

Maths

Rationale



NCETM

NATIONAL CENTRE FOR EXCELLENCE
IN THE TEACHING OF MATHEMATICS

Lister Infants Maths Rationale

“Respect for all, Learners for Life”

Our school motto is the motivation for our school and it is what makes our school mathematics curriculum unique. Our core beliefs are of primary focus and play a vital role in leading the valuable delivery of a real- life maths mastery curriculum at our school.

Vision

To create an inclusive maths curriculum where all children, staff and parents feel that they are encouraged to succeed, persevere, love learning and actively work together to be the best that they can be. To secure mathematical understanding for all children regardless of their ability through excellent planning and teaching. We aim for all children to make good progress from their starting points and believe that this is made possible through forming valuable home - school links.

Intent

The staff and Governors of Lister Infant School recognise the huge importance of children mastering the basic skills of mathematics and therefore we aim to offer a stimulating and engaging maths curriculum where all children make progress and achieve independence in maths.

Mathematics is a creative and complex inter-connected discipline that has been developed over centuries and it provides the solution to some of history's mathematical problems. It is fundamental to everyday life, critical to understanding science, technology and engineering and it is necessary for financial literacy and to all forms of employment. A high- quality maths education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the importance and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Our maths curriculum has been devised using the main principles of The National Curriculum for mathematics which aims 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.
- 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.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, are organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. 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.

Key drivers:

- To provide an exciting and engaging maths curriculum that is broad and balanced and accessible to all pupils.
- To provide a real-life maths curriculum, relevant to our children so they have breadth of experience.
 - To ensure there is breadth, depth and progression in teaching and learning across the maths curriculum and within and across year groups to increase pupil's knowledge, skills and understanding.
- To have high expectations of all our pupils by providing challenge that deepens understanding.
- To encourage our children to persevere and aspire to be their best.
- To expose our children to a multitude of maths problems to inspire our children to learn and achieve.
- To deepen mathematical knowledge through enhancing vocabulary.

Implementation

We are currently working with the NCETM (National College for Excellence in the Teaching of Mathematics) and thus provide a mastery approach to the teaching of maths within school.

Maths in all year groups including Reception is mapped out yearly and it is taught sequentially to revisit key aspects of learning both in year groups and across key stages. This process is used across the school to ensure clear progression. Teachers are expected to know what has been taught in a particular subject area in the year prior to the one that they are teaching: for example fractions. They will recap taught knowledge, pre- assess the

class and then they will teach the subject content for the specific year group.

Teachers plan their lessons using the NCETM curriculum prioritisation maps and the school Calculation Policy to incrementally plan for each small step. The materials provided by the NCETM are then used in conjunction to planning which provide teachers with CPD and a set of uniform models to present to children.

We have adopted the concrete, pictorial, abstract approach in all year groups for the teaching of mathematics in order to provide children with the best possible opportunities for success.

As a result of the school becoming a Maths Mastery Hub and our collaboration with the NCETM to plan and deliver maths mastery teaching all classes are taught whole class and work upon the same objective. Through careful planning and scaffolding with manipulatives or imagery all children are able to access the lesson objective with the required learning support for their needs. Children who quickly grasp concepts are then given 'Push it' tasks which require further development of mathematical knowledge or two step problems, which revisit the new skill and some skills that have already been taught. This shows depth of understanding and a knowledge of which maths concepts need to be used to access the 'Push it' tasks.

At Lister Infants children study mathematics daily covering a broad and balanced mathematical curriculum including elements of number, calculation, fractions, geometry, measurement and statistics. Children also practise daily basic skills that focus on the four rules of number (addition, subtraction, multiplication and division). The aim of the mastery approach to maths is to build fluency in these areas and to think about numbers in a different way. Due to the interconnected nature of maths, at Lister we aim to teach maths in a cross- curricular manner as well as discretely to teach the practical application of mathematical skills to other subjects. We focus not only on the mathematical methods but also focus on subject specific vocabulary and we use the principles of Maths Mastery to broaden and deepen understanding.

The school is currently part of the NCETM, Mastering Number Project which aims to consolidate number sense for children. The aim is to reduce cognitive load and make number skills automatic to aid the teaching of maths concepts throughout the school. Children in Reception, Year 1 and Year 2 are accessing these 10-15 minute sessions daily.

From Nursery to the first term in Year 1 children will become familiar with manipulatives and imagery for understanding maths and the main manipulatives used are ten frames and Numicon. Children also draw pictures to display their own knowledge. From the spring term in Year 1 and throughout Year 2 children become familiar with base ten and start to use these to add meaning and depth to their maths work.

We want children and their families to see the importance of maths in their daily lives and to understand how much it is required in order to live a successful life. We want children to make the connections between the teaching of maths in the classroom and the transferable knowledge that can be used at home and throughout life including for employment. When teaching, teachers promote the real –life links and where possible problems and reasoning questions are posed in a way that are meaningful to the children that we teach.

We aim for each child to be confident in each yearly objective and for them to develop their ability to use this knowledge to develop a greater depth understanding to solve varied fluency problems as well as problem solving and reasoning questions. We use a range of teaching resources, models and representations, including online resources throughout the school to ensure a curriculum that is specific to each child's learning needs. Children from Reception to Year 2 have access within school to basic skills sessions using the online resource RM Easi-Maths, which aims to build pupil engagement and consolidate maths knowledge.

From the 2019/20 academic year onwards, schools in England will be required to administer an online multiplication tables check (MTC) to year 4 pupils. The purpose of the MTC is to determine whether pupils can recall their times tables fluently, which is essential for future success in mathematics. It will help schools to identify pupils who have not yet mastered their times tables, so that additional support can be provided. At Lister Infants we aim for all children leaving year 2 to have practised and recalled their times tables and related facts and where possible know and remember them. This ambitious target will only help to prepare children with the sound building blocks for the Key Stage 2 curriculum.

To support the children with their multiplication practise we use 'Times Table Rocks Stars' as an online and fun learning platform which also offers resources to be used in the classroom.

Inclusion

Our school is an inclusive school and in each class there are children with a range of additional needs including ADHD, Dyslexia, Speech and Language, ASD and moderate learning difficulties. Our school recognises that children, with these different needs, benefit from an adapted lesson to allow all children to be successful and access activities at a level appropriate to their skills and needs. Resources are used to cater to the needs of individuals and support provided by staff as necessary. Any pupils with special educational needs are identified and teachers ensure lessons are catered to suit to every pupil's needs through adapting tasks, using resources and staff as necessary. We want all our pupils to apply what they know with increasing fluency and independence.

Family links

We have strong relations with our parents and encourage families to be a part of school life.

- Parents can access topic webs to inform them on what their child is learning in maths each half term which also explains how they can support learning at home.
- We also offer a range of parent workshops to support learning in maths and hold demonstration workshops for families to observe learning first hand. Parents are provided with ideas of how they can support learning at home to further develop their child.
- Parents are invited to attend class assemblies, take part in Maths Party Day and are encouraged to tweet examples of their children accessing maths problems at home.
- We hold fund raising events such as bingo, a Christmas and summer fayre and family quizzes to support our school and encourage parental involvement in school life.
- We send home enterprise challenges once a year where parents and their children use real-life maths skills to bake jam tarts that are then sold in school. The money raised is used to enhance maths resources and teaching.
- We provide homework each week which has shared homework tasks for collaborative learning with families.
- Parents also complete questionnaires to inform how our maths curriculum is designed and implemented and this is also discussed through parent council.

Impact

Lister Infants has consistently high attainment in maths and we are often above national for the end of Foundation Stage and the end of Key Stage One. At Lister Infant School we achieve high standards of achievement because:

- Lessons are relevant, exciting and challenging
- Teachers know about the different learning styles and allow for them within in their lessons
- Children are encouraged to do their best, aim high and to be resilient and persevere.
- We are an inclusive school where every child is enabled to achieve their potential.
- Teachers have clear expectations of what is needed to be taught in order to develop and deepen knowledge, skills and understanding

Throughout the Foundation Stage and KS1 teachers complete ongoing informal assessment to support each child's learning and development which helps to identify the next steps in their learning. Assessment includes teacher observation, questioning, discussions with the pupil and marking and oral feedback against the learning objective and assessment criteria for the lesson. Teachers share these next steps with pupils to support the children in moving their learning on. Children are assessed formally by their class teacher at the end of each term. The data is then logged onto the school system which is used by the Maths Lead, Assessment Coordinator and the Senior Leadership Team to track pupil progress. Individual year group staff meet termly with the Senior Leadership Team, to discuss pupil's progress and identify those who are at risk of not meeting their targets. These children will then

receive additional support through interventions, direct teaching or precision teaching to ensure the gap is diminished and that they progress more quickly.

To ensure consistency in assessing, whole school moderation takes place each term. Moderation of pupil's work also takes place within the Local Authority and the West Derby School's Network. This robust system ensures that teacher assessment is accountable and is a fair judgement.

At the end of each year teachers complete summative assessments against EYFS and National Curriculum level descriptors. Teachers must make a judgement as to whether the child's learning and development is best described by:

- The description of the level of development expected at the end of the year **(expected)**;
- Not yet at the level of development expected at the end of the year **(emerging)**;
- Or beyond the level of development expected at the end of the year **(exceeding)**.

(See assessment policy for further details)

Each term children in Year 2 will complete a summative assessment to help them develop their approach to testing and to also demonstrate their understanding of the topics covered. Children will use a combination of White Rose assessments and previous SATs papers. The results from both the formative and the summative assessments are then used to determine children's progress and attainment.

The school implements a termly programme of prioritised monitoring, review and evaluation which includes:

- Book scrutiny
- Lesson Observations were appropriate
- Pupil Voice
- Learning walks

The subject coordinator reports to the Senior Leadership Team each term by monitoring data for all children including specific groups. Through data analysis, actions are shared with staff and are monitored by the subject co-ordinator. In addition a learning walk takes place within which lessons, books and pupil voice are triangulated to ensure that high quality learning is happening. At the end of each year, a subject action plan is devised, monitored termly and reviewed at the end of the following year. We ensure all staff receive regular CPD in order to provide the highest quality of education to our pupils. Staff who have attended CPD training cascade information to other staff members during meetings to ensure that good practice is implemented by all. We also invite experts into school to lead whole staff training and the subject lead attends meetings throughout the year with the

Local Authority. Our school has been recognised for its Maths program receiving the Gold Liverpool Counts Quality Mark of which we are extremely proud!
(Please see our school list of awards).