

## Mathematics Curriculum Statement: Foxhills Junior School

Vision for Maths  
at Foxhills  
Federation –  
Foxhills Junior  
School



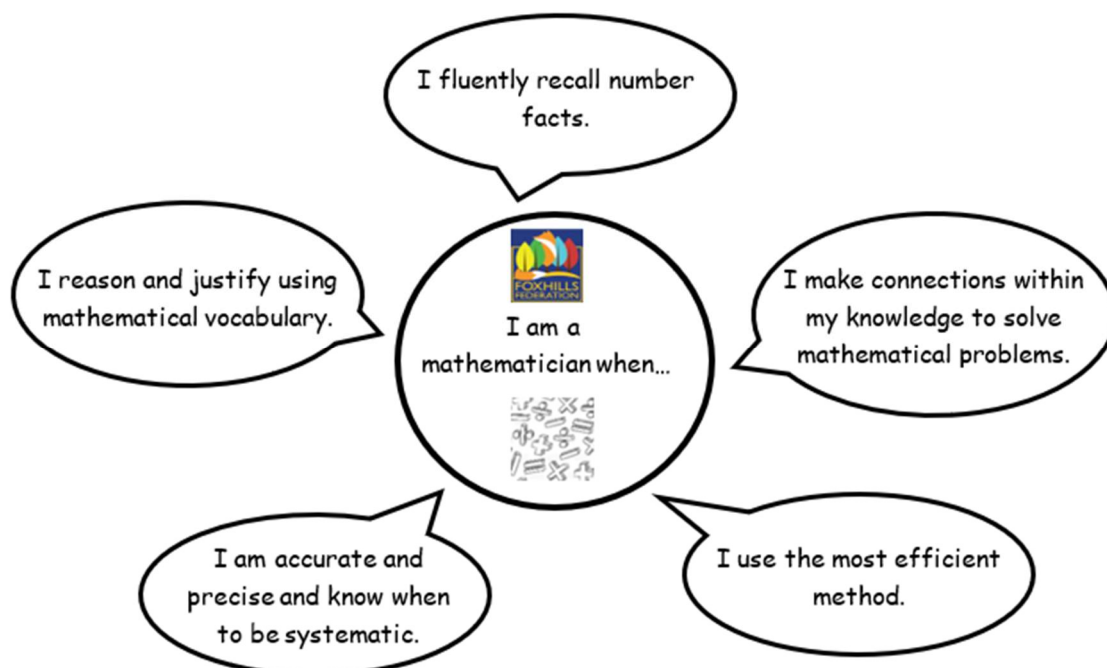
*For every child  
to master the  
key concepts  
in maths to be  
able to reason,  
solve problems  
and work  
fluently and  
systematically.*

Mathematics is a creative, rich and exciting area of the curriculum, which allows children to understand the world around them more deeply. Through building their knowledge across various domains, pupils are prepared for the future. Indeed, mathematical literacy is essential to everyday life; critical to science, technology and engineering; and necessary for financial literacy and most forms of employment. It nurtures the development of logical, methodical and creative mindsets, as well as providing children with the knowledge required to solve all manner of problems.

The Mathematics curriculum at Foxhills Infant School has been carefully designed to address the requirements of the National Curriculum (2014), ensuring that all pupils develop proficiency in the three key areas over time:

- Fluency
- Reasoning
- Problem Solving

Our vision for mathematics is that every child will develop fluent and automatic access to key mathematical knowledge. This will enable them to engage with rich problem solving and reason about mathematics with confidence. This will enable all children, no matter their starting point, to see themselves as mathematicians and appreciate the joy and wonder of mathematics.



Sequencing of the  
Maths Curriculum

The curriculum at Foxhills Junior School has been carefully sequenced to reflect the hierarchical nature of knowledge in mathematics. It aims to ensure that knowledge builds cumulatively over time and that children are supported to integrate new information into increasingly sophisticated schema (mental models).

In order to do this, using the National Curriculum as a base, we have carefully mapped the progression of substantive and procedural knowledge from EYFS to Year 2, identifying the key knowledge which children must acquire to make sense of mathematics and achieve the milestone objectives set out in the National Curriculum (2014). Our approach has been informed by subject specific guidance from the NCETM and is constantly under revision to ensure that all of our children receive the best offer within the teaching of mathematics.

Our curriculum contains four key documents:

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- **Overview Long Term Plan**  
This identifies which key topics are taught at which point within the academic year.
- **Mathematics Mapping**  
This explicitly details each individual piece of substantive and procedural knowledge to be taught during a mathematics unit;
- **Picture Glossary**  
This explicitly defines the key mathematical vocabulary identified within the mathematics mapping to ensure that, through their mathematics education, concepts are defined consistently, minimising extraneous cognitive load.

The careful sequencing of our curriculum and the documents available to support staff with its delivery support pupils to experience success within mathematical learning; we believe this is essential, as success with learning is one of the key predictors of high pupil motivation.

Because the majority of our pupils join us from Foxhills Infant School, our curriculum explicitly builds on the knowledge developed in the Foxhills Infant School curriculum. This enables us to ensure that the transition between Infant and Junior does not result in lost learning opportunities for children: connections are immediately built, and their mathematical education remains coherent and cohesive. However, we do recognise that some pupils will join Foxhills Junior School from other local Infant schools. To ensure these pupils receive the same high-quality provision, we have explicitly identified the key knowledge which underpins each area of new learning, ensuring we can address any gaps in a timely manner (so all children can keep up) and so, where 'catch-up' is required, it builds systematically upon missing knowledge.

Within our mathematics mapping and medium term planning, we have identified key knowledge which must be retrieved and consolidated from previous learning journeys in order to support their success. This supports our teachers to plan effective retrieval and assess pupils' readiness to begin a new unit of learning.

Each year group's coverage has a broadly similar structure: beginning with an introduction to the underpinning number knowledge children need to secure to access the wider areas of mathematics and progressing to manipulation of this new number knowledge with increasingly sophisticated calculation techniques. In light of the recommendations from the recent report 'Co-ordinating mathematical success: the mathematics subject report' (2023), we have ensured that geometry knowledge is sequenced throughout each academic year group's curriculum.

Within each year group's curriculum, each half term will usually include knowledge from each of the following areas.

Number – Place Value: Integer or fractional numbers
Number – Calculation: Four operations of addition, subtraction, multiplication and division.
Wider Mathematical Knowledge – Geometry, measures and statistics.

Where this is not the case (for example when calculation knowledge has been covered by the end of the Spring term), there is an expectation that teachers are regularly revisiting these strands, continuously developing pupils' procedural fluency.

### Year 3

#### Autumn

Representing and comparing numbers to 1,000	Using place value to add (including columnar addition)	Introduction to the 3, 4 and 8 times tables
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Perimeter of shapes	Using place value to subtract (including columnar subtraction)	Divisibility rules of known times tables and remainders	Types of lines. Right Angles
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### Spring

Representing and recognising fractions (including tenths)	Adding and subtracting fractions	Equivalence and comparison of fractions
Properties of shapes: quadrilaterals	Roman numerals to XII	Telling the time to the nearest minute

### Summer

Using related facts and the distributive law to multiply	Calculating with money	Calculating with measures
Using related facts to divide	Comparing units of time	Statistics: Scaling

**Number:** In Year 3, children will build on the secure foundational knowledge they have built of our Base 10 number system and will extend this to numbers up to 999. Children will be introduced to the idea of a ‘thousand’ but this will not be covered in depth until Year 4. Children will continue to explore representing number with confidence and flexibility, and this will be reinforced through children’s calculation learning across the remainder of the academic year. Children will develop a deep understanding of small unit and non-unit fractions and will begin to manipulate these with the same mathematical confidence when they work with integer numbers (for example, by mathematically comparing, adding and subtracting).

**Calculation:** In Year 3, children’s calculation knowledge will continually reinforce their developing understanding of place value within 1,000. They will continue to explore a range of strategies for mentally manipulating numbers and will focus on their knowledge of key number facts (4, 8 and 3 times tables). Once their knowledge of number facts is secure, they will be formally introduced to the formal written methods for addition, subtraction and multiplication with numbers appropriate for their place value knowledge in order that sufficient time is dedicated over the junior years to develop children’s procedural fluency. Children will learn how knowledge of place value and number facts can be used to fluently and efficiently complete significantly more complex calculations in all four operations (such as  $200 \times 3$ ).

**Wider Maths:** In Year 3, children will continue developing more complex and refined knowledge of the key areas of mathematics (beyond calculation). Each of these areas will build directly on the knowledge they developed in the Infant phase and will set up secure foundations for later in their education.

- **Measurement:** Children will continue to practice their calculation skills within the context of a range of different measures and will begin to utilise this knowledge in more complex mathematical contexts. Children will be introduced to the concept of perimeter as a property of shape and space and will use this to reinforce their knowledge of properties of shapes and accurate measurement from KS1.
- **Properties of Shape:** Children will continue to reinforce their confidence using the appropriate vocabulary to describe different shapes. They will extend this knowledge by considering the wide range of different quadrilaterals which exist and how to recognise these.
- **Statistics:** Children will build upon their knowledge of a range of charts from KS1 and will be introduced to more mathematically advanced equivalents (e.g. replacing the block diagram with the bar chart). Through this, children will be introduced to the basic concept of axes and origin.

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- **Time:** Children will refine their knowledge of telling the time further in order that continued practice through the later junior years will allow them to develop fluency. Children will learn the key conversions associated with telling the time to support more complex calculation in later years.
- **Money:** Children will use their knowledge of multiplication, addition and subtraction to complete increasingly complex calculations with money, including ensuring they only manipulate measures in the same unit.
- **Position and direction:** Children will be formally introduced to the idea of a 'right angle' as both a measure of turn and a property of shape. Children will practice recognising right angles in a range of different contexts to support their developing understanding of shape and movement.

### Year 4

#### Autumn

Numbers to 10,000	Negative Numbers	Roman Numerals to C	Addition: Formal Written Methods
Multiplication: times tables	Perimeter of rectilinear shapes and area by counting squares	Acute and obtuse angles	Position and Direction: Coordinates in the first quadrant

#### Spring

Subtraction	Division: times tables and related facts	Representing and recognising fractions (including hundredths)
Revisiting addition, subtraction, comparison and equivalence	Decimal numbers	Properties of 2D and 3D shapes

#### Summer

Multiplying and dividing by 10, 100 and 1000	Multiplication: Formal written methods	Measurement: conversions
Division: Formal written methods	Money: conversions and decimal notation	Statistics: Discrete and continuous data

**Number:** In Year 4, children will build on the secure foundational knowledge they have built of our Base 10 number system and will extend this to numbers up to 9,999. Children will be introduced to the idea of a 'ten-thousand' but this will not be covered in depth until Year 5. Children will continue to explore representing number with confidence and flexibility, and this will be reinforced through children's calculation learning across the remainder of the academic year. Children will be introduced to other key concepts within number, including formalised mathematical estimation through rounding and negative numbers. Children will develop a deep understanding of larger unit and non-unit fractions and will learn to manipulate these with the same mathematical confidence they have when working with integer numbers (for example, by mathematically comparing, adding and subtracting). They will also be introduced to the concept of decimal notation for tenths and hundredths and will link this to both their knowledge of our Base 10 number system and their knowledge of fractions.

**Calculation:** In Year 4, children's calculation knowledge will continually reinforce their developing understanding of place value within 10,000. They will continue to explore a range of strategies for mentally manipulating numbers and will focus on their knowledge of key number facts (including the times tables up to 12 x 12). Once their knowledge of number facts is secure, they will deepen their understanding of the formal written methods for addition, subtraction and short

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multiplication with numbers appropriate for their place value knowledge. They will learn to multiply and divide numbers by 10, 100 and 1,000 to support their ability to multiply using the distributive nature of multiplication. When their knowledge in all these domains is secure, children will be introduced to the formal notation of short division, using concrete resources to support the development of their conceptual understanding.

**Wider Maths:** In Year 4, children will continue developing more complex and refined knowledge of the key areas of mathematics (beyond calculation). Each of these areas will build directly on the knowledge they have developed thus far.

- **Measurement:** Children will convert between different measures using their knowledge of multiplying by powers of 10 and will begin to represent measures using appropriate decimal notations to support their developing calculation skills.
- **Properties of Shape:** Children will continue to reinforce their confidence using the appropriate vocabulary to describe different shapes. They will extend this knowledge by considering the wide range of different triangles which can be found.
- **Statistics:** Children will build upon their knowledge of a range of charts used to represent discrete data. They will build on their knowledge of bar charts to discover a new type of data (continuous data) and will initially explore this through examining a range of different time charts.
- **Time:** Children will continue to apply their knowledge of telling the time and will solve a range of problems which involve using their knowledge of multiplication to convert between different units of time.
- **Money:** Children will be introduced to the formal decimal notation for money and will use this to support more efficient calculation when problem solving in this domain.
- **Position and direction:** Children will be introduced to the concept of a 'coordinate grid' which builds on their knowledge of axes from Year 3. They will explore how locations can be efficiently described using coordinates. They will learn about how to describe movement changes on a coordinate grid (translation).

### Year 5

#### Autumn

Numbers to 1,000,000	Negative Numbers, Rounding and Roman numerals	Addition and Subtraction	Measuring Angles
Multiplication: multiples, factors and primes	Multiplication: formal written methods	Calculating perimeter and area	Volume

#### Spring

Division: formal written methods	Properties of shapes: classifying and grouping shape using advanced mathematical language	Time: solving multi-step problems involving converting between units of time
Fractions: Mixed numbers and improper fractions	Fractions: comparing fractions with different denominators	Fractions: calculating with different denominators

#### Summer

Decimal Fractions	Percentages	Money	
Multiplication and division: multiplying by 10, 100 and 1,000	Converting measures	Position and Direction: Transformations	Statistics: Line graphs

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**Number:** In Year 5, children will build on the secure foundational knowledge they have built of our Base 10 number system and will extend this to numbers up to 1,000,000. Children will be introduced to the idea of a 'ten-thousand' and 'hundred-thousand' in depth, and will encounter the idea of a 'million'. Children will continue to represent numbers flexibly using a range of concrete, pictorial and abstract representations; however, the focus will shift to the most useful and appropriate representations within a given context, as the focus in Upper Key Stage 2 shifts to intentional use of number knowledge. When consolidating and extending their knowledge of rounding, children will begin to consider degrees of accuracy and will begin to make purposeful selections of the power of ten to round to. All number knowledge introduced in the early parts of Year 5 will continue to be reinforced through children's calculation learning for the remainder of the academic year. In fractions, children will consolidate their knowledge of larger unit and non-unit fractions, and will begin to consider fractions beyond 1, representing these as mixed numbers and improper fractions. They will formalise their understanding of equivalence, learning to use their knowledge of factors and multiples to create equivalent fractions with efficiency. This will unlock the door for them to begin solving more complex comparison and calculation problems, as they are able to convert fractions with different denominators to find a common denominator. They will also build on their knowledge of decimal notation, linking this to their knowledge of our Base 10 number system, their knowledge of fractions and to the new concept of percentages.

**Calculation:** In Year 5, children's calculation knowledge will continually reinforce their developing understanding of place value within 1,000,000 as they extend their knowledge of the formal written methods for addition, subtraction, multiplication and division to larger numbers. They will learn to multiply and divide any number by 10, 100 and 1,000 using their knowledge of place value and digital shifting to support their ability to multiply using the distributive nature of multiplication. When their work on multiplying by powers of 10 in Year 5, and their work on using derived facts to support efficient multiplication from Year 4 (e.g.  $20 \times 5$ ) is secure, they will be introduced to the formal written method of long multiplication, in order to allow them to multiply larger numbers with confidence. Children will learn to interpret remainders accurately in context, which will support their ability to apply their written methods within problem solving contexts.

**Wider Maths:** In Year 5, children will continue developing more complex and refined knowledge of the key areas of mathematics (beyond calculation). Each of these areas will build directly on the knowledge they have developed thus far.

- **Measurement:** Children will convert between different measures using their knowledge of multiplying by powers of 10, extending this to any number within their knowledge of place value. They will secure their confidence representing measures using appropriate decimal notations to support their developing calculation skills.
- **Properties of Shape:** Children will extend upon their knowledge of shape as they explore shapes up to 12-sided shapes and begin to explore how algebraic formulae (presented in words initially) can be used to represent key facts (specifically related to the perimeter, area and volume of rectangles, squares and cuboids). Through this, their developing knowledge of key facts about shapes will allow them to calculate missing sides and angles with increasing efficiency. They will develop confidence with an increasing range of measurement tools, specifically the protractor, to facilitate their ability to accurately and precisely represent 2D shapes.
- **Statistics:** Children will build upon their knowledge of a range of charts used to represent continuous data, considering line graphs in detail. They will consider the idea of comparative graphs and the contexts in which bar and line versions of these may be used.
- **Time:** Children will encounter timetables in various forms and will learn how to apply their knowledge of time to solve problems with these, including converting units where necessary and solving comparison, sum and difference problems.

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- **Money:** Children will build on their secure knowledge of our monetary system to begin solving a range of more complex problems involving decimal notations for money, including scaling problems.
- **Position and direction:** Children’s knowledge of coordinates will be extended to a four-quadrant grid, building on their experience with the first quadrant in Year 4. They will continue plotting and describing points and polygons with accuracy, using coordinates. They will continue exploring different transformations, consolidating their knowledge of translation and exploring reflection in horizontal and vertical planes.

### Year 6

#### Autumn

Numbers to 10,000,000	Negative Numbers, Rounding and Roman numerals	Addition and Subtraction	Measuring Angles and properties of shapes
Multiplication and division: mental strategies, common factors, common multiples and primes	Multiplication and division: formal written methods	Fractions	

#### Spring

Converting units of measure	Algebra	Fractions, decimals and percentages
Applying formulae to solve perimeter, area and volume problems	Transformations on a coordinate grid	

#### Summer

Ratio and Proportion	Statistics	Revision
SATs	Enterprise Project (money)	Transition project

**Number:** In Year 6, children will build on the secure foundational knowledge they have built of our Base 10 number system and will extend this to numbers up to 10,000,000. Children will be introduced to the idea of a million in depth and will encounter the idea of a ‘ten-million’. Children will continue to represent numbers flexibly using a range of concrete, pictorial and abstract representations; however, the focus be firmly on the selection of the most useful and appropriate representations within a given context, as the focus in Upper Key Stage 2 shifts to intentional use of number knowledge. Children’s knowledge of rounding in Year 6 will be applied intentionally to the context in which it is used: e.g. when estimating to check reasonableness, children will be taught to choose the most appropriate degree of accuracy. The curriculum in Year 6 will continually consolidate and provide opportunities for consolidating and increasing pupils’ fluency with their secure place value knowledge. In fractions, children will make purposeful selections of the form in which they present fractional numbers: improper fractions, mixed numbers, decimals or percentages. They will consolidate their understanding of efficient calculation of equivalence and will learn to use their knowledge of highest common factors to record fractions in their simplest form, to develop good practice as they move on to secondary school. Children in Year 6 will develop their fluency when applying their knowledge of equivalence calculations in addition, subtraction and comparison questions, including within more complex problem-solving contexts. Once children’s fraction knowledge is fully secure, they will be introduced to multiplication and division of fractions, initially using concrete and pictorial representations to secure conceptual understanding. Children will learn a range of strategies for calculating percentages of amounts and will learn to make intentional selections of which strategy will be most efficient to use. Children will be introduced to the concept of ratio and will learn to apply their knowledge of ratio to solve a range of scaling problems.

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**Calculation:** In Year 6, children will focus on increasing their procedural fluency within the methods they have learned and will begin to make confident selections of the most appropriate and efficient method to use in a given context. Children will also be introduced to the formal written method of long division and will use this to solve more complex division problems with fluency and confidence. Children's understanding of interpreting remainders will be further developed as they will learn to record remainders as fractions, decimals and 'whole number' remainders and will begin to select the most appropriate way of doing so considering the context of the problem being studied.

**Wider Maths:** In Year 6, children will continue developing more complex and refined knowledge of the key areas of mathematics (beyond calculation) and will focus on integrating their knowledge within each of these areas. New knowledge introduced will support pupils to make links between their pre-existing knowledge and will ensure children have robust mathematical schema prior to embarking on their secondary school journeys.

- **Measurement:** By Year 6, children will have a secure understanding of the range of measures we can record and the types of tools available for their use. Therefore, the focus in Year 6 will shift towards the efficient use of algebraic formulae to support the calculation of properties of shapes, focussing on quadrilaterals, triangles, circles and cuboids. Children will learn to use and recall key algebraic formulae and utilise these with confidence.
- **Properties of Shape:** By Year 6, children will have a secure understanding of the properties of 2D and 3D shapes. Therefore, the focus in Year 6 will shift towards the efficient use of algebraic formulae to support the calculation of properties of shapes, focussing on quadrilaterals, triangles, circles and cuboids. Children will learn to use and recall key algebraic formulae and utilise these with confidence when working with a range of different shapes.
- **Statistics:** Children will build upon their knowledge of a range of charts used to represent continuous data, exploring the pie chart as they have now been introduced to the key vocabulary associated with circles and percentages. They will consider which graphs are most appropriate for the context. They will learn more formal ways of describing and evaluating data, specifically by considering a range of ways of calculating averages (mean, median and mode) and by exploring the idea of 'range' as a measure of variance.
- **Time:** Children will focus on applying their secure knowledge of time across the other domains within mathematics, learning to solve more complex time problems, including scaling and rates.
- **Money:** Children will focus on applying their secure knowledge of money across the other domains within mathematics, learning to solve more complex money problems, including scaling and rates.
- **Position and direction:** Children will continue to secure their knowledge of transformation on a coordinate grid. They will formally explore the transformation of rotation and will continue to embed their understanding of translation and reflection, including reflection in a diagonal line.

**What are the knowledge types and how will they be taught?**

The curriculum at Foxhills is knowledge-based because our staff are united by the belief that knowledge promotes intellectual growth: The more you know, the more you understand the world. Knowledgeable children are confident and can broaden their experiences.

In line with OFSTED's research reviews and mathematics curriculum guidance, in mapping mathematics, we have identified key types of knowledge which progressively build over the course of children's education. Because of the complexity of knowledge within mathematics, our mapping focusses predominantly on explicitly outlining the substantive and procedural knowledge.

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- **Substantive knowledge:** The specific facts which children are expected to learn as a result of our mathematics curriculum. Within our mapping, these are identified as ‘know that...’ statements. Due to the nature of mathematics, there is a significant amount of substantive knowledge for children to acquire; our mapping ensures that this is introduced at the most appropriate time and supports teachers to identify pre-requisite knowledge to support unpicking of any misconceptions.
- **Procedural knowledge:** The knowledge of key procedures within mathematics. In our mapping, these are identified as ‘know how...’ statements. Each aspect of procedural knowledge will be grounded in clear, explicit teaching of linked substantive knowledge.

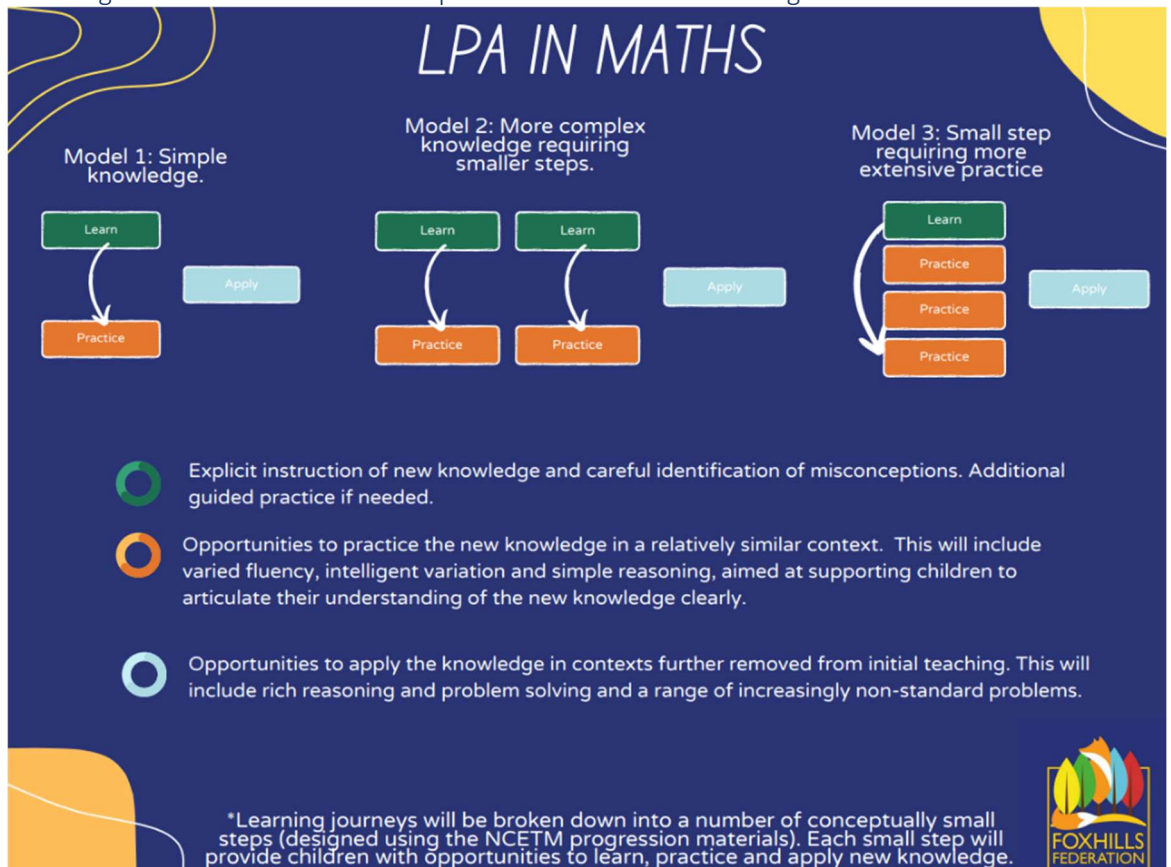
Conditional and disciplinary knowledge within mathematics are taught through the instruction of the substantive and procedural knowledge, and are modelled clearly by teachers as they show children how to approach reasoning and problem solving challenges.

- **Disciplinary knowledge:** This forms the basis of our ‘what it means to be a mathematician’ statements, and underpins pedagogy across all areas of the mathematics curriculum.
- **Conditional knowledge:** Conditional knowledge provides the link between the other types of knowledge within our curriculum as it exemplifies when and why children will need to apply their mathematical knowledge. This will be taught through careful and explicit modelling of a broad range of problem solving and reasoning problem types to support children to develop complex, interrelated schema over time.

### How is the curriculum implemented?

Our mathematics curriculum is designed to be taught using our pedagogical approach: Learn, Practice, Apply, Revisit (LPAR). This approach is based on cognitive science and recognises the effectiveness of direct instruction, followed by ample opportunities for purposeful practice. The aim of our approach is that pupils are enabled to ‘keep up’, not ‘catch up’.

This diagram reflects how LPAR is implemented within the teaching of mathematics.



In practice, the teaching of mathematics at Foxhills Infant School takes three parts

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- Explicit teaching and deliberate practice of new knowledge (*mastery teaching*).
- Regular revisit of learned knowledge (*Last step, last journey, last year...*).
- Additional explicit teaching and revisit of key number knowledge (*automatic number knowledge*).

### Mastery Teaching

Teachers use curriculum documents to inform their short-term planning. Teachers use the mapping and associated documents to plan their explicit instruction: they use concise and clear exposition supported by the most appropriate representations (concrete, pictorial or abstract) to help pupils understand new mathematical ideas. **All pupils** are exposed to the representation which will best support the development of conceptual understanding, even if they already show some procedural knowledge of the taught concept. Because of this, children will ordinarily begin learning as a whole class. However, during explicit teaching, teachers plan regular opportunities for pupils to demonstrate their understanding, using collective response strategies wherever possible (e.g. I do, we do; hinge questions). Teachers use this information to make appropriate decisions about how to support pupils' progress: for example, this may mean using 'cutaway' so pupils who are secure begin independent learning earlier; providing additional worked examples; using different representations and addressing misconceptions with smaller groups. This flexible approach to teaching and learning allows our teachers to personalise learning effectively with a mixed ability classroom.

When pupils have demonstrated that they have understood the new knowledge, teachers provide them with ample opportunities to practise in a context relatively similar to initial instruction. This deliberate practice supports pupils to secure new knowledge in their long-term memories.

All pupils are then given the opportunity to apply their knowledge in more complex, problem solving contexts, where they may need to draw links between a range of mathematical ideas to be successful. This helps them to link their new knowledge to other schema within their long term memory, increasing the flexibility of their understanding. Throughout initial practice and application of knowledge, pupils are given regular opportunities to reason about mathematics and our teachers have high expectations of pupils' use of mathematical language: by developing the vocabulary of maths, we empower our pupils to explain their thinking with ever-increasing confidence.

At all times, children will be working on the same 'small step'. Children who reach conceptual security more quickly will be challenged to deepen their understanding, rather than accelerating through new content. Deepening can take a wide range of forms: for example, teachers may provide children with an open-ended deepening task, may ask a pupil to explain their reasoning, may extend a completed task using careful questioning or simple tools such as an adapted Frayer model or may use reduced feedback to encourage increased reflectiveness and encourage the adoption of effective checking strategies.

### Revisit

Alongside effective instruction and opportunities to practice new learning, our teachers plan for children to have regular opportunities to revisit previously learned knowledge as we know 'remembering' this helps our pupils to secure their new knowledge within their long term memories and ensure it is easy for them to access. Retrieval is included in the following ways (however, this is not an exhaustive list; retrieval is crucial to pupils' success within mathematics):

- Regular retrieval practice. In EYFS, this is through the careful design of maths stations within the enhanced provision. In Year 1 and 2, this is through the use of a regular retrieval practice task, which is designed to present previously learned knowledge at increasingly spaced intervals.

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- Clever design of practice and apply problems to include knowledge which has already been learned in a previous learning journey.
- Inclusion of 'revisit' tasks at the beginning of a new learning journey to support a teacher to assess whether pupils have mastered the pre-requisite knowledge.

Where teachers' assessment for learning (AfL) has identified that a pupil or group of pupils are at risk of falling behind, teachers may use revisit time to work with a small group of pupils on 'keep up' where they address any misconceptions and ensure pupils are ready to access the learning in the mastery lesson.

### Mastering Number

Automatic recall of key number facts is essential to reduce cognitive load. Therefore, our teachers deliver separate, short and focussed fluency sessions. These are designed to be explicit and quick, providing regular opportunities for pupils to retrieve key facts and strengthen their knowledge of these and develop a deep understanding of a range of mental methods which will support their attainment in the wider mathematical curriculum. These sessions will be interactive, oral and may incorporate use of approved computer programmes (such as Times Tables Rockstars in Year 2).

### **Adaptation and Variation**

We have a 'keep-up' approach in mathematics as we believe all children have the right to succeed in mathematics. Therefore, we expect that, wherever possible, all children are accessing the same learning. To support this, we use a range of strategies to support all children to make exceptional progress from their starting points. We recognise that strategies must be applied flexibly and must be in response to individual children's needs in specific areas of the mathematics curriculum.

Often, effective adaptation and variation can be made during quality first teaching. Varying the resources available to children on tables, providing additional worked examples and using faded worked examples can all be used successfully to support learning during quality first teaching. Additionally, flexible use of adult time will allow for pupils to receive the support/challenge they need. For example, adults can adapt in the moment by

- Cutting pupils away to work independently when they have demonstrated conceptual security to maximise learning time
- Working with smaller groups following initial teaching, adapting modelling or using varied representations to address misconceptions
- Circulating effectively to provide effective and timely feedback
- Pulling small groups back to work with an adult to address misconceptions or challenge children to extend thinking.

Other strategies may be deployed to address more specific barriers to success within mathematics. Some of the strategies we have identified which our teachers may use to support their learners are shown in the table below. We recognise that children may need support in mathematics at different times and for different reasons; therefore, we encourage our teachers to utilise supporting strategies flexibly, as informed by the needs of their learners.

Barrier	Possible strategy
Gaps in pre-requisite knowledge meaning that pupils may struggle to grasp new learning.	<ul style="list-style-type: none"> <li>• Pre-teaching</li> <li>• Same day intervention</li> <li>• Design of revisit tasks to diagnose specific gaps</li> <li>• Use of 'revisit' time to fill gaps in knowledge</li> <li>• Appropriate interventions (e.g. number blocks, precision teaching)</li> </ul>
Difficulties reading (e.g. as a result of dyslexia)	<ul style="list-style-type: none"> <li>• Adapted task including pictorial representations to support conceptual understanding.</li> </ul>

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may create a barrier to accessing more complex worded problems.	<ul style="list-style-type: none"> <li>Recording worded problems on a talk tin or through 'google classroom' for pupils to hear the question read aloud.</li> <li>Use of coloured paper/visual overlays (where pupils have identified visual strain – e.g. Irlen syndrome)</li> <li>Addition of 'sound buttons' on more complex decodable words to support independent reading.</li> </ul>
Difficulties writing (e.g. as a result of dysgraphia or fine motor issues) may create a barrier providing written responses.	<ul style="list-style-type: none"> <li>Use of alternative forms of response (e.g. adult scribing, audio-recording a pupil's verbal response, pictures/diagrams, word-processing)</li> <li>Adapted equipment (pen grips, triangular pencils, adapted ruler)</li> </ul>
Struggling to organise information	<ul style="list-style-type: none"> <li>Task planners</li> <li>Worked examples and faded worked examples</li> <li>Worked example books</li> <li>Effective modelling on learning wall to refer to</li> </ul>
Difficulties retaining new knowledge	<ul style="list-style-type: none"> <li>Overlearning</li> <li>Precision teaching</li> <li>Same day intervention</li> <li>Additional use of spaced retrieval</li> <li>Additional practice, including guided practice if necessary</li> </ul>
Difficulties getting started/overwhelm when tackling a range of problems	<ul style="list-style-type: none"> <li>Reducing the number of questions per sheet</li> <li>Strimming individual questions to reduce overwhelm</li> <li>Completing a modelled example as the first question for an 'easy start' to generate the feeling of success.</li> <li>Use of task planners</li> <li>Rest and movement breaks</li> <li>Guided practice and faded worked examples</li> </ul>
Weaker/limited mathematical vocabulary	<ul style="list-style-type: none"> <li>Pre-teaching</li> <li>Use of pictorial word banks</li> <li>Effective learning walls</li> </ul>

Where children are at risk of falling behind, our teachers take action quickly to identify the foundational knowledge they have not secured and fill these gaps. This may be completed during mathematics lessons through effective use of cutaway teaching or, where necessary, through structured, timetabled interventions.

In mathematics, we recognise that one of the most effective ways to intervene when a child struggles with new learning is through same day intervention to ensure that gaps do not develop or widen. Wherever possible, if a pupil has been identified to have struggled within a lesson, they will receive additional support from an adult to fill these gaps. Alternatively, this support may be provided the following day, or through planned cutaway in a following lesson.

### Rationale for enrichment and wider personal development

In addition to our mathematics curriculum, we have carefully sequenced a range of opportunities for children to apply their mathematical knowledge in a real-life context, and to explore ways in which mathematics may enrich their future lives. Opportunities planned are wide and varied, including careers days, number themed days, inter-house competitions, enterprise projects and application of mathematics in other areas of the curriculum. This supports our children to see the value and purpose of their mathematical learning, and aims to compensate for children who may, otherwise, not have access to wide and varied mathematical experiences.

## Mathematics Curriculum Statement: Foxhills Junior School

### Impact

We recognise that, by its very nature, our mathematics curriculum is a working document. Leaders systematically assess the impact of our mathematics curriculum in order to make appropriate changes to the curriculum to ensure all children make the best possible progress during their time at Foxhills.

When monitoring mathematics, leaders look for:

- Evidence of effective use of concrete, pictorial and abstract representations, both in adult modelling and in children's learning.
- Evidence of accurate and precise mathematical language used ambitiously and defined in line with our mathematics mapping.
- Evidence of children being taught and applying a range of different strategies, both to support mental calculation and to support reasoning and problem solving.
- Evidence of children articulating their mathematical thinking clearly.
- Evidence of misconceptions being identified early, systematically addressed and not reoccurring
- Evidence of adults providing children with high quality feedback which moves learning forwards, and evidence of children responding to this.
- Evidence of children having secure and automatic recall of mathematical facts.
- Evidence of positive attitudes towards mathematics and a can-do approach.
- Evidence of adaptation and variation which allows all children to access the same, age-appropriate knowledge.
- Evidence of mathematical non-negotiables for each year group in place.

To evaluate these statements, leaders triangulate information from the following sources of evidence and identify key actions to further drive improvements in the quality of mathematics instruction:

- Learning walks and lesson observations
- Pupil conferencing
- Summative assessments
  - Termly tests
  - Times Tables Rockstars OUMTC data
  - External assessment data (Year 4 MTC, Year 6 SATS)
- Book looks
- Supportive work with individual year group teams
- Intervention evaluations
- Patterns of performance in retrieval practice
- Pupil progress data

We believe it is important that our teachers ensure that new knowledge is learned before moving on. Every cohort is different and may reach conceptual security at different speeds; therefore, it is likely that the time taken for specific learning journeys will differ year on year. However, we also recognise the potential risk to curriculum coverage. As a result, subject leaders also complete regular curriculum coverage monitoring to ensure that a strategic approach is taken to adapting the long term overview, where necessary, for specific cohorts. This allows the subject leader to ensure that coverage is thorough, that teachers are able to respond flexibly to the needs of their pupils and that curriculum revision can take place if necessary.