, however, be reviewed earlier if there are changes to the National Curriculum, or other significant changes which impact on the teaching and assessment of this subject.

Aims

The implementation of this policy is the responsibility of all teaching staff and should be read in conjunction with the school's CPA Calculation Policy.

At Lantern Lane Primary School, we follow the Early Years Foundation Stage Framework (2021) and the National Curriculum (2014). We fully support the aim of the National Curriculum (2014) in mathematics, which looks to provide every child with:

"...a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject."

Through the learning and opportunities, we plan at Lantern Lane and through rigorous formative assessment, we aim to support each child in the development of each of the following key aims of the mathematics curriculum:

- Fluency: 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
- Reasoning: reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- Problem Solving: 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 our engagement with the National Curriculum and our commitment to providing outstanding provision for every child in the subject of maths, Lantern Lane aims to:

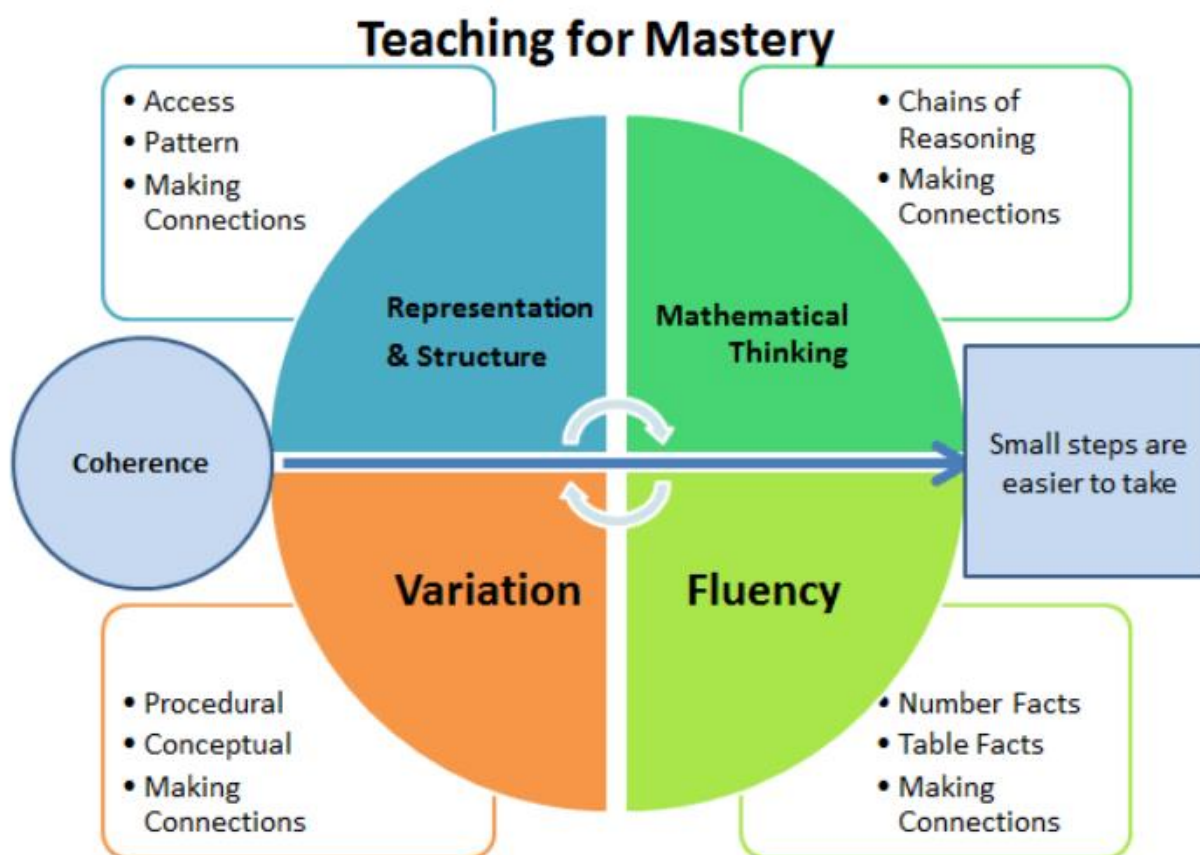
- ✚ promote enjoyment and a curious mind through practical activity, exploration, investigation and discussion;
- ✚ develop an appreciation of the creativity and power of mathematics;
- ✚ teach children to understand the importance of mathematics in everyday life both now and in the future;
- ✚ develop children's ability to move between concrete, pictorial and abstract representations fluently and confidently.
- ✚ enable children to select and use a range strategies and tools efficiently through independent thought;
- ✚ equip children with the mathematical language needed to understand problems and explain their methods and reasoning;
- ✚ promote and provide opportunities for children to develop the core learning skills of confidence, determination, evaluation, continued hard work and enthusiasm.

Teaching for Mastery

In September 2019, Lantern Lane Primary School enrolled its maths leads on the NCETM Maths Hub Teaching for Mastery training and began transitioning towards a mastery approach to the teaching and learning of mathematics. We understood that this would be a gradual process and take several years to embed. The rationale behind changing our approach to teaching mathematics lay within the NCETM Maths Hub Programme as well as the 2014 National Curriculum, which states:

- The expectation is that most pupils will move through the programmes of study at broadly the same pace.
- Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content.
- Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

5 Big Ideas of Mastery



Our teaching for mastery is underpinned by the NCETM's 5 Big Ideas.

- Opportunities for Mathematical Thinking allow children to make chains of reasoning connected with the other areas of their mathematics.

- A focus on Representation and Structure ensures concepts are explored using concrete, pictorial and abstract representations. The children actively look for patterns and generalise whilst problem solving.
- Coherence is achieved through the planning of small, connected steps to link every question and lesson within a topic.
- Teachers use both procedural and conceptual variation within their lessons and there remains an emphasis on Fluency with a relentless focus on number and times table facts.

Teaching for Mastery Principles

- It is achievable for all - we have high expectations and encourage a positive 'can do' mindset towards mathematics in all pupils, creating learning experiences which develop children's resilience in the face of a challenge and carefully scaffolding learning so everyone can make progress.
- Deep and sustainable learning - lessons are designed with careful small steps, questions and tasks in place to ensure the learning is not superficial.
- The ability to build on something that has already been sufficiently mastered - pupils' learning of concepts is seen a continuum across the school.
- The ability to reason about a concept and make connections - pupils are encouraged to make connections and spot patterns between different concepts (E.g. the link between ratio, division and fractions) and use precise mathematical language, which frees up working memory and deepens conceptual understanding.
- Conceptual and procedural fluency - teachers move mathematics from one context to another (using objects, pictorial representations, equations and word problems). There are high expectations for pupils to learn times tables, key number facts (so they are automatic) and have a true sense of number. Pupils are also encouraged to think whether their method for tackling a given calculation or problem is efficient.
- Problem solving is central - this develops pupils' understanding of why something works so that they truly have an appreciation of what they are doing rather than just learning to repeat routines without grasping what is happening.
- Support within whole class teaching, rather than separate tasks. Children are supported to enable the whole class to move on together. Teachers do this in a variety of ways such as: adult support, extended use of concrete/pictorial resources, additional scaffolding and models and the use of same day intervention.
- Challenge through greater depth - rather than accelerated content, (moving onto next year's concepts) teachers set tasks to deepen knowledge and improve reasoning skills within the objectives of their year group. They do this in a range of ways such as: pattern spotting.

generalising, proving, using multiple methods, looking for efficient strategies, encouraging flexible thinking and application of skills across different contexts.

- Children in EYFS, have daily whole class maths inputs. These are developed further through a combination of carefully planned continuous provision and focus group activities.

Curriculum design and planning

- Teachers use White Rose Maths Schemes of Learning as a starting point in order to develop a coherent and comprehensive conceptual pathway through the mathematics. The focus is on the whole class progressing together. Collaborative planning with year group colleagues is encouraged to ensure consistency.

- Learning is broken down into small, connected steps, building from what pupils already know. The lesson journey should be detailed and evident on flipcharts (PowerPoint) as there is no requirement for teachers to produce detailed paper plans.

- Difficult points and potential misconceptions are identified in advance and strategies to address them planned.

- Key questions are planned to challenge thinking and develop learning for all pupils.

- Contexts and representations are carefully chosen to develop reasoning skills and to help pupils link concrete ideas to abstract mathematical concepts.

- The use of high quality materials and tasks to support learning and provide access to the mathematics, is integrated into lessons. These may include White Rose Maths Schemes of Learning and Assessment Materials, Deepening Understanding activities, NCETM Mastery Assessment materials, NRICH, further pictorial images and concrete resources.

- Opportunities for extra fluency practice (instant recall of key facts, such as number bonds, times tables, division facts, addition and subtraction facts) is provided outside mathematics lessons. Children in Y2 (Spring onwards) - Y4 use TT Rockstars three times per week in class to support developing fluent recall of times tables facts and this continues in Y5 and Y6 based on need. Children in F2, Y1 and Y2 take part in the NCETM's Mastering Number programme, which supports the development of good number sense, fluency in calculation and flexibility with number.

Lesson Structure

- Lessons follow an agreed LLPS Lesson Design (Let's do this, Let's revisit our learning, Let's learn/talk, Let's develop our learning, Let's showcase our learning, Let's reflect/stretch our learning).

- New key learning points are identified explicitly.
- There is regular interchange between concrete/contextual ideas, pictorial representations and their abstract/symbolic representation.
- Mathematical generalisations are emphasised as they emerge from underlying mathematics, which is thoroughly explored within contexts that make sense to pupils.
- Making comparisons is an important feature of developing deep knowledge. The questions "What's the same, what's different?" are often used to draw attention to essential features of concepts.
- Repetition of key ideas (for example, in the form of whole class recitation, repeating to talk partners etc) is used frequently. This helps to verbalise and embed mathematical ideas and provides pupils with a shared language to think about and communicate mathematics.
- Teacher-led discussion is interspersed with short tasks involving pupil to pupil discussion and completion of short activities.
- Formative assessment is carried out throughout the lesson; the teacher regularly checks pupils' knowledge and understanding and adjusts the lesson accordingly.
- Gaps in pupils' knowledge and understanding are identified early by in-class questioning. They are addressed rapidly through individual or small group intervention, either on the same day or the next day, which may be separate from the main mathematics lesson, to ensure all pupils are ready for the next lesson.
- Teachers discuss their mathematics teaching regularly with colleagues, sharing teaching ideas and classroom experiences in detail and working together to improve their practice.









Feedback

Feedback in maths should be completed in line with the Lantern Lane Primary School Feedback Policy.

The following feedback codes will be used across KS1 and KS2 to ensure consistency and a clear message for children.

The use of codes is intended to make feedback accessible to all children including our dyslexic children and those with SEND (with this being regularly monitored by the SENCo and/or Dyslexia Lead).

By showing how much support that the child had in completing a piece of work (either through the use of equipment or working with a peer/ adult), this will support teaching staff when reviewing learning, assessing current understanding and planning for future progression.

Code	Explanation		Code	Explanation
	You have used equipment to support your learning.		GW (with initials)	A teacher or teaching assistant guided your work here.
 Beside LO.	You are developing learning in relation to the learning objective.		PW/PW	You worked together with a partner on your work here.
 Beside LO.	You are securing learning in relation to the learning objective.		CR	You have a correction to complete here.
 Beside LO.	You are mastering learning in relation to the learning objective.		CH	You have a challenge to complete here.
	Answer to individual question is incorrect. Complete a correction in purple pen.			Self-assessed. Answer to individual question is correct.
	Answer to individual question is correct.			Self-assessed. Answer to individual question is incorrect. Complete a correction in purple pen.
VF	Verbal feedback. Your teacher has explained further to support your progress.		WCF	You will receive your feedback as a whole class in the next lesson.

Notes:

- ❖ The assumption is that pupils have worked independently unless guided work/ paired work is marked beside a whole lesson or individual question.
- ❖ If pupils have completed additional work to consolidate the objective outside of the lesson time, this will be shown in their books with a **same day intervention** stamp and the initials of the person that has delivered/ supported this. Where appropriate, the subsequent intervention work will be recorded in maths books to continue the learning journey (if being recorded). However, it is anticipated that much of the intervention work will take place practically and on whiteboards.
- ❖ Time will always be allocated for the child to review the feedback given, making any corrections and responding to any challenges that have been set. This opportunity will be given as soon as possible to ensure that this process has the biggest impact on the progress of the child. All responses to feedback will be done in purple pen so the teacher can identify these easily for checking.
- ❖ If a child has been allocated a specific target in maths that extends beyond one lesson (e.g. show all your working when problem-solving), then the teacher may also choose to comment on progress towards this in writing as well as verbally.
- ❖ Whole class feedback may be appropriate in maths where a misconception or method error is common to a significant majority of the class.

Presentation

KS1:

- ✓ KS1 pupils will present all written maths work neatly.
- ✓ When working in their maths books, KS1 children will leave a 2 square margin and write 1-digit in each box.
- ✓ All worksheets will have a learning objective and children are to neatly write their name and date.
- ✓ KS1 pupils will stick the slips showing the date and learning objectives into their maths books neatly at the top of a new page.
- ✓ All work completed in maths is done in pencil. Rubbers are used with discretion when completing number work. Pupils should cross out work with straight lines, allowing the teacher to analyse the errors when reviewing books. Rubbers may be appropriate when working on shape/ space work.
- ✓ Where the children self- or peer assess work, the following should be modelled and expected:
 - *Ticks in purple pen fit within a 1cm square
 - *Dots in purple pen are of a sensible size.
 - *Corrections are completed neatly in purple pen with the same presentation expectations as when working in pencil.

Pupils in Year 2 will begin to follow the KS2 expectations (see below) in the summer term to help them prepare for transition.

KS2:

- ✓ KS2 pupils draw a margin on the left side of the page with a ruler. The margin is 2 squares wide.
- ✓ KS2 pupils place the date in numerals in the right-hand corner of the page or below the last ruled off piece of work. E.g., 2/9/19.
- ✓ In UKS2, pupils record a title, which identifies the specific learning objective. e.g. **I can** use partitioning when adding. In LKS2, the teacher uses their judgement to record the title at the top of a question slip for the children or to ask them to write this independently [this may also be appropriate for small numbers of children in UKS2 also].
- ✓ Both the title and date are underlined with a ruler and pencil.
- ✓ All work completed in maths is done in pencil. Rubbers are used with discretion when completing number work. Pupils should cross out work with straight lines, allowing the teacher to analyse the errors when reviewing books. Rubbers may be appropriate when working on shape/ space work.
- ✓ Numerals are set out in maths with one digit per box.
- ✓ All straight lines are drawn with a ruler. E.g. Lines to mark answer row in a column addition.
- ✓ When self- assessing work, KS2 pupils use purple pen.
 - *Ticks in purple pen fit within a 1cm square.
 - *Dots in purple pen are of a sensible size.

*Corrections are completed neatly in purple pen with the same presentation expectations as when working in pencil.

Assessment

This section should be read and considered in conjunction with the Assessment Policy.

In addition to the formative assessment undertaken in lessons, teachers will use termly summative assessments supplied by the NFER to reinforce their judgements and provide further opportunities to identify gaps in pupil learning and tailor future lessons.

Termly, children will be assessed to ascertain whether they are:

- working below;
- working towards;
- working at;
- exceeding age related expectations.

Teacher judgements are then entered onto OTrack each term and teachers talk through the progress of their pupils at termly data support meetings: this ensures targeted support can be given to those who need it. To support individual class teachers in their judgements, regular moderation activities will be arranged within teams, year groups, key stages and even within the family of schools. The subject coordinator and other members of SMT will support these moderation activities.

At the end of Autumn and Spring terms, all class teachers will provide the management team with a prediction for each child (for the end of the year) based on the 4 levels of attainment outlined above. At the end of the Summer term, a definitive decision - based on the information collected throughout the year- will be made for each child and reported to parents. This information will continue to be stored on OTrack.

For children making small steps and/or working significantly below age-related expectations, PIVATs and/or BSquared will be used to track their progress with this data being collated and monitored by the SENCo.

Inclusion and Special Needs

Lantern Lane aims to meet the needs of all, taking into account gender, ethnicity, culture, religion, language, disability, age and social circumstances. The provision for children with special needs is detailed in the SEND Policy. SEND pupils may be supported by additional adults, different resources or differentiated activities. We have high expectations of all children and strongly believe that all children are able to achieve in mathematics. Some may take longer to grasp concepts and may need careful scaffolding or extra time/support.

Early Years Foundation Stage (EYFS)

Children in EYFS explore mathematical concepts through active exploration and their everyday play-based learning. Children are taught key concepts and develop number sense using a hands-on practical approach. EYFS practitioners provide opportunities for children to manipulate a variety of objects which supports their understanding of quantity and number. Pupils explore the 'story' of numbers to twenty and the development of models and images for numbers as a solid foundation for further progress. The CPA approach is used when teaching children key

mathematical skills. Practitioners allow children time for exploration and the use of concrete objects helps to support children's mathematical understanding. Mathematics in the early years supports children to achieve the early learning goal (by the end of F2) as well as providing a solid foundation for them to begin the National Curriculum in year 1.

Role of the Subject Leader

- Ensures teachers understand the requirements of the National Curriculum and supports them to plan lessons. Leads by example by setting high standards in their own teaching.
- Leads continuing professional development; facilitates joint professional development; provides support and feedback for teachers to improve pupil learning.
- Leads the whole-school monitoring and evaluation of teaching and learning in mathematics by observing teaching and learning in mathematics regularly; analysing assessment data in order to plan whole school improvement in mathematics; conducting work scrutiny to inform evaluation of progress; conducting pupil interviews.
- Takes responsibility for managing own professional development by participating in external training, independent private study, engaging in educational research and scholarly reading and keeping up-to-date with Teaching for Mastery developments.
- Keeps parents informed about mathematics issues.
- Ensures that the school's senior leaders and governors are kept informed about the quality of teaching and learning in mathematics.
- Works in close partnership with the school's senior leaders to ensure the learning needs of all pupils in mathematics are met effectively.
- Keeps the school's policy for mathematics under regular review.