Maths Curriculum Design

Intent: What are our aspirations for our children in Maths?

Through our curriculum design, we aim to equip our children with the skills, confidence and enthusiasm to become proficient mathematicians. Through our Let's Do Maths system, our children develop their confidence and understanding by obtaining varied fluency in all areas in Maths. Our curriculum design gives all learners the opportunity of reaching age related expectations and mastery whatever their ability. Through spending longer on units, learning is embedded into the children's long term memory and therefore making their understanding thorough. At the heart of everything we do is our goal to extend the children's understanding and use of language as we recognise how this improves the life chances of every child as they grow into adulthood. This is also embedded throughout our Maths curriculum as all children are given the opportunity to explain, reason and check their own thinking.

Implementation: How do staff implement our curriculum?

- **Each Maths unit is 2 to 3 weeks in length.** This allows units to be covered in depth across the year and sets a high expectation that teachers and children will work towards making progress within this time frame. Some units may take slightly longer depending on issues that may have arisen from the 'cold assessment'.

- **Each year long term planning is used to map out block units to give children the opportunity to spend more time to consolidate methods.** This is reviewed to make sure that the sequence of units meets the needs of our children (see appendix 1).
- **Each unit starts with a 'cold assessment' and finishes with a 'hot assessment'.** These allow teachers to assess mathematical knowledge and understanding from the previous year as well as the children's current year group. The 'hot assessment' allows teachers to assess the learning against the objectives taught in the unit and enables identification of any 'gaps' that need to be filled after the unit is finished. A comparison between the Cold and Hot Assessments indicates the amount of progress made.

- **Each lesson follows the 'Let's Do Maths' system.**

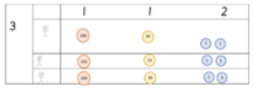
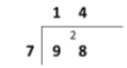
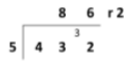
A typical daily lesson in Year 1 to 5 is usually 45 – 60 minutes for mathematics and is structured with:

- Let's Start (which includes an oral or mental activity or revision of a taught concept).
- The main teaching (which includes both teaching input and pupil activities and a balance between whole class, grouped, paired and individual work)
- Let's Practise (an activity based on the main teaching of the lesson).
- Let's Practise+ or Let's Master (children will then be moved onto this once their Let's Practise is complete. This is usually an extension of the work or a challenge for them to apply their learning).
- Let's Check (a plenary which involves the whole class to sort out misconceptions, identify progress, to summarise key facts and ideas, to make links to other work and to discuss next steps).

- **Use of Let's Explain for children to reason using mathematical vocabulary.** Throughout most lessons, children are given opportunities to solve a problem and explain how they know. Teachers encourage children to use mathematical vocabulary and therefore extending children's understanding of language.
- **Use of Let's Calculate.** On a weekly basis, children complete Let's Calculate. This develops their varied fluency of mixed operations and enables arithmetic to be revised outside of the units that it is taught in.

- **Following the age related curriculum.**
- **Use of working walls across all classes to develop consistency.** To help the children become more independent learners, there are working walls in every classroom linked to the current unit and the children have their own maths jotters to look back at previous learning.
- **Staff Led Intervention.** This is carried out dependent on need.
- **Number Fun.** Number Fun takes place daily in Year 1 and 2 to develop Number Fluency.
- **Let's Count.** This takes place daily in Reception. Children count in different ways depending on the intending objective.
- **Use of the bar model for problem solving.** The bar model is used throughout every class from Reception to Year 5 to solve problems in a variety of ways. (See Bar Model Calculation Policy).
- **Developing end of term tests so that they cover what we have covered to give children the opportunity to be successful.** Children are formally assessed in mathematics at the end of every term. Teachers develop their own test paper that cover only aspects of maths that have already been taught. For the end of year formal assessment, we use NFER arithmetic and reasoning tests.
- **To develop rapid recall of times tables across the school we use:**
  Let's Multiply. Let's Multiply takes place three times a week in Key Stage Two to develop rapid recall of multiplication and division facts.
  Use and monitoring of Times Tables Rock stars. All children from year 2 to year 5 have a Times Tables Rock stars account. They play it once a week in school and are then also expected to play it 3 times a week at home.
  Use of songs. Songs are used to develop counting and times tables knowledge. These allow children to build a pattern which embeds their learning deeper.

- **Learning objectives and target sheets.** Within a three week unit, children work on a set of objectives. Learning objectives from each lesson are taken from the unit overview. The objectives are based on the National Curriculum for each year group. They are broken down into smaller steps for that unit of work. Each child has a version of this grid so they can see what the whole unit will include. After a unit has been completed, teachers mark the overview sheet so that it is clear which objectives have been met.

<table>
<tr><th colspan="6">Year 4 Division</th></tr>
<tr><td>I can divide by 1 and zero mentally.</td><td>I can divide a number by 10.</td><td>I can write and calculate division statements.</td><td rowspan="2">I can use an informal written method.
  </td><td rowspan="2">I can position digits in the correct place on squared paper.</td><td rowspan="2">I can solve problems and investigation linked to division</td></tr>
<tr><td>I can recall and use division facts from the times tables up to 12 x 12</td><td>I can divide a number by 100.</td><td>I can divide 2 digit numbers by a 1 digit number.</td></tr>
<tr><td colspan="2" rowspan="2">I can recognise factors of numbers.</td><td>I can divide 3 digit numbers by a 1 digit number.</td><td rowspan="2">I can use a formal written method.
98 ÷ 7 becomes
 
Answer: 14
432 ÷ 5 becomes
 
Answer: 86 remainder 2</td><td rowspan="2">I can present by work in an organised way.
.</td><td>I can solve missing number problems.</td></tr>
<tr><td>I can divide calculations with remainders.</td><td>I can solve 2 step problems linked to multiplication and division.</td></tr>
</table>

- **Complexity –** Within a unit, the most basic skills will be introduced first working up to the most complex.
- **Frequency –** Certain objectives will be repeated throughout the unit. This supports interleaved learning where new learning is introduced alongside the previous learning. This allows a continuous cycle of consolidation while, at the same time, introducing new skills allowing learning to embed in the long term memory. It also supports a positive attitude to learning as children have more than one opportunity to work on an objective and therefore feel success and achievement when they self-assess against their learning objectives.

Impact: How has our curriculum made a difference to our children?

- All learners are given the age appropriate curriculum so there is no ‘ceiling’ or ‘capping’ of achievement.
- Children have a sound understanding of the maths curriculum.
- Children have varied fluency making them more efficient mathematicians.
- All children are given the opportunity for mastery.
- Children build up perseverance and resilience through the Let’s do Maths system: practise, practise, practise.
- Children are able to reason and explain, not only verbally but also through written explanations.
- Recall of times table facts are becoming more fluent and rapid.
- Children discuss their own abilities honestly and are able to discuss their learning.
- Across the school, there is no ‘fear’ of Maths. Children show enjoyment for the subject.

Appendix 1

The Littletons School

Whole School Maths Long Term Plan 2018/19

	Autumn 1 7 weeks, 2 days	Autumn 2 6 weeks	Spring 1 5 weeks, 2 days	Spring 2 7 weeks	Summer 1 4 weeks	Summer 2 7 weeks
Reception/Year 1	Number & place value – 3 wks	Subtraction – 3 wks	Number and Place Value – 2 wks	Fractions – 3 wks	Number and Place Value – 2 wks	Measures – 2 wks
	Addition – 3 wks	Multiplication - 3 wks	Division – 2 wks	Number and Place Value – 2 wks	Multiplication and Division – 3 wks (1/2 and ¼)	Revision of concepts
	Shape– 1 wk		Measures – 1 wk	Measures – 2 wk		
Year 1/Year 2 **Statistics may want to be covered throughout topic lessons.**	Number & place value – 3 wks	Subtraction – 3 wks	Number and Place Value – 2 wks	Fractions – 2 wks	Revision of Key Concepts Assessment	Areas that need revisiting
		Multiplication - 3 wks	Division – 2 wks	Addition and subtraction links – 2 wks		
	Addition – 3 wks		Measures – 1wk	Division and links to multiplication – 2 wk		
	Shape – 1 wk			Statistics – 1 wk		
Year 3	Number and Place Value – 4 wks	Subtraction – 3 wks	Division – 3 wks	Fractions – 4 wks	Measures – 3 wks Assessment	Revision of concepts
	Addition – 3 wks	Multiplication – 3 wks	Geometry – 2 weeks	Statistics – 2 wks		
				Measures – 1 wk		

Year 4	Number and Place Value – 4 wks	Subtraction – 2 wks	Division – 3 wks	Fractions and decimals – 2 wks	Statistics – 2 wks Assessment	Revision of concepts
	Addition – 3 wks	Addition and Subtraction links and problem solving – 1 wk	Fractions and decimals – 2 wks	Measures – 2 wks		
		Multiplication – 3 wks		Geometry – 3 wks		
Year 5 GC to teach Year 5 3d shape, measures, statistics and position and movement on Thursdays.	Number and Place Value – 4 wks	Subtraction – 3 wks	Division – 2 wks	Fractions and decimals – 4 wks	Geometry – 3 wks Assessment	Revision of key concepts
	Addition – 3 wks	Multiplication – 3 wks	Multiples, factors and primes – 2 wks			
			Division – 1 wk	Percentages – 3 wks	Fractions – 3 wks	