



Early Years Foundation Stage Maths Progression



Programme of Study - Statutory Framework 2021

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.

'Developing a strong grounding in number is essential so 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 relationship between them and the patterns within those numbers.'

'It is important to develop a positive attitude and interest 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.'

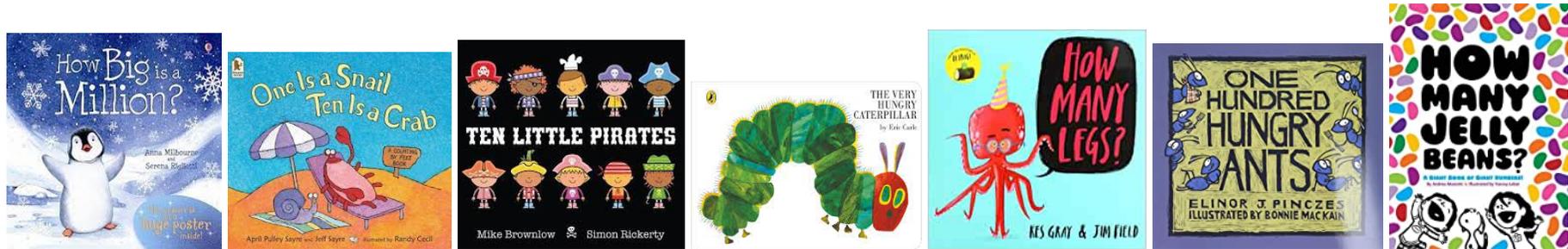
(James, Putting the Early Years into Practice, p.70, 2023)

10 Core Rhymes

Nursery have created resources for a set of '10 Core Rhymes' they believe all children should know by the end of their Nursery Year. These are used in small groups and as a whole class. They include rhymes like: 5 Little Speckled Frogs, 5 Little Ducks, 5 Little Monkeys etc.



Maths Through Stories



Nursery rhymes, books and traditional tales are used to deepen children's understanding of number e.g. The Nursery team plan in a range of activities linked to traditional tales that include 3 bears, 3 goats and 3 pigs. They explore what 3 looks like through pictures, models and a variety of representations.

Other recommended texts:

What's the Time, Mr Wolf?
How many Seeds in a Pumpkin?
One is a Snail, Ten is a Crab
On the Launch Pad

The Great Pet Sale
5 Minutes Peace
Who Sunk the Boat?
There's a hole in my Bucket.

Subitising

Subitising supports counting and is the foundation of calculation fluency. Through this method pupils will understand how numbers can be decomposed and recomposed into and from parts (essential for addition, subtraction, multiplication and division).

Subitise comes from the Latin 'to arrive suddenly'. **Subitising** is the ability to quickly recognise and say the number of things without counting.

Perceptual subitising: when you 'just see' how many items there are in a very small collection, you are perceptual subitising.

Conceptual subitising: this involves seeing the parts and putting together the whole. For example, when you see a domino, you might see two groups of 4 as one 8.

Teaching Approaches

Fluency is achieved in Maths when we skillfully combine **four approaches** to teaching:

Teacher Directed: Where we teach the new tools and model how to apply them meaningfully

Teacher-Led: Where we sharpen new tools and invite children to have more control over how and the problems we solve using them

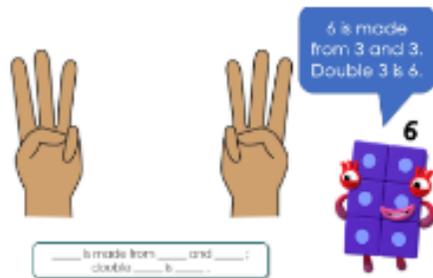
Child-led: When the children decide when to use the tools we have given them (and the problems they wish to solve) and they invite us to learn alongside them

Child-initiated: Where the child uses their tools alone or with other children and does not want or need the intervention of an adult
(Wilding, *EY Maths 3-5*, 2023)

We provide a range of visual models of numbers



Model conceptual subitising



Emphasise the parts within the whole



Plan games which involve partitioning and recombining sets

Encourage children to notice and reflect on maths in their play and everyday routines



Reception Year are following the NCETM Mastering Number Programme

<https://axis.ncetm.org.uk/mastering-number/overview-of-content/>

NCETM (National Centre for Excellence in the Teaching of Mathematics)

At the Federation, we use the **NCETM Programme** to support us with our teaching of Maths. The research based programme is broken up into 6 key areas of mathematical learning, which collectively provide a platform for everything children will encounter as they progress through their maths learning at primary school and beyond.



A core part of this learning (included in every NCETM lesson) is engaging children in sustained back-and-forth conversations in which children are encouraged to talk about their strategies to solve number problems. This is often modelled through sentence stems and 'What do you see' discussions.

Shape, Space and Measure

<https://www.ncetm.org.uk/media/5c3btyon/typical-progression-pattern.pdf>

- Select, rotate and manipulate shapes to develop spatial reasoning skills.
- Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.
- Continue, copy and create repeating patterns.
- Compare length, weight and capacity.



Maths Yearly Overview - Nursery and Reception

Exploring repeating patterns with lollipop sticks, inspired by Rangoli Art (Diwali).

<p>Core resources</p>	<p>A wide range of natural and man-made counting objects (e.g. shells, stones, leaves) to count, sort and arrange Counting objects that are all the same to reduce cognitive load - bottle tops, counters of the same colour, lolly sticks, gems Number tracks - numerals with pictorial or physical representations Core rhyme boxes - nursery Numicon and boards Numeral cards to match to objects 5 and 10 frames Shapes</p>
------------------------------	--

Finding Mathematical moments in the day	<p>Counting how many children are in, using 5s frames for self registering, counting out snacks, looking at the sequence of the day using visual timetables (sequencing events - next, after, before), using the clock to talk about time, problem solving e.g. there are too many people in the role play corner so how can we sort this problem out? Singing number rhymes and songs.</p> <p><i>Prompt question for encouraging mathematical thinking: What do you notice? Tell me what you see.</i></p>			
	Nursery Core Maths Skills	Reception Autumn	Reception Spring	Reception Summer
	<p>Number - comparison, cardinality, counting, subitising</p> <ul style="list-style-type: none"> ● Learn number songs and rhymes demonstrating understanding through gestures and actions. ● Recite numbers past 5 ● Say one number for each item in order 1, 2, 3, 4, 5 ● Show fingers up to 5 using one and two hands ● Subitising - develop recognition of 3 objects when using objects and representations ● Know that the last number reached when counting tells you the total quantity (Cardinal Principle) ● Link numerals and amounts to 5 ● Make comparisons between amounts using language e.g. more than, fewer than, lots, the same, not enough, too many, not the same. ● Solve mathematical problems with numbers up to 5 - role play contexts and stories. ● Experiment with their own symbols and marks as well as numerals. 	<p>Follow NCETM Planning - see overview</p> <p>Subitising/ building a deep understanding of numbers to 5</p> <p>Learn number songs/rhymes and demonstrate understanding</p> <p>Length, weight, height, capacity</p> <p>2D shape Select, rotate and manipulate shapes in order to develop spatial reasoning skills.</p>	<p>Follow NCETM Planning - see overview</p> <p>Subitising</p> <p>Compare quantities up to 10</p> <p>Count objects accurately to 10 and beyond - cardinal principle</p> <p>1 more/ 1 less</p> <p>Number Bonds to 5</p> <p>Addition</p> <p>Subtraction</p> <p>Money</p>	<p>Follow NCETM Planning - see overview</p> <p>Building a deep understanding of numbers to 10</p> <p>Doubling, halving and sharing</p> <p>Data handling - collecting information and recording it</p> <p>Time</p> <p>Ordering and sequencing familiar events</p>

	<p>Spatial Awareness</p> <ul style="list-style-type: none"> • Understand position through words alone – for example, “The bag is under the table,” – with no pointing. Understand ‘under’, ‘on’, ‘in’ and ‘next to’. • Start to understand and use the language around directions and routes e.g. model language as children walk the same route to the lunch hall. <p>Pattern</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. • Extend and create ABAB patterns – stick, leaf, stick, leaf. • Begin to describe a sequence of events, real or fictional, using words such as ‘first’, ‘then’, ‘now’ and ‘next’ e.g. Talk for Writing vocabulary linked to actions. Patterns of everyday routine. <p>Shape</p> <ul style="list-style-type: none"> • Use everyday and mathematical language to talk about shapes in play e.g. ‘sides’, ‘corners’, ‘pointy’, ‘big’, ‘small’. • Sort objects according to common characteristics. <p>Measure</p> <ul style="list-style-type: none"> • Make comparisons between objects relating to size, length, weight and capacity e.g. through cooking 	<p>Compose and decompose shapes eg: investigate how shapes can be combined to make new shapes eg: 2 triangles can be put together to make a square.</p> <p>Repeating patterns</p> <p>Counting verbally</p> <p>Count objects, actions and sounds.</p> <p>Number recognition</p> <p>Use 5 frames</p> <p>Count objects accurately to 10 and beyond</p>	<p>Estimating - problem solving</p> <p>3D shape</p>	
--	--	---	---	--

Number ELG

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.

Numerical Patterns ELG

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.

Mastering Number: Overview of content – Reception

Strand/ Half-term	Subitising	Cardinality, ordinality and counting	Composition	Comparison
1 Children will:	<ul style="list-style-type: none"> • perceptually subitise within 3 • identify sub-groups in larger arrangements • create their own patterns for numbers within 4 • practise using their fingers to represent quantities which they can subitise • experience subitising in a range of contexts, including temporal patterns made by sounds. 	<ul style="list-style-type: none"> • relate the counting sequence to cardinality, seeing that the last number spoken gives the number in the entire set • have a wide range of opportunities to develop their knowledge of the counting sequence, including through rhyme and song • have a wide range of opportunities to develop 1:1 correspondence, including by coordinating movement and counting • have opportunities to develop an understanding that anything can be counted, including actions and sounds • explore a range of strategies which support accurate counting. 	<ul style="list-style-type: none"> • see that all numbers can be made of 1s • compose their own collections within 4. 	<ul style="list-style-type: none"> • understand that sets can be compared according to a range of attributes, including by their numerosity • use the language of comparison, including 'more than' and 'fewer than' • compare sets 'just by looking'.
2 Children will:	<ul style="list-style-type: none"> • continue from first half-term • subitise within 5, perceptually and conceptually, depending on the arrangements. 	<ul style="list-style-type: none"> • continue to develop their counting skills • explore the cardinality of 5, linking this to dice patterns and 5 fingers on 1 hand • begin to count beyond 5 • begin to recognise numerals, relating these to quantities they can subitise and count. 	<ul style="list-style-type: none"> • explore the concept of 'wholes' and 'parts' by looking at a range of objects that are composed of parts, some of which can be taken apart and some of which cannot • explore the composition of numbers within 5. 	<ul style="list-style-type: none"> • compare sets using a variety of strategies, including 'just by looking', by subitising and by matching • compare sets by matching, seeing that when every object in a set can be matched to one in the other set, they contain the same number and are equal amounts.
3 Children will:	<ul style="list-style-type: none"> • increase confidence in subitising by continuing to explore patterns within 5, including structured and random arrangements 	<ul style="list-style-type: none"> • continue to develop verbal counting to 20 and beyond • continue to develop object counting skills, using a range of strategies to develop accuracy 	<ul style="list-style-type: none"> • continue to explore the composition of 5 and practise recalling 'missing' or 'hidden' parts for 5 	<ul style="list-style-type: none"> • continue to compare sets using the language of comparison, and play games which involve comparing sets

	<ul style="list-style-type: none"> explore a range of patterns made by some numbers greater than 5, including structured patterns in which 5 is a clear part experience patterns which show a small group and '1 more' continue to match arrangements to finger patterns. 	<ul style="list-style-type: none"> continue to link counting to cardinality, including using their fingers to represent quantities between 5 and 10 order numbers, linking cardinal and ordinal representations of number. 	<ul style="list-style-type: none"> explore the composition of 6, linking this to familiar patterns, including symmetrical patterns begin to see that numbers within 10 can be composed of '5 and a bit'. 	<ul style="list-style-type: none"> continue to compare sets by matching, identifying when sets are equal explore ways of making unequal sets equal.
4 Children will:	<ul style="list-style-type: none"> explore symmetrical patterns, in which each side is a familiar pattern, linking this to 'doubles'. 	<ul style="list-style-type: none"> continue to consolidate their understanding of cardinality, working with larger numbers within 10 become more familiar with the counting pattern beyond 20. 	<ul style="list-style-type: none"> explore the composition of odd and even numbers, looking at the 'shape' of these numbers begin to link even numbers to doubles begin to explore the composition of numbers within 10. 	<ul style="list-style-type: none"> compare numbers, reasoning about which is more, using both an understanding of the 'howmany'ness of a number, and its position in the number system.
5 Children will:	<ul style="list-style-type: none"> continue to practise increasingly familiar subitising arrangements, including those which expose '1 more' or 'doubles' patterns use subitising skills to enable them to identify when patterns show the same number but in a different arrangement, or when patterns are similar but have a different number subitise structured and unstructured patterns, including those which show numbers within 10, in relation to 5 and 10 be encouraged to identify when it is appropriate to count and when groups can be subitised. 	<ul style="list-style-type: none"> continue to develop verbal counting to 20 and beyond, including counting from different starting numbers continue to develop confidence and accuracy in both verbal and object counting. 	<ul style="list-style-type: none"> explore the composition of 10. 	<ul style="list-style-type: none"> order sets of objects, linking this to their understanding of the ordinal number system.
6	In this half-term, the children will consolidate their understanding of concepts previously taught through working in a variety of contexts and with different numbers.			