

## Maths at Horton Grange 2019-2020

The following document sets out the essence of the teaching and learning of mathematics at Horton Grange Primary School. We want the children to not only leave our school being numerate, but also with a love of maths that will stay with them throughout their education and into adulthood. We aim to develop not only their fluency but also their curiosity tenacity and resilience to solve problems. In a rapidly changing and developing world with STEM at the heart of that change, we recognise the importance of having these skills to equip our children for future careers, and develop both the teaching and learning of maths with crucial links to the North East Maths Hub and the Port of Blyth.

Area	Intent/Rationale	Implementation	Resources to support	Impact
Times Tables/Number Bonds	These calculations will form the basic building blocks of much of what they learn in maths right up to (and even beyond) their GCSE courses, such as division, algebra and fractions. Children will struggle to access reasoning and mastery questions without the means by which to record their calculative thinking. Children at Horton Grange need the firmest grasp of basic skills in order to	<ul style="list-style-type: none"> <li>● <u>Teaching</u> of times tables should sit alongside the children's opportunities for independent practice. This involves chanting, songs (eg BBC supermovers, exploration of patterns, recall, counting stick work and Shanghai lessons.</li> <li>● All children (Y1-6) to have access to times tables rockstars (online programme)</li> <li>● TT rockstars done in class at least 3 times per week</li> <li>● TT rockstar sheets to be sent for homework as part of basic skills focus</li> </ul>	<ul style="list-style-type: none"> <li>● Third Space Learning Termly planner for times tables</li> <li>● TT rockstars (please see EB with queries re: logins)</li> <li>● Hit The Button (Topmarks)</li> <li>● Shanghai</li> </ul>	Children know the times tables and associated division facts (for the times tables to at least their own year groups expectations) They recall them at speed and with fluency and knowledge of them is evident in assessments and in their approach to calculation 100% of children to score >20 in the times tables check (Y4)

	<p>apply to higher order reasoning and practice provided through the programmes on offer to ensure this happens in the most effective and engaging way.</p>	<ul style="list-style-type: none"> <li>● <b>YEAR 1</b> Number Bond Rockstars (numbers within 20) to be done in the first term and counting of multiples of 2,5,10 to be done through the year according to the schedule (See Appendix)</li> <li>● Half termly assessments to be done on relevant times tables on a mixed grid and results uploaded via a google spreadsheet to maths team</li> <li>● UKS2 children who are falling behind targeted through tt rockstars club (lunchtime club)</li> <li>● Year 4 to sit Times Tables check (Summer 2)</li> </ul>	<p>chanting times tables sheets and lessons (examples on T Drive)</p>	
<p>Scheme of Work and Progression</p>	<p>Using a scheme of work allows teachers to plan for progression and the mastery approach in the most effective way, whilst also building fluency. Having tried several schemes in the past White Rose Maths is the most coherent and comprehensive. Teachers are expected to use the</p>	<ul style="list-style-type: none"> <li>● Teachers use the long term plan to schedule the units they will teach and the order they will be taught in.</li> <li>● Medium term plans are provided so that they can be adapted if necessary and provide the basis for individual weekly planning.</li> <li>● Through the scheme the children's mathematical journey is supported, giving them</li> </ul>	<ul style="list-style-type: none"> <li>● Concrete resources (numicon, Cuisenaire, place value counters, Dienes, bead strings and multilink)</li> <li>● Pictorial representat</li> </ul>	<p>Children have a secure and deep understanding of mathematical concepts. Teachers use the scheme confidently, developing their subject knowledge and their knowledge of progression across year groups.</p>

	<p>scheme as a basis for their teaching and adapt as necessary, always using their own professional judgement in the first instance. A scheme of work is a guide and should not solely dictate either the content or the speed of the lessons if A4L indicates otherwise.</p>	<p>experiences of mathematical talk, concrete experiences, pictorial representations, fluency activities and reasoning problems that challenge their mathematical thinking</p> <ul style="list-style-type: none"> <li>• Teachers should adapt the scheme when necessary to take account of prior learning and the individual needs of the pupils.</li> </ul>	<p>ions-bar modelling, part whole models, place value charts</p> <ul style="list-style-type: none"> <li>• WRM website</li> <li>• NCETM website</li> <li>• Nrich website</li> <li>• Oxford Owl mastery document</li> <li>• Third Space learning resources</li> </ul>	
<p>Pre/Post Unit Assessments</p>	<p>Pre and Post unit assessments were introduced to ensure the children's grasp of a concept was not assumed and learning could be targeted most effectively. Post unit assessments are a chance for the child to show their understanding of what they have learned in that</p>	<ul style="list-style-type: none"> <li>• White Rose Maths assessments are used as the Pre Unit Assessments. These are a short snapshot of what the children already know and understand and are done at the beginning of the unit of work. However, teachers should use questioning and their knowledge of common misconceptions alongside the</li> </ul>	<ul style="list-style-type: none"> <li>• White Rose Maths Unit Assessments</li> <li>• Maths Frame (assessments and activities)</li> </ul>	<p>Teachers use the pre unit assessment to plan learning effectively, ensuring the level of challenge is pitched appropriately. Children's learning is progressive. Pre unit assessments also show what knowledge has been retained from previous</p>

	<p>unit of work. These can be used to help teachers form judgements about the child's progress and attainment.</p>	<p>assessment to ensure the most accurate picture is given</p> <ul style="list-style-type: none"> <li>• MathsFrame assessments are used as the post unit assessment at the end of the unit. These are more in depth assessments with a wider range of questions for each key skill</li> <li>• Teachers should compare the pre and post unit assessments, to gauge a child's progress and use the post unit assessments to form judgements about the child's attainment in that particular area of maths</li> </ul>		<p>years</p> <p>Post unit assessments show progress from their starting points and give an accurate indication of the depth of understanding</p>
Arithmetic Fluency	<p>One of the three aims of the National Curriculum states that pupils will: <i>'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'</i></p> <p>Developing arithmetic</p>	<ul style="list-style-type: none"> <li>• Fluent in 5 (Third Space Learning Resource) is used in KS2 to support the teaching of arithmetic. This should be done at least 3 times per week and can be adapted as necessary to suit the needs of the pupils.</li> <li>• Teaching of the strategies needed to ensure accuracy, efficiency and flexibility is key and teachers should use the school's calculation policy to ensure consistency of approach.</li> </ul>	<ul style="list-style-type: none"> <li>• Third Space Learning fluent in 5</li> <li>• My minimaths</li> </ul>	<p>Arithmetic fluency is automatic and is used as a vehicle to develop the children's mathematical reasoning. Calculations are accurate and reflect efficiency. Methods are used appropriately and the children can use strategies confidently and flexibly.</p>

	<p>fluency at Horton Grange should focus on the children becoming efficient, accurate and flexible.</p> <p>Spaced learning and continued practice has been shown to be the most effective method in aiding memory and facilitating the retrieval of facts automatically thus reducing cognitive overload when dealing with more complex calculations.</p>	<ul style="list-style-type: none"> <li>• Times tables and number bonds support the development of calculation through continued opportunities.</li> <li>• Arithmetic assessments to be done at the end of every half term alongside reasoning assessments.</li> </ul>		
Planning	<p>Planning for maths should allow the teacher to plan for a series of lessons that demonstrate both the consolidation and progression of knowledge and skills. It is a creative process that should enable the teacher to combine their knowledge of the subject, pupils and resources to ensure the teaching allows for the learning to be effective and meaningful. Planning at Horton Grange takes into account the work</p>	<ul style="list-style-type: none"> <li>• Planning is done collaboratively with a parallel teacher but should be individual to the needs of each specific class.</li> <li>• Planning should be done on the provided format (included in the appendix) and uploaded onto a shared platform so that it can be accessed.</li> <li>• Planning for maths should include opportunities for: <ol style="list-style-type: none"> <li>1. Fluency - times tables practice, number bonds, arithmetic etc</li> <li>2. Key skills to be taught</li> <li>3. A chance to reflect on prior knowledge of the learning</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• White Rose Maths Scheme</li> <li>• TT rockstars</li> <li>• Fluent in 5</li> <li>• Horton Grange Planning format</li> <li>• Maths No Problem text books (fluency)</li> <li>• Third Space</li> </ul>	<p>Teachers plan for a series of lessons which give the children a deep understanding of maths. They are reflective and adaptable to take account of A4L. Links are made through and across other areas of maths and other subjects to ensure the children have a deep understanding of mathematical concepts.</p>

	done on metacognition and mastery teaching. Planning evolves with time to reflect how the children respond to the teaching and to allow for misconceptions to be dealt with	<ol style="list-style-type: none"> <li>4. Explicit input and teaching strategies the teacher will use.</li> <li>5. Independent, paired or group activities through which the children will achieve the key skill</li> <li>6. Reasoning questions (including mathematical talk) which extend the children's understanding, expose them to key vocabulary and challenge their understanding of the skill.</li> <li>7. A chance to reflect on their learning, ask questions and plan next steps</li> <li>8. Key vocabulary to be learned, conceptual links and resources (concrete, pictorial and abstract focus to be highlighted for each lesson)</li> </ol>	learning resources	
Books	Books recording the children's work are an important element of evidencing progress and allowing the children to learn to work mathematically and systematically. They should reflect the learning journey	<p>Pre unit assessment (at the start of each unit)</p> <p>A toolkit of the strategies, pictorial representations, small steps of progression and memory aids that the children will need throughout the unit of work that they can refer back to during the unit.</p>	<p>WRM pre unit assessment Maths Frame post unit assessments.</p> <p>WRM Oxford Owl teaching for mastery</p>	Books reflect the learning journey, the maths curriculum and provide high quality and accurate evidence of the children's knowledge, skills and understanding. They also reflect a strong work ethic and

	<p>of that key skill and include aids to help the children remember and understand mathematical concepts. Opportunities for fluency and developing reasoning and explanation should be evident. Presentation should be neat and reflect care and thought.</p>	<p>A series of lessons working on the key skills and small steps set out in WRM (including opportunities for arithmetic practice, fluency, reasoning and greater depth where appropriate)</p> <p>Post unit assessment</p>	<p>document Nrich website NCETM website Third Space Learning resources</p>	<p>the ability to challenge their thinking and learn from their mistakes. Misconceptions are addressed promptly through timely feedback, as a result progress is cumulative and obvious over time.</p>
Metacognition	<p>The Education Endowment Foundation has identified that children who develop their metacognitive strategies effectively can make up to 8 months additional progress. At Horton Grange we are continually looking to accelerate progress for all children, but especially those who need to catch up and keep up. Metacognition is integral in all areas of the curriculum and is embedded in the planning. Changing the way our children think about learning and engage in the learning process will</p>	<p>1.Planning format supports metacognitive strategies</p> <ul style="list-style-type: none"> <li>● Activate prior knowledge</li> <li>● Explicitly teach, model and practice strategies</li> <li>● Independent practice where the children plan, monitor and evaluate their learning</li> <li>● Reflection of the learning</li> </ul> <p>2. Each classroom has a visual representation of 'being in the pit' which supports conversation around facing challenges and the tools they need to tackle them</p> <p>3. Metacognitive talk - children know the process of learning. They engage in talk about working and long term memory which aids metacognition.</p>	<p>CPD relating to metacognition accessible on the T Drive EEF guide to metacognition (copies downloadable <a href="https://educationendowmentfoundation.org.uk/tools/guidance-reports/metacognition-and-self-regulated-learning/">https://educationendowmentfoundation.org.uk/tools/guidance-reports/metacognition-and-self-regulated-learning/</a>)</p>	<p>Increased metacognitive skills impact on all areas of learning. Children are better able to retain and apply their learning. This is evident not only in data and in books but also in their ability to articulate their learning. Comparative data shows no difference between PP children and their peers</p>

	have a long term positive impact in all areas of the curriculum.			
Summative Assessments	<p>Summative assessments help teachers to form a judgement, alongside teacher assessment and work in books, about the progress and achievement. They prepare the children for more formal testing that is done at the end of each Key Stage.</p> <p>At Horton Grange these assessments are part of the teaching cycle of assessment for learning and should be administered in a way that makes them as accessible and as non-threatening as possible</p>	<p>Summative assessments are done across Key Stage 1 and 2. This includes arithmetic and reasoning.</p> <p><b><u>Assessment Cycle (tbr)</u></b></p> <p>Autumn 1 Autumn 2 Spring 1-no assessment as no data capture Spring 2 Summer 1 Summer 2</p> <p><b><u>Year 5</u></b></p> <p>A baseline test is carried out in Summer 2 using a Year 6 past SAT paper (2017). This provides a baseline indication prior to teaching the Year 6 curriculum and used to set achievement targets</p> <p><b><u>Year 6</u></b></p> <p>Mock Sats are done in January/February. Past SAT papers are used (latest)</p>	<p>Cornerstones Assessment</p> <p>WRM assessment</p> <p>KS1/KS2 previous assessments</p> <p>Third Space Learning assessments</p>	<p>Teachers are able to make accurate assessments of children's learning and progress and use this to help inform future learning.</p> <p>Data allows comparisons to be made and progress to be judged</p>

