Leasowes Primary School
Maths Policy

Date Approved: September 2023	**Print Name:**
Date to be Reviewed: September 2024	**Signed:**

Intent

When teaching mathematics at Leasowes, we intend to provide a curriculum which caters for the needs of all children, providing them with the necessary and relevant knowledge and skills for them to become successful in the future. Understanding of number is a fundamental life skill. The culture and ethos at Leasowes is about breaking the perception of 'I can't do maths', converting reluctant mathematicians into resilient and confident learners. We incorporate sustained levels of challenge through varied and high-quality activities with a focus on fluency, reasoning and problem solving to meet the goal of 'True Fluency'. Children are required to explore Maths in depth, using mathematical vocabulary to reason and explain their workings, understanding that there are many ways to solve a problem and that some are more efficient than others. A wide range of mathematical resources are used and children are taught to show their workings in a concrete, pictorial and abstract form wherever suitable. They are taught to explain their choice of methods and develop their mathematical reasoning skills. We instil courage, and an acceptance that challenge is often a necessary step in learning. Our rigorous curriculum allows children to make better sense of the world around them, relating the connections between mathematics and everyday life.

Aims

Our aims in teaching mathematics are:

- Nurture interest and curiosity within mathematics to be able to use and apply the skills in other curricular areas.
- Further develop positive attitudes to mathematics, recognising that mathematics can be both useful and enjoyable.
- Through a concrete, pictorial and abstract approach, give children the tools to visualise connections and patterns with mathematical concepts, therefore enabling true fluency.
- Equip children with the Basic Skills they need to become numerate.
- Become fluent in the fundamentals of mathematics, through varied and frequent practice with increasingly complex problems over time, so that children 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.
- Instil an understanding that there is more than one way to solve a problem but some ways are more efficient than others.
- Further develop a mastery of mathematical concepts to show a deeper understanding of what they have learnt.
- Refine the children's ability to apply mathematical skills with confidence and understanding when solving problems.
- Enable children to express themselves and their ideas using the language of mathematics with assurance.
- Remember more, therefore quickly and accurately retrieve mathematical skills to rapidly improve progress

Roles and Responsibilities

The **subject leader** is responsible for:

- Preparing policy documents, curriculum plans and schemes of work for the subject.
- Reviewing changes to the national curriculum and advising on their implementation.
- Monitoring the learning and teaching of maths, providing support for staff where necessary.
- Ensuring the continuity and progression from year group to year group.
- Encouraging staff to provide effective learning opportunities for pupils.
- Helping to develop colleagues' expertise in the subject.
- Organising the deployment of resources and carrying out an annual audit of all maths-related resources.
- Liaising with teachers across all phases.
- Communicating developments in the subject to all teaching staff.
- Leading staff meetings and providing staff members with the appropriate training.
- Organising, providing and monitoring CPD opportunities in the subject.
- Ensuring common standards are met for recording and assessing pupil performance.
- Advising on the contribution of maths to other curriculum areas, including cross-curricular and extra-curricular activities.
- Collating assessment data and setting new priorities for the development of maths in subsequent years.

The **classroom teacher** is responsible for:

- Acting in accordance with this policy.
- Ensuring progression of pupils' mathematical skills, with due regard to the national curriculum.
- Planning lessons effectively, ensuring a range of teaching methods are used to cover the content of the national curriculum.
- Liaising with the subject leader about key topics, resources and support for individual pupils.
- Monitoring the progress of pupils in their class and reporting this on an annual basis to parents.
- Reporting any concerns regarding the teaching of the subject to the subject leader or a member of the SLT.
- Undertaking any training that is necessary in order to effectively teach the subject.

The **SENCO** is responsible for:

- Liaising with the subject leader in order to implement and develop maths throughout the school.
- Organising and providing training for staff regarding the maths curriculum for pupils with SEND.
- Advising staff how best to support pupils' needs.
- Advising staff on the inclusion of mathematical objectives in pupils' individual education plans.
- Advising staff on the use of teaching assistants in order to meet pupils' needs.

Implementation

Mathematics is a core subject of the National Curriculum. All children take part in daily coherent Maths lessons, which cover the programmes of study for Maths in a rigorous and progressive way, as set out in the National Curriculum and EYFS statutory framework (RRS 28/29 – Right to and goals of education).

The Maths curriculum at Leasowes is ambitious due to the many teaching strategies used to ensure that the children are deepening their understanding of all concepts all of the time. At the planning stage, teachers understand the need to make the learning memorable, providing effective scaffolding where necessary, as well as creating rigorous challenge for those who are ready for this, so that children continually grow in confidence.

Examples of our ambitious provision include:

- Use of White Rose Resources
- A Concrete, Pictorial and Abstract approach
- Creating regular reasoning opportunities
- Adaptive teaching that is fluid
- A relentless approach to tackling misconceptions
- Regular retrieval tasks away from the learning to encourage memory
- Use of Bar modelling

- Effective Learning Conversations
- Use of 'Mentor/ Mentee' in UKS2
- Pre-teaching through morning club and registration times
- 'Extra' Maths, such as the use of thoughtful, inviting and effective times tables games in Y4 during registration
- Consolidation activities planned for homework
- CPD through Staff Development Meetings

Children are taught 1-1, in groups and as classes; similarly, children will be expected to work alone, in pairs, in small groups and sometimes as a whole class. The key skills are approached in varied and systematic ways in order to ensure that children have a balanced wide range of strategies at their disposal. Various approaches are adapted and integrated to meet the needs of the individual. A flexible yet rigorous approach is taken in the use of different methodologies and materials. Many adaptive teaching strategies are used across the key stages, enabling an inclusive maths curriculum that is challenging to all.

Early Years Foundation Stage

Maths is planned in conjunction with the EYFS requirements for mathematical development, introducing the children to the fundamentals of number and numerical patterns that they will need to know to ensure that they are prepared for the learning in KS1; developing a positive attitude and a true interest in the subject. At the Early Years stage, children experience mathematics on a daily basis through a combination of practical and recorded activities, inside and outside of the classroom, some adult led and others child initiated through well planned Continuous Provision activities. Children are introduced to the fundamental number basics needed such as counting, subitising, calculating simple addition and subtraction problems, as well as building their confidence in the accurate use of vocabulary. In addition, children in EYFS will develop their spatial reasoning skills in relation to shape, space and measure. This early introduction to mathematics is delivered making thoughtful links to the 'theme' of that week. Maths in Early Years is planned rigorously through use of White Rose resources alongside the many creative ideas that have been refined over time, ensuring a balanced, ambitious and inviting maths provision. Retrieval opportunities are planned for children to further embed prior learning, equipping them with the knowledge and skills to solve mathematical problems.

Key Stage One

The principal focus of mathematics teaching in key stage 1 is to ensure that children develop confidence and mental fluency with whole numbers, counting and place value, therefore preparing the children for the next phase in their learning. This should involve working with numerals, words and the four operations, including with practical resources (for example, concrete objects and measuring tools).

At this stage, children 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, most children will meet the expected standard set out in the Teacher Assessment Framework for the end of KS1 expectations, with some children working towards or at greater depth.

Children 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 Two

The principal focus of mathematics teaching in lower key stage 2 is to ensure that children become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that children develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, children should develop their ability to solve a range of problems, including simple fractions and decimal place value. Teaching should also ensure that children 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, children should have memorised their multiplication tables up to and including the 12x multiplication table and show precision and fluency in their work. This will be assessed with through the Multiplication Tables Check (MTC). Knowledge of the times tables are essential in preparation to applying these to more complex concepts in UKS2.

Children should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Upper Key Stage Two

The principal focus of mathematics teaching in upper key stage 2 is to ensure that children extend their understanding of the number system and place value to include larger integers. This should develop the connections that children make between multiplication and division with fractions, decimals, percentages and ratio, and apply this knowledge to solving problems.

At this stage, children 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, children 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 children classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, children should be fluent in written methods for all four operations, including long multiplication and division, which are consistently taught in line with the Calculations Progression Policy. Children should also be fluent in working with fractions, decimals and percentages. This will enable the children to access KS3 Maths with confidence. Children should read, spell and pronounce mathematical vocabulary correctly. This will be assessed through end of KS2 SATs.

Concrete Pictorial Abstract (CPA)

Throughout our ambitious Maths curriculum, we embed a Concrete, Pictorial and Abstract (CPA) approach, in particular to the teaching of number. We understand, that the children who thrive in maths, thrive because they are able to see the pattern and interconnections within the given concept. The CPA approach gives all children the opportunity to do this, ensuring that our teaching of Maths is equitable. We use effective resources and scaffolding; creating many concrete and pictorial opportunities before introducing the abstract. This enables the children to build a clearer understanding, connecting their knowledge and skills and therefore visualising the problem at hand when working in the abstract form.

Reasoning

Developing reasoning skills with young learners needs to be completed carefully and systematically. We aim to develop their reasoning skills so they learn to become systematic thinkers and also acquire the ability to articulate such thinking in a clear, succinct and logical manner. This approach enables learners to develop their enquiry skills in order to frame maths in a relevant way of our current world. Through their reasoning, the children's opinions on how to approach a question are seen as a safe and calm discussion (RRS 12 – Respect the views of the child). Reasoning activities are regularly planned for, with activities visible in books.

Retrieval

Retrieval plays a key part in making the Leasowes curriculum ambitious. In Maths, children develop their retrieval, and therefore memory skills through a variety of different methods including pre-teaching concepts, consolidating learning and helping improve rapid learning. Retrieval activities are clearly planned in and activities visible in books with an orange border to ensure its differentiation from other activities. The tasks are implemented away from the learning, giving the children the opportunity to show their teacher what they truly remember, therefore creating a further effective assessment tool.

Bar Modelling

Bar modelling is an essential 'maths mastery' strategy that we have adopted throughout the school. Bar modelling allows children to draw and visualise mathematical concepts to solve problems. The purpose of bar modelling is to support the children in identifying the mathematical relationships within the questions and support identification of operation in a pictorial way. This builds upon and deepens understanding of calculation, therefore enabling children to build coherence and 'True Fluency'.

Calculations Policy

How calculations are taught, including a consistent, progressive way of teaching formal written methods is clearly set out in the Calculations Policy. Understanding of calculations is built through a CPA approach.

Documents and Resources to Aid Planning and Teaching

Teachers have access to the statutory documentation and agreed school strategies, templates and formats to support with the planning, preparation and assessment of Maths. All staff are made aware of how and where to access these. Documents and resources include:

- National Curriculum programme of study relevant to year group
- Collins Busy Ants scheme: online access and textbooks
- White Rose Subscription
- Maths.co.uk
- TT Rockstars subscription for all children
- Y2 (optional) and Y6 teacher assessment framework
- Planning formats
- Maths Policy and Maths Calculation Policy
- Access to all Maths CPD
- Curriculum overviews to ensure coverage of topics.
- Effective resources such as Numicon, number beads, Dienes apparatus, counting sticks, times tables games

NB All teaching staff have access to the Busy Ants scheme, including text books and online resources. In each year group, teachers use this tool as part of the planning to ensure coverage, coherence and progression through the year. However, all staff understand that Leasowes is not a school that is 'scheme led' but a school that is 'scheme assisted'. Busy Ants is simply one of many effective resources accessed by teachers and children to ensure an ambitious curriculum.

Impact

Assessment and Recording

Children's ability in Maths is continually assessed by the teachers, using a plethora of strategies, including formative opportunities such as discussions and marking, through to summative opportunities such as NFER and statutory end of key stage tests. All information gathered is triangulated to form a true reflection of where the child is within their learning journey and what the next steps are.

All information is recorded half termly on Target Tracker. This information is used by teachers, SENDCo and senior leaders to ensure that no child falls behind in their learning and that effective and realistic interventions are implemented where needed, including the updating of PLPs for children on our SEND register. Additionally, data is used by SLT to identify areas of our curriculum that may need further refinements to continually evolve. SLT and teachers have worked hard in ensuring that the data recorded is as accurate as realistically possible. We know that the system works due to the fact that for a number of years, our internal data has matched external end of key stage 2 data very closely.

For further clarification, please refer to the 'layers of assessment' document below (Appendix A).

Reporting to Parents

Parent Consultation evenings are held in the Autumn and Spring terms where children's progress and achievement are discussed. At the end of the academic year parents receive a written report on which there is a summary of their child's achievements and progress, together with a grade for the child's effort and engagement with mathematics. At the end of the Autumn and Spring terms, parents receive a Progress Report from teachers outlining attainment, progress and effort in Maths, as well as targets for the future. Parents also receive an annual report detailing their child's progress and attainment in all core subjects, including next steps where necessary, at the end of the academic year.

Children with SEND

Teachers access regular CPD that enables them to be confident in identifying children who may have special educational needs in relation to maths. Where this is identified, teachers liaise closely with our SENDCo, to clarify what extra provision may be needed. If at this point the child is identified as needing to join the SEND register, PLPs will be carefully put together and implemented with input from teacher, SENDCo, parents and child. Progress will then be monitored and adapted half termly, with the child leaving our register as and when gaps are closed in learning between child and peers.

First and foremost, we believe in 'prevention rather than cure'. Therefore, all children are provided with quality first teaching, carefully planned for through the use effective resources. At the planning stage, misconceptions are pre-empted and are tackled 'head on'.
Where necessary, our SENDCo is very proactive in accessing all external support available.

Homework

We recognise the importance of making links between home and school and encourage parental involvement with the learning of mathematics. We emphasise the importance of securing the basic skills and encourage families to practise mental recall facts. To support our families with this, we purchase subscriptions to maths-based websites like TT Rockstars, maths.co.uk so that they can practise these skills at home.
Homework provides opportunities for children:

- Practise and consolidate their skills and knowledge
- Further develop and extend their techniques and strategies
- Share their mathematical work with their family
- Prepare for their future learning.

See Homework Policy for further details.

Monitoring and Evaluation

The SLT and Maths Lead manage a programme of rigorous monitoring to assess the impact of the intended and implemented Maths curriculum using triangulation of the following methods:

- **Book Scrutiny:** Do books show progression? Is the intended curriculum being implemented? What is the impact? Is there compliance with curriculum coverage? Are concepts varied? Is the weighting of number in relation to the other areas apparent? Do children take pride? Are whole school initiative being implemented consistently?
- **Learning walks and lesson observations:** Are children engaged in learning? Do staff have good subject knowledge? What is the quality of teaching and learning like? Are children given the opportunity to practise retrieval or revisit previous learning? What are child outcomes and progress like? Are Maths displays consistent and do they follow whole school agreement?
- **Staff feedback and questionnaires:** Do staff know the expectations of the subject? What are the non-negotiables? Do staff need further CPD? How can they be supported? How do they feel the subject area/curriculum could be improved? Does everyone understand the Feedback and Marking Policy in relation to Maths?
- **Child voice:** Can children talk confidently about the subject? Do they have positive views? Can they remember what they have learned? Can they make links across subjects (horizontal) and to previous years (vertical)?
- **Data assessment:** What is the picture of the data? Are children on track (attainment/progress)? Are their gaps in curriculum coverage? How will these be addressed? Are there any patterns?
- **Subject action plan review:** What progress and impact has been made as a result of subject improvements? What are the strengths of the subject? What are the future actions?
- **In-school and cross-MAT moderation:** Is assessment rigorous and robust? What conversations are informing assessments at different levels? What challenge is there between colleagues? What teaching and learning points can be shared through this process?
- **Learning Conference:** Phase teams (EYFS, Y1/2, Y3/4 and Y5/6) take part in a day of quality assurance. As part of this, SLT will conduct their own monitoring of the curriculum, teaching, learning and assessment of Maths and other subjects within the phase, triangulate findings and give feedback.
- **Subject Deep Dives:** Individual subject deep dives are carried out to monitor the intent, implementation and impact of a subject. This will focus on the subject leader and cascade down through the teacher, children and impact on outcomes. The findings are shared with the subject lead and actioned accordingly.

Appendix A

The Layers of Assessment

The Philosophy of Assessment

Assessment is a continuous cycle that builds the picture of the Leasowes Learner. To be most effective, there needs to be a collaborative approach between teacher and child. The child must play a true role in their learning journey, unlocking future success.

A Culture and Ethos of Continual Feedback

High quality interactions, questioning, observations, 'In the Moment' feedback, Live Marking, Fluid Grouping, Mentor/Mentee

Assessment that Enables Children to Articulate their Progress

The Leasowes Learner: Retrieval (orange), Reasoning (yellow), Learning Conversations, Learning Lines, Responsive Marking, Presentation Symbols, Pupil 'purple polish' and 'red pen' Marking

Core Assessment

NFER, SATs, Phonics, MTC, RBA, Prog Maps, Pupil Book Study, 2Eskimos, TT Rockstars, Spelling Shed

Non-Core Assessment

(in conjunction with 'Assessment that Enables Children to articulate their Progress')

Knowledge Organisers, Progression Maps, Retrieval Practice (orange), Reasoning Practice (yellow), Learning Conversations, Tasks, Observation, Pupil Book Study, Continuous Provision (EY),

In addition:

(End of assessments tasks checks ***core knowledge***)

Science – End of Unit Assessment Task

History and Geography - End of Unit Assessment Task and Knowledge Organisers.

Art – Final piece & Evaluation

DT – Final Piece and Evaluation

Computing – Formative & summative tasks (Teach Computing)

PE – PEDPASS Core Task

MFL – End of unit reading, speaking or listening assessment

Music – Performance Assessment (live and recorded)

RE – Framework for Assessment (Staffordshire Agreed Syllabus)

PSHE – Leasowes Learner application/assessment task

Recording of Judgements

Target Tracker: Completion of Statements, use of gap analysis Core half termly, Non-core termly, Class Data Analysis, Phase Data Analysis, Subject Data Analysis

Checking of Judgements

Pupil Progress Meetings, Phase Data Meeting, Book Scrutiny, Writing Grids, Learning Conferences, Subject Leaders Monitoring, Internal and External Moderation, Deep Dives

The Use of Assessment

Intervention, PLP, Adaptive Teaching, Support, Planning, Curriculum Development, Fluid Grouping, Closing the Loop - Measuring Impact, Morning Club, Staggered Starts

Reporting to Parents

Targeted Parent Conversations, School Reports, Progress Reports, Parent Workshops, Parents' Evening, Partnerships with Parents (EY)