**Intent**

At Lingham we aim to build happy, confident and resilient mathematicians, with every pupil believing that by working hard at maths, they can succeed. This belief is at the heart of all maths teaching at Lingham.

*The National Curriculum for Mathematics aims to ensure that all pupils:*

* *Become fluent in the fundamentals of mathematics so that they can develop their conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.*
* *Reason mathematically, including being able to develop an argument, justification or proof using mathematical language.*
* *Solve problems by applying their mathematics to a variety of problems, including breaking them down into a series of smaller steps, and persevering in seeking solutions.*

**Implementation**

At Lingham, we follow the White Rose Scheme of Learning. The principles of mastery underpin this scheme and our teaching aims to carefully consider the 5 Big Ideas – Coherence, Mathematical Thinking, Representations and structures, Fluency and Variation ( see appendix a)

A whole class teaching approach is adopted, keeping the class working together wherever possible and giving all pupils the chance to work on fluency, reasoning and problem solving tasks. Support for all learners is achieved through various forms of scaffolding. This may include but is not limited to; the degree of adult support provided, asking enabling and extending questions and the use of concrete and pictorial models and representations. Pupils who are struggling to grasp a concept or procedure are identified quickly by the teacher and intervention is put in place to try to ensure pupils are ready to move forward with the rest of the class. This may be small group support with the pupils at the end of the lesson or in the morning as children are completing their morning work. Sometimes, teaching assistants may reteach parts of the lesson at another time to provide further support.

Where children are unable to work on age appropriate content due to additional needs, Individual Support Plans are created by teachers and lessons are planned to narrow the gap by focusing on the RTP criteria.

All teachers plan in recap and retrieval activities opportunities EVERY lesson to ensure that key learning is revisited and reinforced to help move learning into the long term memory. This includes key concepts from previous years. For

‘Revisit and Review’ sessions, teachers create bespoke learning recaps or use White Rose Flashback 4 materials.

We adapt the White Rose scheme of learning in the following ways to meet the needs of our learners at Lingham:

* Teachers clearly identify the key learning point for each lesson and edit / streamline the slides provided to target the key learning.
* Teachers carefully select and use a range of concrete and visual resources to expose the mathematical structures in a lesson.
* Teachers explicitly model methods and approaches and use an ‘I do, we do and you do’ approach
* Our Long Term Map has been adapted (from the Spring Term) to provide further opportunities to revisit and consolidate the most important learning for each year group (spiral)
* Wherever possible measures and money units are woven into calculations units ( in particular addition, subtraction and multiplication and division) to provide real context and to provide further opportunities to consolidate calculation strategies
* We use the NCETM Mastering Number in FS and KS1 as an additional scheme of learning to develop strong number sense and calculation fluency and flexibility
* Resources from our CPD with Tara Loughran are utilised to strengthen reasoning and problem solving where appropriate

In our EYFS classes, pupils work towards the Early Learning Goals for Number and Numerical Patterns using the ‘Development Matters’ document. The NCETM Mastering Number program provides the structure for the daily teaching input, focussing on developing the children’s numerical understanding. Each week learning challenges in provision link to the key learning and provide opportunities for independent application. Children record their maths learning in their journals. White Rose materials, First 4 Maths and Tara Lougran resources are used where appropriate to enhance learning.

Mathematical talk is a crucial component of lessons in all age phases. Lessons include regular opportunities for the children to discuss their understanding and explain their thinking, both with adults and with peers. Accurate use of vocabulary is crucial, modelled by teachers and expected from pupils.

In addition to the daily maths lesson, children in year 1 – 6 have additional maths sessions to improve fluency and number sense. Children complete Daily 10s and fact fluency sessions

**If you were to walk into a mathematics lesson at Lingham Primary, you would see:**

* Opportunities for pupils to recap and revisit previous learning.
* Pupils given the opportunity to discuss mathematical ideas and problems as a pair, group or class.
* Key mathematical vocabulary being modelled by adults and pupils expected to use the correct, precise mathematical vocabulary when explaining their mathematics.
* A CPA approach being used: pupils will use concrete resources and pictorial representations and models to help them understand a concept and deepen their learning.
* Clear and precise modelling of methods and approaches by teachers using ‘I do, we do, you do’
* Pupils being encouraged to explain what they notice and to explain how and why they have solved a calculation or problem.
* Adults making explicit connections to previous learning
* Adults working with a carefully, selected guided group to ensure progress.
* Adult using questioning to support and challenge pupils’ learning.
* Adults making opportunities to assess pupils learning within a lesson, quickly identifying any pupils who are struggling and supporting these.

**Impact**

‘Assessment for Learning’ is fundamental to raising standards and enabling children to reach their potential. Teachers continually assess pupils understanding through all parts of the lesson. They provide feedback to clarify misconceptions and to move learning forward. Teachers use children’s misconceptions as an opportunity for discussion and reasoning. For example, the teacher may say ‘X thinks this but Y thinks this. Who do we agree with? Can we explain/ prove who is correct?’ This usually leads to a rich discussion and high-quality reasoning whereby children prove (often with manipulative resources or drawings) why one answer is correct and the other is not. This approach is successful as children are developing their growth mind set and are taught that all answers are valid and worth exploring; they are free to make mistakes and open to learning from them.

While most assessment takes place within the lesson, some assessment in mathematics takes place through written and verbal feedback after the lesson. This information informs planning for the next lesson. Teachers frequently conference with pupils at the start of the day or the start of the next lesson to address any misconceptions.

To further inform teaching, we use White Rose end of unit assessments to assess progress at the end of each unit. These assessments allow teachers to identify areas of strength and areas that are still not secure and adjust their planning accordingly. Common errors can be addressed at the start of lessons and build into starters or ‘daily 10’ activities to provide further practice. Teachers use their ‘additional maths’ time to go over concepts and to address gaps in learning.

Teachers use this range of information, alongside NTS termly assessments and End of Key Stage Test materials , to build up a clear picture of each child’s ability within each area of maths. The teacher assesses each Target Tracker statement. This information enables teachers to make a termly assessment judgement against the age-related expectations for their year group. This judgement is recorded termly as a Target Tracker Step. This is used to analyse the data across the school in a variety of ways.

To ensure judgements are accurate, teachers meet regularly to moderate samples of work against national standards and exemplification materials, both within school and across our Moreton Cluster.

The subject leader, alongside SLT will conduct a range of activities across the year to monitor the impact of our Mathematics provision. These activities include: pupil voice; looking at pupils’ work; spending time in lessons to get a feel for what it’s like to be a pupil learning maths in the class; speaking with pupils about their mathematics and about how their teacher helps them to develop their mathematical skills; sampling children’s’ ability to solve problems and calculations based on the half term’s learning The aim of these activities is to build up a connected view of how well the intended curriculum is grasped by our pupils.

This information, alongside the data will enable us to evaluate the overall effectiveness of our Mathematics Curriculum and enable us to make improvements, for example planning CPD opportunities or developing interventions, so that pupils leave ready for the curriculum at Key Stage 3 and for life as an adult in the wider world.

CPD

Presently, we are part of the Wirral Maths Hub’s ‘Sustaining Mastery’ programme and several other staff are benefitting from professional development programmes with the NCTEM such as the ECT maths subject knowledge programme with our SLE. We also benefit from termly training with maths consultant and OI, Tara Loughran.

Governors oversee the teaching and learning of mathematics. Updates on progress, attainment, initiatives and developments are presented to governors termly. Governors also visit school to speak with the subject leader and to observe Maths provision in practice.

**EYFS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **2018/2019** | **2020/21** | **2021/2022** | **2022/2023** |
| **Good Level of Development** | 69%  (National Average: 72%) | 33%  Best Endeavours | 52%  (National Average: 65%) | 54%  (National Average: TBC %) |
| **Meeting the Expected Level in Number** | N/A |  | %  (National Average: 78%) | 60%  (National Average: TBC %) |
| **Meeting the Expected Level in Numerical Patterns** | N/A |  | %  (National Average: 77%) | 60%  (National Average: TBC %) |

**KS1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **2017/2018** | **2018/2019** | **2021/2022** | **2022/2023** |
| **Expected Level +** | 75%  (National Average 76%) | 65%  (National Average 76%) | 63%  (National Average: 67%) | 56% (National Average: TBA) |
| **Greater Depth Level +** | 10%  (National Average 22%) | 5%  (National Average 22%) | 0%  (National Average: 15%) | 6%  (National Average: TBA) |

**KS2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **2017/2018** | **2018/2019** | **2021/2022** | **2022/2023** |
| **Multiplication Check** |  |  | 12% (Scoring 25) (N: 27%)  18 Mean Score (N: 19.8) | 33% (Scoring 25) 20.92 Mean Score |
| **Expected Level +** | 79%  (National Average 76%) | 81%  (National Average 79%) | 71%  (National Average: 71%) | 70% |
| **Greater Depth Level +** | 20%  (National Average 24%) | 27%  (National Average 27%) | 23%  (National Average: 23%) | 16% |

**Pupil Voice:**

To Be Added

**Monitoring – Autumn Term**

* Monitoring of teaching and learning shows evidence of good staff subject knowledge and understanding of the concepts being taught. Vocabulary is being modelled consistently in most lessons, and pupils expected to use the correct mathematical terminology.
* All learning is matched appropriately to the age group being taught.
* Past learning is routinely revisited which enables pupils to recall and build upon work from previous years.

**Appendix a**

**The Mastery Approach**

Our whole school adopts a **mastery approach** to the teaching of maths. Lesson planning and delivery is based on the **five big ideas**; coherence, mathematical thinking, representations and structures, fluency and variation.

**Coherence**: Lessons and sequences of lessons are broken down into small carefully sequenced steps. You will see teachers helping pupils to make links and connections to previous learning.

**Mathematical Thinking**: For ideas to be understood deeply, they must not merely be passively received but must be worked on by the student, reasoned with and discussed with others. At Lingham you will see adults asking questions that require children to reason, explain and convince. Children will draw diagrams or use manipulatives to illustrate an idea or strategy. All children have learning partners and collaborative learning is part of all lessons.

**Representations and Structures** Representations are used in lessons expose the mathematical structure being taught. Teachers at Lingham think carefully about which representations to use for each new concept. You will see a wide range of manipulatives and images being used in all classrooms for example, ten frames, bar models, part/ whole diagrams and place value resources.

**Fluency:** Fluency is more than just memorisation of a procedure or a collection of facts. It encompasses a mixture of efficiency, accuracy and flexibility. At Lingham, we provide carefully planned opportunities for daily calculation practice, number sense activities and regular opportunities to learn important number facts including the multiplication tables. Quick and efficient recall of facts and procedures is important in order for our learners’ to solve increasingly complex problems. Lessons begin with fluency work before moving into more demanding reasoning and problem solving activities. Practice is a vital part of learning, but the practice used is intelligent practice that reinforces pupils’ procedural fluency and develops their conceptual understanding. By developing fluency through intelligent practice, we aim to help pupils to develop their flexibility to move between different contexts and representations of mathematics, to recognise relationships and make connections and to make appropriate choices from a whole toolkit of methods, strategies and approaches.

**Variation:** This is carefully constructed scaffolding; teachers taking children from a point they know and gradually stepping up towards the 'new' learning. It is the opportunity to work on different representations of the same mathematical idea to deepen understanding. Multiple representations of the same concept will 'showcase' to pupils the different conceptual ideas that underpin a mathematical idea. Teachers thoughtfully choose examples to work on to support pupils to make the desired connections and relationships and ultimately generalisations. Teachers often ask pupils to consider variation by asking **‘What's the same? What's different?**between the representations.