

Larkrise Primary School



Mathematics Policy

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Achieve Excellence

Contents

- 1. Curriculum Statement**
- 2. Teaching and Learning**
- 3. Assessment**
- 4. Planning and Resources**
- 5. EYFS**
- 6. Equal Opportunities**
- 7. Inclusion**
- 8. Role of the Subject Leader**
- 9. Parents**

1. Curriculum Statement

The main rationale of Mathematics mastery is ‘everyone can’. We adopt the principles of a ‘growth mindset’ by giving all children the structures and support required to succeed in their learning and to be able to achieve Maths mastery.

Intent

The intention of the Maths curriculum at Larkrise is that children are taught to become competent and confident mathematicians who can complete arithmetic calculations, solve mathematical problems, explain their reasoning, and show their understanding using a variety of different concrete, pictorial and abstract representations. They do this whilst continually developing and repeating key basic mathematical skills and concepts.

We strive to embed the skills and processes necessary to enable children to use and apply their Maths learning in a variety of contexts. We aim to develop children’s enjoyment of Maths and provide opportunities for children to build a conceptual understanding of Maths before applying their knowledge to everyday problems and challenges. Our approach to the teaching of Mathematics develops children's ability to work both independently and collaboratively as part of a team. Through mathematical talk, children will develop the ability to articulate and discuss their mathematical thinking. By the end of Key Stage Two, children will leave our school prepared for the next step in their mathematical education.

The 2014 National Curriculum for Maths aims to ensure that all children:

- Become fluent in the fundamentals of Mathematics.
- Are able to reason mathematically.
- Can solve problems by applying their Mathematics skills.

At Larkrise, these skills are embedded within Maths lessons and are developed consistently over time. We understand that learning takes time, and we give time for units of work to be embedded so that children are really comfortable with the skills they are developing.

We are committed to ensuring that children are able to recognise the importance of Maths in the wider world and that they are also able to use their Mathematical skills and knowledge confidently in their lives in a range of different contexts. Our curriculum and documents also allow for Mathematical skills to be practised outside of Maths lessons within the wider curriculum such as Science and History.

2. Teaching and Learning

Implementation

At Larkrise, we use the mastery approach to maths teaching. This is a research-driven teaching and learning method that meets the goals of the National Curriculum. As a school our mastery approach is taught using the White Rose scheme of learning.

But what does this mean in practice? In summary, a mastery approach...

- **Puts numbers first-** White Rose's scheme of learning has number at their heart, because they believe confidence with numbers is the first step to competency in the curriculum.
- **Puts depth before breadth:** White Rose's scheme of learning reinforces knowledge and skills again and again.
- **Encourages collaboration:** Children can progress through the scheme as a group, supporting each other as they learn.
- **Focuses on fluency, reasoning and problem solving:** This gives children the skills they need to become competent mathematicians.

As a school we use the resources provided by White Rose, but teachers adapt the plans and resources to support the needs of the children in their classes to ensure that all children are 'mastering' the skills required within the lesson.

At the heart of the mastery approach is the Concrete, Pictorial and Abstract (CPA) approach. Research shows that when children are introduced to a new concept working with concrete physical resources and pictorial representations leads to a better understanding of abstract concepts. We use the CPA approach throughout our teaching from EYFS to Year 6. Children are encouraged to use CPA to build it, draw it, say it and write it to help support their learning and understanding. All aspects of CPA are used within a mathematics lesson if required.

In the classroom, this will be seen as:

- Teachers who reinforce an expectation that all children are capable of achieving high standards in Mathematics where the large majority of children progress through the curriculum content at the same pace.
- Adaptation is achieved through precise questioning, individual support and resourcing. Teachers challenge those who have grasped the content by 'going deeper' or setting 'chilli challenges' and encourage children to further explore the ideas and concepts of the lesson rather than moving them through the curriculum faster.
- Through ongoing formative and summative assessments, teachers are able to identify gaps in understanding and plan for those requiring intervention as soon as possible.
- To ensure whole-school consistency and progression, the school uses White Rose Maths scheme of work with adapted teacher PowerPoints and pupil sheets which teachers provide concrete resources to support input and independent learning. This strategy supports the children to move from physical objects to mathematical calculations.
- Practice and consolidation play a central role. Carefully designed variation through different models e.g. Dienes, bar model, number lines etc (see Calculations Policy for detail of models) builds fluency and understanding of underlying mathematical concepts.
- Slowing down the teaching of White Rose if required and planning additional lessons to support White Rose teaching to ensure that children are able to access the activities and learning. e.g. if children struggle with one concept, plan additional lessons to continue teaching this until around 80% of children have 'mastered' this concept.
- 'Same day interventions' are used to address misconceptions and support lower ability learners in achieving mastery in Mathematics.

- EYFS, Year 1, Year 2 and Year 3 also have an additional 10-minute slot of Maths teaching due to our continued enrolment on the NCETM's Mastering Number Embedding programme.
- Rising Stars Arithmetic Practice tests and Tackling tables worksheets are completed each week, and scores are recorded on a regular basis to show pupil's progression with arithmetic skills and times tables knowledge and understanding.

Impact

The school has a supportive ethos and our approaches support the children in developing their collaborative and independent skills, as well as empathy and the need to recognise the achievement of others. Students can underperform in Mathematics because they may think they are not naturally good at it, and often the view of parents can support this negative view. The White Rose Maths programme addresses these preconceptions by ensuring that all children experience challenge and success in Mathematics by developing a growth mindset with challenges open to all. Regular and ongoing assessment informs teaching and planning as well as intervention, to support and enable the success of each child.

3. Assessment

We continually assess our pupils and record their progress through daily marking and verbal feedback. Children are formally assessed at the end of each block of teaching using White Rose end of block assessments linked to the units of work covered in White Rose. They are also assessed once a term in Years 1 to Year 6 using the Progress in Understanding Mathematics Assessment (PUMA). This provides a standardised score of 100 (similar to KS2 SATs) which allows us to assess whether pupils are working towards year group expectations, working at year group expectations or working at a greater depth of year group expectations.

EYFS are assessed against the Early Learning Goals for Mathematics and using the end of block checkpoints from White Rose.

Weekly assessments are also conducted during Arithmetic Practice tests from Rising Stars and times tables checks from Tackling Tables.

Assessment is seen as an integral part of the teaching process and we strive to make our assessments purposeful, allowing us to match the correct level of work to the needs of pupils, thus benefiting the pupils and ensuring progress. It is the responsibility of the class teacher to assess all pupils in their class and identify any children that may need additional teaching and support through interventions.

Short term assessment is a feature of each lesson. Observations and careful questioning enable teachers to adjust lessons and brief other adults in the class if necessary. This allows for any misconceptions to be addressed.

4. Planning and Resources

The use of Mathematics resources is integral to the concrete, pictorial, abstract approach and thus planned into teaching and learning. The school has a wide variety of good quality equipment and resources, both tangible and ICT based, to support our learning and teaching. These resources are used by our teachers and children in several ways including:

- Demonstrating or modelling an idea, operation or method of calculation. Resources for this purpose would include: a number line; place value cards; dienes; place value counters and grids; money or coins; measuring equipment for capacity, mass and length; bead strings; the interactive whiteboards and related software; 3D shapes and/or nets; Numicon and related resources and software; multilink cubes; clocks; protractors; calculators; dice; number and fractions' fans; individual whiteboards and pens; and 2D shapes and pattern blocks, amongst other things.
- Enabling children to use a calculation strategy or method that they couldn't do without help, by using any of the above or other resources as required.
- The use of resources within a lesson is up to the discretion of the teacher. If they feel that the children can access and 'master' the activities without needing concrete resources, then resources do not have to be out every lesson. This works in line with the concrete-pictorial-abstract approach.
- Enabling children to identify when they might need to use concrete resources to support their own learning and be able to access these independently in the classroom.
- If you do not have access to practical resources, use the two free websites provided for manipulatives to support learning. These are: <https://www.didax.com/math/virtualmanipulatives.html> and <https://mathsbot.com/manipulativeMenu>

Standard resources, such as number lines, multi-link cubes, dienes, hundred squares and counters are located within individual classrooms. Resources within individual classes are accessible to all children who should be encouraged to be responsible for their use. Further resources (often larger items shared by the whole school) are also available as part of a central supply. An interactive teaching tool for the purpose of modelling strategies is available to all teachers as part of the White Rose Maths scheme.

Resources to support teachers' own professional development and understanding of new approaches as part of a mastery approach are available on NCETM website. As well as overviews of learning, these include short videos which demonstrate new methods to ensure accuracy.

5. **EYFS**

As of September 2021, the new EYFS framework was implemented. This statutory framework outlines the expectations of the EYFS curriculum and what children should be achieving by the end of their first year at school. Due to the changes in the EYFS framework there are now two main areas of mathematical teaching and learning. These are:

- Number
- Numerical patterns

The EYFS Framework states:

"Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape,

space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, ‘have a go’, talk to adults and peers about what they notice and not be afraid to make mistakes.”

The teaching of Mathematics in EYFS consists of five whole class White Rose teaching sessions a week and 4 additional Mastering Number sessions in the afternoons. After the White Rose teaching input most lessons are followed up with a whole class practical activity using concrete resources to support learning. Whole class teaching is then reinforced with activities during Explore time (independent learning time). Maths challenges can also be set by the class teacher when required.

In terms of assessment, the children are assessed within the first 6 weeks of the academic year. This

assessment is known as The Reception Baseline Assessment. Teaching cannot begin until these assessments are completed. Regular observations and assessments using the White Rose Maths checkpoints help to ensure that children that need additional intervention to consolidate their mathematical understanding are identified and supported by appropriate interventions.

In the final term of Reception, The EYFS Profile must be completed for each child. Each child’s level of development must be assessed against the Early Learning Goals. Practitioners must indicate whether children are meeting expected levels of development, or if they are not yet reaching expected levels. This will be recorded as being ‘expected’ or ‘emerging’ on the EYFS profile. The Profile provides parents and carers, practitioners and teachers with a well-rounded picture of a child’s knowledge, understanding and abilities, their attainment against expected levels, and their readiness for year 1.

6. Equal Opportunities

The school is committed to ensuring the active participation and progress of all children in their learning.

All children will be given equal opportunities to achieve their best possible standard, whatever their current attainment and irrespective of gender, ethnic, social or cultural background, home language or any other aspect that could affect their participation or the progress of which they are capable.

7. Inclusion

The National Curriculum states:

‘Children 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.’

There is little adaptation in the content taught but the questioning and scaffolding individual children receive in class as they work through problems will differ, with children who grasp concepts more quickly challenged through more demanding problems, or to represent their understanding in different ways.

which deepens their knowledge. Children’s difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support later the same day. A range of inclusion strategies are embedded in practice and teachers are aware of the special educational needs of the children in their Maths class, as well as those who have English as an additional language. Although the expectation is that the majority of children will move through the programmes of study at broadly the same pace, the

2014 National Curriculum states:

'Decisions about when to progress should always be based on the security of children's understanding and their readiness to progress to the next stage.'

If a child's needs are best met by following an alternative plan, including coverage of the content from a previous year, this will be overseen by the SENDCo, in collaboration with the class teacher and with the knowledge of SLT and subject leader. Specific arrangements for the provision of children with SEND will be communicated to parents and carers during SEND reviews.

8. Role of the Subject Leader

The subject leader will raise the profile of Maths at Larkrise through best practice. They will model lessons, as appropriate to new staff, ECTs and peers to support continued professional development. The subject leader will monitor progression and continuity of Maths throughout the school through lesson drop ins,

regular monitoring of work in pupil books, monitoring and analysing assessment data and through professional discussions with teachers. The subject leader will ensure that all staff have access to year group plans and the relevant resources which accompany them.

The subject leader will monitor children's progress through the analysis of whole school data. They will use this data to inform the subject development plan which will detail how standards in the subject are to be

maintained and developed further.

The subject leader will, on a regular basis, organise, audit and purchase central and class-based Maths resources.

The subject leader will attend CPD sessions with other Eveleigh Link Maths subject leaders and inform staff of any changes to current guidance.

The subject leader will extend relationships and make contacts beyond the school.

The subject leader will develop opportunities for parents/carers to become more involved in Maths education through parent workshops.

The subject leader will ensure that all staff have access to professional development including observing outstanding practice in the subject as well as CPD courses and training.

9. Parents

The school recognises that parents and carers have a valuable role to play in supporting their child's mathematical learning.

Parents are directed to use the 'Calculations Policy' for Addition and Subtraction and Multiplication and Division to show the concrete, pictorial, abstract steps to teaching Maths. These are found on the school website under 'Key information' - Policies and guidance. This is to help support parents who may have a negative view towards Maths. Parents also have access to a PowerPoint guide that explains how we teach mastery at school as well as information PowerPoints on KS2 SATS and the Year 4 Multiplication Test Check (MTC).

Parents are informed of their child's progress at termly learning conferences and this is also communicated in written school reports.

Parents and carers are encouraged to speak to their child's teacher at any point during the year, either informally or by making a specific appointment. Information about their child's standards, achievements and future targets in Maths is shared during parent/carer meetings, as well as ways that parents/carers may be able to assist with their child's learning.

The school also provides a number of opportunities for parents/carers to learn about what their child is learning and the way their child is being taught through parent drop-in events.

