

Statement of curriculum intent in Maths Hyde Park Infant School

At Hyde Park Infant School we want children to make rich connections across mathematical concepts that allow them to develop a deep conceptual understanding of the concepts taught, work fluently between concepts and use mathematical reasoning to solve problems. We intend for all of our pupils to use and apply their mathematical knowledge of concepts and number to solve problems and reason about their ideas. We want our children to be independent and confident in their own choices to solve problems. Children will experience sequenced learning throughout EYFS and KS1, each stage building upon the last so they become confident and fluent with their choices in the fundamentals of mathematics. Problems will increase in complexity year on year so that pupils develop their conceptual understanding and their ability to apply their mathematical knowledge rapidly and accurately. We want pupils to have the confidence and skills to use and apply what they know to varied problems and see the relationships and connections between different aspects of maths. It is essential that the children are exposed to and supported in developing a wide, varied and accurate mathematical vocabulary. This will support them in accessing mathematical problems, as well as presenting mathematical justification, argument or reasoning. Mathematical discussion should be facilitated within lessons through modelling the use of this vocabulary and displaying it within the classrooms. All pupils in all year groups will be supported through a variety of concrete manipulatives, visual images and models as well as developing their mental strategies to solve problems fluently. Maths will be taught in small steps over a sequence of lessons that allow all children to access lessons with the aim to mastering objectives over time. Each lesson phase provides the means to achieve greater depth through quality first class teaching. See appendix 1 for sequence of teaching across year groups.

Implementation

At Hyde Park Infant School, we recognise that in order for pupils to progress to deeper and more complex problems, children need to be confident and fluent across each yearly objective. We teach to ensure mastery in Maths is embedded across all of our year group curriculums. All planning is based on teaching the same objective to most of the children at the same time, taking small sequential steps to ensure children have a deep understanding of the concept being taught. Children will then have the opportunity to experience varied contexts to encourage confidence, fluency and efficiency with their mathematical problem solving. When being introduced to a new concept, children will have the opportunity to experience it through concrete, pictorial and abstract methods to deepen their understanding. Each objective is broken down into fluency, reasoning and problem solving. All resources are sourced from various resources with support from NCETM Teaching for Mastery Work Group. We believe all children can achieve and are supported through quality first class teaching, any misconceptions are addressed as quickly as possible through effective use of teaching assistants and teacher led guided groups when needed. Differentiation is achieved by individual support, immediate and effective intervention and through the use of varying manipulatives and resources. All teachers use precise questioning in class to test conceptual and procedural knowledge and assess children regularly to identify those requiring intervention, so that all children keep up. 'Differentiation' will now be seen by children working on differing complexities of problems within the same objective. 'Rapid graspers' will have challenging problems to solve to ensure that they continue to make progress through reasoning challenges, enquiry tasks and open ended problem solving opportunities, including tasks that ask them to generate own questions and problems – innovate. There will be some children who are using practical equipment for longer in order to support learning.

Tracking Progress

At the end of a term, children's learning will be assessed using Teacher Assessment and annually using NFER assessments through questions and problems that require the pupils to remember, understand, apply, analyse and evaluate their knowledge and skills. The results will be uploaded onto Arbor as per our MAT assessment policy.

Marking and Feedback

- Targeted marking or questioning and verbal feedback takes place by the class teacher on a daily basis.
- Verbal feedback is constantly used to progress the learning in the lessons.
- Mini-plenaries and modelled intervention are used to address misconceptions.
- Scaffolded and targeted questioning is used by teachers and teaching assistants to enhance learning outcomes for all.
- The focus on a mastery approach to Mathematics will ensure that pupils acquire a deep, long-term, secure and adaptable understanding of the subject.
- Children who have not been able to grasp a concept taught or master an objective will receive support from either a teacher or TA as soon as it is possible. Ideally, this should take place within a lesson or on the same day.

All pupils, when introduced to a key new concept, should have the opportunity to understanding by first physically represent mathematical concepts through using objects and pictures as well as being introduced to the mathematical language needed to access the learning. Children will then be moved onto demonstrating and visualising abstract ideas, alongside numbers and symbols.

Concrete – children have the opportunity to use concrete objects and manipulatives to help them understand and explain what they are doing.

Pictorial – children then build on this concrete approach by using pictorial representations, which can then be used to reason and solve problems.

Abstract – With the foundations firmly laid, children can move to an abstract approach using numbers and key concepts with confidence.

We implement our approach through high quality teaching delivering appropriately challenging work for all individuals. To support us we have a range of mathematical resources in classrooms including Base10, straws and counters. We also use a range of planning resources including those provided by the White Rose Hubs, NCETM and NRICH. We continuously strive to better ourselves and frequently share ideas and things that have been particularly effective. We also take part in training opportunities and regional networking events. Through our teaching we continuously monitor pupils' progress against expected attainment for their age, making formative assessment notes where appropriate. The main purpose of all assessment is to always ensure that we are providing excellent provision for every child.

EYFS	Year 1	Year 2	Where are they heading?
<p>Children will have practical experiences and use concrete manipulatives in context to learn about number, shape and patterns. Children will move onto using visual images and models of real life objects throughout the year. They will solve problems and reason about the choices they have made to an adult. Children will develop a strong sense of number and understanding of the value of each digit between 0 – 20. They will have the opportunity to use and develop their understanding of mathematical language in context and will be introduced to different mathematical concepts. Children will represent their ideas through concrete manipulatives, pictorial representations before moving onto abstract notions of numerals and symbols.</p>	<p>In year one, children will be introduced to more formal recording of operations through the use of number sentences and symbols. They will have the opportunity to begin to organising their mathematical thinking and ideas independently. Children will start to use mathematical language when solving contextualised word problems and use their understanding of maths vocabulary to explain and reason about their choices. They will apply their increasing conceptual understanding to solving more sophisticated one – step problems and show their understanding through pictures, number stories, concrete manipulatives and some abstract formal methods. Children will continue to build on their understanding of number and strengthen their knowledge of place value through the use of concrete manipulatives and visual images and models.</p>	<p>In year two children will build on their understanding of the different operations taught in year one. They will continue to develop a deeper understanding of number and place value through concrete manipulatives, models and images and abstract representations for numbers between 0 – 100. As children work on more formal recordings and more complex problems they will further develop their understanding of a whole ten as a unitary concept and then begin to unitise ten to support their problem solving. As the children’s deeper understanding of the concepts taught further develops they will be encouraged to move fluently and efficiently between different strategies to solve problems. Children will begin to see links and relationships between each concept by recognising and using the inverse, seeing similarities and differences.</p>	<p>In year three and four children are introduced to the KS2 curriculum which is explained in HPJS’s implementation strategy.</p>

	<p><u>Number and place value:</u> one more and one less up to 10 - 20</p> <p><u>Number, addition and subtraction:</u> within 20</p> <p><u>Geometry:</u> shape properties and names</p> <p><u>Mental Strategies:</u> Children will continue to ensure number, place value and mental efficiency skills are being taught. Use discrete 5/10 min sessions each day. (e.g. number bonds, number recognition, subitising, number line counting forward and backwards, one more/one less)</p>	<p><u>Number : Place Value</u> Read and write numbers to at least 100 in numerals and in words.</p> <p><u>Number: Addition and Subtraction</u> Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures; applying their increasing knowledge of mental and written methods.</p> <p><u>Number: Multiplication and Division</u> Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers.</p> <p><u>Measurement: Time & Money</u> Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. Find different combinations of coins that equal the same amounts of money.</p>	
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	<p><u>Number: Addition and Subtraction</u> Represent and use number bonds and related subtraction facts within 20.</p> <p><u>Number: Multiplication and Division</u> Solve one step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of a teacher.</p> <p><u>Number : Place Value</u> Count to 50 forwards and backwards beginning with 0 or 1 or from any other number. Count, read and write numbers to 50 in numerals.</p> <p><u>Measurement: length and height</u> Measure and begin to record lengths and heights.</p> <p><u>Measurement: weight and volume</u> Measure and begin to record mass/weight, capacity and volume.</p>	<p><u>Multiplication and Division</u> Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers.</p> <p><u>Shape: Geometry-</u> properties of shape. Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.</p> <p><u>Statistics:</u> Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.</p> <p><u>Fractions:</u> equivalency and $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$ of shapes, measurements and numbers.</p> <p><u>Addition and Subtraction</u> Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. Use concrete manipulatives, pictorial representations and abstract representations.</p>	
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	<p><u>Number: Multiplication and Division</u> Count in multiples of twos, fives and tens.</p> <p><u>Number: Fractions</u> Recognise find and name a half as one of two equal parts of an object, shape or quantity.</p> <p><u>Geometry: Position and direction</u></p> <p><u>Number: Place Value</u> Count to and across 100, forwards and backwards beginning with 0 – 1 or from any given number</p> <p><u>Measurement: Money</u> Recognise and know the value of different denominations of coins and notes.</p> <p><u>Measurement, time:</u> Sequence events in chronological order using language (before, after, next, first, today, yesterday, tomorrow, morning, afternoon and evening).</p>	<p>Application and use of knowledge to solve problems and reason across all mathematical strands. Develop a deeper understanding of the concepts taught and solve more sophisticated problems, using the language taught to explain and reason about their ideas. Investigations and use of contextualised problems to become more confident and fluent between strategies and concepts.</p>	
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Impact

Through moderation of planning, lessons and books, we can be sure that progress is made across all year groups. If progress is not being made, support is immediate and steps provided to ensure all pupils achieve and make progress. Assessment takes place at the end of each term and children’s progress and attainment is uploaded onto Arbor. Formative assessment takes place on a daily basis and teachers adjust planning accordingly to meet the needs of their class. The teaching of mathematics is monitored by leaders through lesson observations and book monitoring sessions. Depth of understanding is what we are aiming for by teaching maths using the Mastery approach.

A mathematical concept or skill has been *mastered* when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations. This will be shown in their books through a variety of representations, pictures, maths stories and work through abstract expressions, including varied practice and increasingly complex problems over time. They experience a wide-ranging number of learning challenges in the subject and know appropriate responses to them. Children will

be able to talk about maths using maths vocabulary confidently and correctly. Throughout each lesson formative assessment takes place and feedback is given to the children through marking and next step tasks to ensure they are meeting the specific learning objective. Teacher's then use this assessment to influence their planning and ensure they are providing a mathematics curriculum that will allow each child to progress. The teaching of maths is also monitored on a termly basis through monitoring arrangements by looking in books, discussing planning with each year group and learning walks. All pupil premium children will be conferenced with on a termly basis to ensure they are being adequately supported to achieve and master the maths being taught.

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 Stage 1

The National Curriculum (2014) states that:

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

Appendix 1