

Mathematics

EYFS Statutory Educational Programme: Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers.

By providing frequent and varied opportunities to build and apply this understanding – such as using manipulatives, including small pebbles and tens frames for organising counting – children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, ‘have a go’, talk to adults and peers about what they notice and not be afraid to make mistakes. Development Matters (p84)

In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. Birthto5Matters (p104)

Nursery Maths Progression

Autumn	End of Spring	End of Summer
<p>Birthto5Matters (p99)</p> <p>Counting</p> <ul style="list-style-type: none"> • May enjoy counting verbally as far as they can go • Uses some number names and number language within play, and may show fascination with large numbers <p>Cardinality</p> <ul style="list-style-type: none"> • Subitises one, two and three objects (without counting) <p>Composition</p> <ul style="list-style-type: none"> • Beginning to recognise that each counting number is one more than the one before <p>Birthto5Matters (p100)</p> <p>Spatial Awareness</p> <ul style="list-style-type: none"> • Predicts, moves and rotates objects to fit the space or create the shape they would like <p>Shape</p> <ul style="list-style-type: none"> • Chooses items based on their shape which are appropriate for the child’s purpose • Attempts to create arches and enclosures when building, using trial and improvement to select blocks <p>Development Matters (p87)</p> <ul style="list-style-type: none"> • Develop fast recognition of up to 3 objects, without having to count them individually (‘subitising’). • Recite numbers past 5. <p>Development Matters (p90)</p> <ul style="list-style-type: none"> • Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc. • Combine shapes to make new ones – an arch, a bigger triangle, etc. <p>Development Matters (p91)</p> <ul style="list-style-type: none"> • Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like ‘pointy’, ‘spotty’, ‘blobs’, etc. 	<p>Birthto5Matters (p99)</p> <p>Comparison</p> <ul style="list-style-type: none"> • Compares two small groups of up to five objects, saying when there are the same number of objects in each group, e.g. <i>You’ve got two, I’ve got two. Same!</i> <p>Counting</p> <ul style="list-style-type: none"> • Points or touches (tags) each item, saying one number for each item, using the stable order of 1,2,3,4,5. <p>Cardinality</p> <ul style="list-style-type: none"> • Counts up to five items, recognising that the last number said represents the total counted so far (cardinal principle) <p>Composition</p> <ul style="list-style-type: none"> • Through play and exploration, beginning to learn that numbers are made up (composed) of smaller numbers • Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same <p>Birthto5Matters (p100)</p> <p>Spatial Awareness</p> <ul style="list-style-type: none"> • Responds to and uses language of position and direction <p>Shape</p> <ul style="list-style-type: none"> • Responds to both informal language and common shape names • Shows awareness of shape similarities and differences between objects • Enjoys partitioning and combining shapes to make new shapes with 2D and 3D shapes <p>Development Matters (p87)</p> <ul style="list-style-type: none"> • Say one number for each item in order: 1,2,3,4,5. • Know that the last number reached when counting a small set of objects tells you how many there are in total (‘cardinal principle’). • Show ‘finger numbers’ up to 5. <p>Development Matters (p89)</p> <ul style="list-style-type: none"> • Understand position through words alone – for example, “The bag is under the table,” – with no pointing. • Make comparisons between objects relating to size, length, weight and capacity. 	<p>Birthto5Matters (p99)</p> <p>Counting</p> <ul style="list-style-type: none"> • Begin to recognise numerals 0 to 10 <p>Cardinality</p> <ul style="list-style-type: none"> • Links numerals with amounts up to 5 and maybe beyond • Explores using a range of their own marks and signs to which they ascribe mathematical meanings <p>Composition</p> <ul style="list-style-type: none"> • Beginning to use understanding of number to solve practical problems in play and meaningful activities <p>Birthto5Matters (p100)</p> <p>Shape</p> <ul style="list-style-type: none"> • Responds to both informal language and common shape names <p>Development Matters (p87)</p> <ul style="list-style-type: none"> • Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. <p>Development Matters (p88)</p> <ul style="list-style-type: none"> • Experiment with their own symbols and marks as well as numerals. • Solve real world mathematical problems with numbers up to 5. Compare quantities using language: ‘more than’, ‘fewer than’. <ul style="list-style-type: none"> • Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: ‘sides’, ‘corners’, ‘straight’, ‘flat’, ‘round’. <p>Development Matters (p89)</p> <ul style="list-style-type: none"> • Describe a familiar route. • Discuss routes and locations, using words like ‘in front of’ and ‘behind’. <p>Development Matters (p91)</p> <p>Extend and create ABAB patterns – stick, leaf, stick, leaf. Notice and correct an error in a repeating pattern. Begin to describe a sequence of events, real or fictional, using words such as ‘first’, ‘then...’</p>

Reception Number Progression

Baseline	End of Autumn	End of Spring
<p>Birthto5Matters (p102)</p> <p>Comparison</p> <ul style="list-style-type: none"> • Uses number names and symbols when comparing numbers, showing interest in large numbers <p>Counting</p> <ul style="list-style-type: none"> • Enjoys reciting numbers from 0 to 10 (and beyond) and back from 10 to 0 <p>Development Matters (p92)</p> <p>Count objects, actions and sounds.</p>	<p>Birthto5Matters (p102)</p> <p>Cardinality</p> <ul style="list-style-type: none"> • Engages in subitising numbers to four and maybe five • Counts out up to 10 objects from a larger group • Matches the numeral with a group of items to show how many there are (up to 10) <p>Development Matters (p93)</p> <p>Subitise.</p> <p>Link the number symbol (numeral) with its cardinal number value.</p> <p>Development Matters (p94)</p> <p>Count beyond ten.</p> <p>Compare numbers.</p> <p>Understand the ‘one more than/one less than’ relationship between consecutive numbers.</p>	<p>Birthto5Matters (p102)</p> <p>Comparison</p> <ul style="list-style-type: none"> • Estimates of numbers of things, showing understanding of relative size <p>Composition</p> <ul style="list-style-type: none"> • Begins to conceptually subitise larger numbers by subitising smaller groups within the number, e.g. sees six raisins on a plate as three and three • In practical activities, adds one and subtracts one with numbers to 10 • Begins to explore and work out mathematical problems, using signs and strategies of their own choice, including (when appropriate) standard numerals, tallies and “+” or “-“

Fishergate Progression Monitoring

Number recognition (Sheet 1 – Monitoring Overview) B5M - Comparison - Uses number names and symbols when comparing numbers, showing interest in large numbers

B5M - Cardinality - Matches the numeral with a group of items to show how many there are (up to 10)

One more (Sheet 4 – Monitoring Overview) B5M - In practical activities, adds one and subtracts one with numbers to 10. DM - Understand the ‘one more than/one less than’ relationship between consecutive numbers.

One less (Sheet 4 – Monitoring Overview) B5M - In practical activities, adds one and subtracts one with numbers to 10. DM - Understand the ‘one more than/one less than’ relationship between consecutive numbers.

B5M - Comparison - Estimates of numbers of things, showing understanding of relative size

B5M - Cardinality - Engages in subitising numbers to four and maybe five. Composition - Begins to conceptually subitise larger numbers by subitising smaller groups within the number, e.g. 3 & 3

Composition - DM - Explore the composition of numbers to 10. DM - Automatically recall number bonds for numbers 0–5 and some to 10.

Composition - DM - Explore the composition of numbers to 10. ELG – Including subtraction facts and doubling facts

End of Summer - Statutory ELG – Number Children at the expected level of development will:

- Have a deep understanding of number to 10, including the composition of each number;- Subitise (recognise quantities without counting) up to 5;

- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Reception Numerical Patterns Progression

Baseline	End of Autumn	End of Spring
<p>Birthto5Matters (p102)</p> <p>Counting</p> <ul style="list-style-type: none"> • Enjoys reciting numbers from 0 to 10 (and beyond) and back from 10 to 0 • Increasingly confident at putting numerals in order 0 to 10 (ordinality) 	<p>Development Matters (p95)</p> <p>Explore the composition of numbers to 10.</p>	<p>Birthto5Matters (p102)</p> <p>Composition</p> <ul style="list-style-type: none"> • Shows awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wide range of objects <p>Development Matters (p96)</p> <p>Automatically recall number bonds for numbers 0–5 and some to 10.</p>

Fishergate Progression Monitoring

B5M - Counting - Enjoys reciting numbers from 0 to 10 (and beyond) and back from 10 to 0

Orders numbers (Sheet 2 – Monitoring Overview) B5M - Counting - Increasingly confident at putting numerals in order 0 to 10 (ordinality)

1:1 Counting Correspondence (Sheet 3 – Monitoring Overview) B5M - Cardinality - Counts out up to 10 objects from a larger group

DM - Use vocabulary: ‘more than’, ‘less than’, ‘fewer’, ‘the same as’, ‘equal to’. Encourage children to use these words as well.

ELG – explore patterns within numbers up to 10, including odds & evens, double facts & how quantities can be distributed equally.

End of Summer - Statutory ELG – Numerical Patterns Children at the expected level of development will:

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Reception Shape Progression

Baseline	End of Autumn	End of Spring
<p>Birthto5Matters (p102)</p> <p>Spatial Awareness</p> <ul style="list-style-type: none"> • Investigates turning and flipping objects in order to make shapes fit and create models; predicting and visualising how they will look (spatial reasoning) <p>Shape</p> <ul style="list-style-type: none"> • Uses informal language and analogies, (e.g. <i>heart-shaped and hand-shaped leaves</i>), as well as mathematical terms to describe shapes • Enjoys composing and decomposing shapes, learning which shapes combine to make other shapes • Uses own ideas to make models of increasing complexity, selecting blocks needed, solving problems and visualising what they will build <p>Pattern</p> <ul style="list-style-type: none"> • Spots patterns in the environment, beginning to identify the pattern “rule” <p>Development Matters (p97) Select, rotate and manipulate shapes to develop spatial reasoning skills.</p>	<p>Birthto5Matters (p102)</p> <p>Spatial Awareness</p> <ul style="list-style-type: none"> • Uses spatial language, including following and giving directions, using relative terms and describing what they see from different viewpoints • May enjoy making simple maps of familiar and imaginative environments, with landmarks <p>Measures</p> <ul style="list-style-type: none"> • Becomes familiar with measuring tools in everyday experiences and play • Beginning to experience measuring time with timers and calendars <p>Development Matters (p97) Compose and decompose shapes so that children recognise a shape can have other shapes <i>within</i> it, just as numbers can.</p>	<p>Birthto5Matters (p102)</p> <p>Pattern</p> <ul style="list-style-type: none"> • Chooses familiar objects to create and recreate repeating patterns beyond AB patterns and begins to identify the unit of repeat <p>Measures</p> <ul style="list-style-type: none"> • Enjoys tackling problems involving prediction and discussion of comparisons of length, weight or capacity, paying attention to fairness and accuracy • Is increasingly able to order and sequence events using everyday language related to time <p>Development Matters (p97) Continue, copy and create repeating patterns. Compare length, weight and capacity</p>

End of Summer – Non Statutory

In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. Birthto5Matters (p104)