Reception's Journey to Early Mathematics

At Whitemoor Primary & Nursery Academy, we recognise that the foundations laid in the Early Years are crucial in shaping children's future success in mathematics and across the wider curriculum. Mathematical development is a fundamental aspect of children's learning and enables them to make sense of the world around them, develop problem-solving skills, think critically and apply their knowledge in meaningful contexts. We believe that secure early mathematical understanding underpins later achievement and supports children to become confident, resilient and independent learners.

In Reception, we provide a rich, engaging and ambitious mathematics curriculum that is firmly rooted in the principles of the Early Years Foundation Stage (EYFS). Through carefully planned learning opportunities, children develop a deep understanding of number, numerical patterns, shape, space and measure. We aim to foster positive attitudes towards mathematics by ensuring learning is practical, meaningful and enjoyable, enabling children to build confidence and fluency through exploration, discussion and hands-on experiences.

Mathematics is taught through a combination of whole-class teaching, adult-led group activities and carefully planned continuous provision, allowing children to consolidate, practise and apply their learning independently throughout the learning environment. Adults play a vital role in modelling mathematical language, extending children's thinking and providing opportunities for children to reason, problem-solve and make connections within their learning.

Our number curriculum is planned using the NCETM Mastering Number Programme, which supports children in developing strong number sense, fluency and a deep understanding of mathematical concepts. Alongside this, we use White Rose Maths to deliver a weekly Shape, Space and Measure lesson, ensuring children develop a broad and balanced mathematical understanding. Through both adult-directed teaching and child-initiated play, children are encouraged to spot patterns, subitise, count, compare quantities, explore composition of number and apply mathematical thinking in a wide range of meaningful contexts.

This guide outlines the progression of mathematical learning from the end of Nursery through to the end of the Autumn, Spring and Summer terms in Reception. It provides an overview of key mathematical areas, including subitising, counting, composition, addition and subtraction, pattern, and shape, space and measure. Within each area, examples of adult support, opportunities for application within continuous provision, and brief explanations of the mathematical concepts are included to support a consistent understanding of progression and practice across the Early Years.

Counting Principles

Big Mathematical Idea Children develop secure counting principles, including one-to-one correspondence, stable order and cardinality, as the foundation for all future mathematical learning. Through meaningful experiences, they learn to count accurately and apply counting flexibly across a range of mathematical contexts.

End of Nursery	End of Autumn	End of Spring	ELG
Says some numbers in sequence	Counts objects accurately using 1-1 correspondence	Counts beyond 10, recognising the stable order principle.	Selects efficient counting strategies independently.
Joins in with counting songs and rhymes.	Understands that the last number counted tells how many (cardinality).	Recognises that the final number counted represents the total quantity, regardless of how the objects are arranged.	Uses understanding of cardinality when comparing quantities and solving problems
Counts small groups of objects	Counts actions, sounds and movements.	Counts from a larger group without losing track.	Explains and justifies counting strategies.
Begins to match number names to quantities.	Counts out a given number of objects from a larger group.	Counts forwards and backwards from different starting points within 10.	Applies counting across different areas of provision and everyday contexts.

Adult role

- Model accurate counting through daily routines & play.
- Use precise mathematical vocabulary consistently.
- Encourage children to explain& justify their thinking.
- Provide meaningful opportunities to count across the learning environment.

Children may demonstrate this learning within:

- Construction
- Small world
- Loose parts
- Water
- Sand
- Creative area
- Snack time
- Outdoor area

Subitising

Big Mathematical Idea: Children develop the ability to recognise small quantities without counting, building strong number sense and supporting mental calculation. Through perceptual and conceptual subitising, children begin to recognise patterns, understand the composition of numbers and develop efficient mathematical thinking.

End of Nursery	End of Autumn	End of Spring	ELG
Notices small groups of objects without counting.	Instantly recognises quantities to 3 (perceptual subitising).	Instantly recognises quantities to 5 in a variety of arrangement.	Uses subitising to support calculations, number bonds and problem solving.
Recognises familiar arrangements during play.	Recognises common dot patterns and finger patterns.	Recognises structured arrangement such as dice patterns & five frames.	Explains how they know the amount without counting.
Begins to compare small quantities.	Uses subitising during games & practical activities.	Uses conceptual subitising to see smaller groups within larger numbers.	Applies conceptual subitising when exploring the composition of numbers to 10.
Explores quantities through practical experiences.	Begins to recognise that numbers can be made up in different ways.	Recognises different representations of the same quantity.	Uses subitising confidently across a range of mathematical concepts.

Adult role

- Model subitising through daily routines & play.
- Use a range of structured representations including dice, fingers and five frames.
- Encourage children to explain what they notice about quantities.
- Provide meaningful opportunities to explore, discuss and represent small quantities.

Children may demonstrate this learning within:

- Construction
- Small world
- Loose parts
- Water
- Sand
- Creative area
- Snack time
- Outdoor area

Composition of Number

Big Mathematical Idea: Children develop the understanding that numbers are made up of smaller numbers and can be composed and decomposed in different ways. Through practical experiences, they begin to recognise the relationships between numbers, developing flexibility, fluency & confidence that supports future calculation & problem solving.

End of Nursery	End of Autumn	End of Spring	ELG
Explores small quantities through practical play.	Explores the composition of numbers to 5.	Explores the composition of numbers to 10.	Demonstrates a deep understanding of numbers to 10, including the composition of each number.
Combines & separates groups of objects during play.	Recognises that numbers can be made in different ways.	Finds different ways to represent the same number.	Explains how numbers can be composed & decomposed using a range of representations.
Notices when groups of objects have been joined together or split apart	Uses practical resources to investigate part-whole relationships	Using part-whole understanding to support addition & subtraction	Uses understanding of composition when solving practical mathematical problems
Begins to match number names to quantities.	Counts out a given number of objects from a larger group.	Counts forwards and backwards from different starting points within 10.	Applies counting across different areas of provision and everyday contexts.
Begins to use mathematical language such as 'more' and 'some'.	Represents numbers using a range of concrete resources	Explains how they know two representations show the same quantity.	Applies understanding of number composition confidently across mathematical concepts.

Adult role

- Model how numbers can be composed & decomposed in different ways.
- Use a range of representations including fingers, five frames, Numicon & natural resources.
- Encourage children to their thinking using practical resources.
- Promote discussion about different ways to make the same number.

Children may demonstrate this learning within:

- Maths area
- Small world
- Loose parts
- Water
- Sand
- Creative area

Comparison

Big Mathematical Idea: Children develop an understanding of how quantities compare by recognising whether groups have more, fewer or the same number of objects. Through meaningful experiences, they learn to compare, order and explain quantities, building the foundations for reasoning, problem solving and calculations.

End of Nursery	End of Autumn	End of Spring	ELG
Notice when a group has more or fewer objects than another.	Compares groups of objects using the language more, fewer and the same.	Compares quantities to 10 in different contexts.	Compares quantities confidently and explains their reasoning using appropriate mathematical vocabulary.
Explores comparing objects through practical play.	Matches objects using 1-1 correspondence to identify equal groups.	Orders groups and numbers by quantity.	Applies comparison skills when solving practical mathematical problems.
Begins to use mathematical language during play.	Compares groups by counting and recognising quantities.	Explains why one quantity is greater, fewer or equal to another.	Justifies comparisons by using mathematical reasoning.
Responds to questions such as "which has more?"	Recognises when groups are equal without relying solely on counting.	Uses comparison to support addition, subtraction & number composition.	Applies comparison confidently across a range of mathematical contexts.

Adult role

- Model the language of more, fewer, less than, greater than & equal to.
- Use practical resources to support reasoning & discussion
- Encourage children to explain & justify their comparisons.
- Provide meaningful opportunities to compare quantities in meaningful contexts.

Children may demonstrate this learning within:

- Construction
- Small world
- Loose parts
- Water
- Sand
- Creative area
- Snack time
- Outdoor area

Addition & Subtraction

Big Mathematical Idea: Children develop an understanding that addition and subtraction describe how quantities change. Through practical experiences of combining, separating & comparing groups, they begin to recognise relationships between numbers and develop the foundations for fluent calculation and mathematical reasoning.

End of Nursery	End of Autumn	End of Spring	End of Summer
Combines and separates groups during play.	Combines 2 groups to find the total using practical resources.	Solves practical addition and subtraction problems within 10.	Uses understanding of addition and subtraction to solve problems and explain reasoning.
Notices when more objects have been added or removed.	Uses the language add, altogether, more, take away, less and subtract appropriately.	Represents additions and subtractions using objects, pictures and simple number sentences.	Selects appropriate strategies to solve practical mathematical problems.
Explores quantities through practical experiences.	Uses practical resources to solve simple problems by combining or separating groups.	Recognises that the same quantity can be represented in different ways.	Explains and justifies different methods used to solve problems.
Begins to recognise simple changes in quantity.	Uses part-part-whole understanding to explore number relationships.	Uses known number facts and composition to support calculation.	Applies addition and subtraction confidently in meaningful contexts across provision.

Adult role

- Model addition & subtraction through meaningful everyday experiences.
- Use a range of concrete resources & representations to support understanding.
- Encourage children to explain how quantities have changed.
- Promote mathematical discussion & reasoning through open-ended questioning.

Children may demonstrate this learning within:

- Maths area
- Small world
- Construction
- Loose parts
- Water
- Sand
- Outdoor area

Pattern

Big Mathematical Idea: Children develop an understanding that patterns exist all around them. Through recognising, copying, continuing and creating patterns, they begin to identify relationships, predict what comes next and develop the mathematical thinking that underpins reasoning across the curriculum.

End of Nursery	End of Autumn	End of Spring	End of Summer
Notices simple patterns in the environment and during play.	Copies and continues simple repeating patterns.	Identifies, extends and creates repeating patterns independently.	Explains, predicts and creates patterns using a range of materials and representations.
Explores colour, shape and object patterns through practical experiences.	Recognises when a repeating pattern has changed or contains an error.	Creates repeating patterns using different objects, movements and sounds.	Identifies and explains the rule within a repeating pattern.
Joins in with repeated actions, songs and rhymes.	Describes patterns using mathematical language.	Recognises patterns in everyday routines and the environment.	Applies understanding of pattern across different areas of learning.
Begins to anticipate what comes next within familiar routines.	Creates simple repeating patterns independently.	Explains how they know what comes next in a pattern.	Demonstrates flexibility by representing the same pattern in different ways.

Adult role

- Model & talk about patterns in everyday routines & the environment.
- Promote mathematical language through open-ended questioning.
- Encourage children to describe, predict & explain patterns.
- Provide opportunities to copy, continue & create patterns using a variety of resources.

Children may demonstrate this learning within:

- Construction
- Small world
- Loose parts
- Music area
- Creative area
- Snack time
- Outdoor area

Shape, Space & Measure

Big Mathematical Idea: Children develop an understanding of shape, space & measure through exploration, investigation and practical experiences. They learn to notice, compare describe & manipulate shapes, explore position & movement, & compare measurable attributes, developing the mathematical language & reasoning needed to make sense of the world around them.

End of Nursery	End of Autumn	End of Spring	ELG
Explores shapes, spaces & measures through play.	Identifies & names common 2D & 3D shapes.	Describes the properties of 3D shapes using mathematical vocabulary.	Applies knowledge of shape, space & measure to solve practical problems & explain thinking.
Notices similarities & difference between objects.	Compares objects by size, length, height, weight & capacity using everyday language.	Orders, compares & explains measurable attributes using mathematical vocabulary.	Chooses appropriate mathematical language to compare & describe objects & quantities.
Builds, stacks, fits & arranges objects during play.	Explores position, direction & movement using practical experiences.	Uses positional language to describe location, movement & routes.	Applies spatial reasoning when building, designing & solving problems.
Matches & sorts objects by simple properties.	Recognises shapes & measure in the environment.	Identifies shapes regardless of orientation or size & uses them purposefully during play.	Applies understanding of shape, space & measure confidently across a range of contexts.

Adult role

- Model precise mathematical language related to shape, space & measure.
- Provide opportunities for children to build, sort, measure & investigate through play.
- Encourage children to compare, describe & explain what they notice.
- Use everyday routines & the environment to promote mathematical thinking.

Children may demonstrate this learning within:

- Construction
- Small world
- Loose parts
- Water
- Sand
- Creative area
- Outdoor area