

Ticket to: a journey from novice to expert (Early Years Foundation Stage)

Mathematics

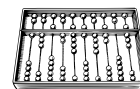


Our mini mathematicians begin their journey of mathematical exploration and discovery through practical, hands on learning experiences. Our novices engage in teacher led learning alongside continuous provision to enable our little learners to apply their knowledge.

By the end of Foundation Stage learners:

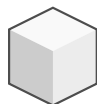


Number (Maths)



Have a deep understanding of number to 10, including the composition of each number.

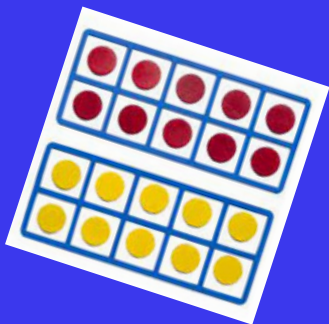
Subitise (recognise quantities without counting) up to 5.
Automatically recall (without reference to rhymes, counting, or other aids) number bonds to 5 (including subtraction facts) and some number bonds to 10, including double facts.



Numerical Patterns (Maths)



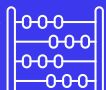
Verbally count beyond 20, recognising the pattern of the counting system. Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. Explore and represent patterns within numbers up to 10, including even and odd, double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







Early mathematical knowledge is an essential foundation of every child's educational journey and what they learn in maths in the early years is a major predictor of later success. All learning experiences acknowledge the importance of play based practice and pedagogy as the means thorough which our mini mathematicians practise and consolidate learning and understanding.

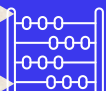
In Early Years in Mathematics, we:

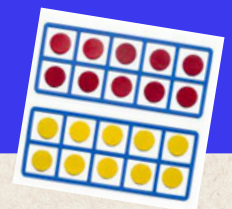
 Develop an understanding of **Cardinality and Counting**, understanding that the cardinal value of a number refers to the quantity, or 'howmanyness' of things it represents. When children understand the cardinality of numbers, they know what the numbers mean in terms of knowing how many things they refer to. We understand **Subitising** as another way of recognising how many there are, without counting.

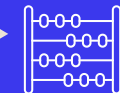
 **Compare** numbers involves knowing which numbers are worth more or less than each other. This understanding underpins the mental number line which children will develop later.

 Recognise the **part - part-whole**, knowing that numbers are made up of two or more other smaller numbers. Learning to 'see' a whole number and its parts at the same time is a key development in children's number understanding.

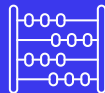
 **Partition** numbers into other numbers and put them back together again, this underpins our understanding of **addition and subtraction** as inverse operations.

 Explore the composition of numbers, recognising that one number can be made up (composed from) two or more smaller numbers.





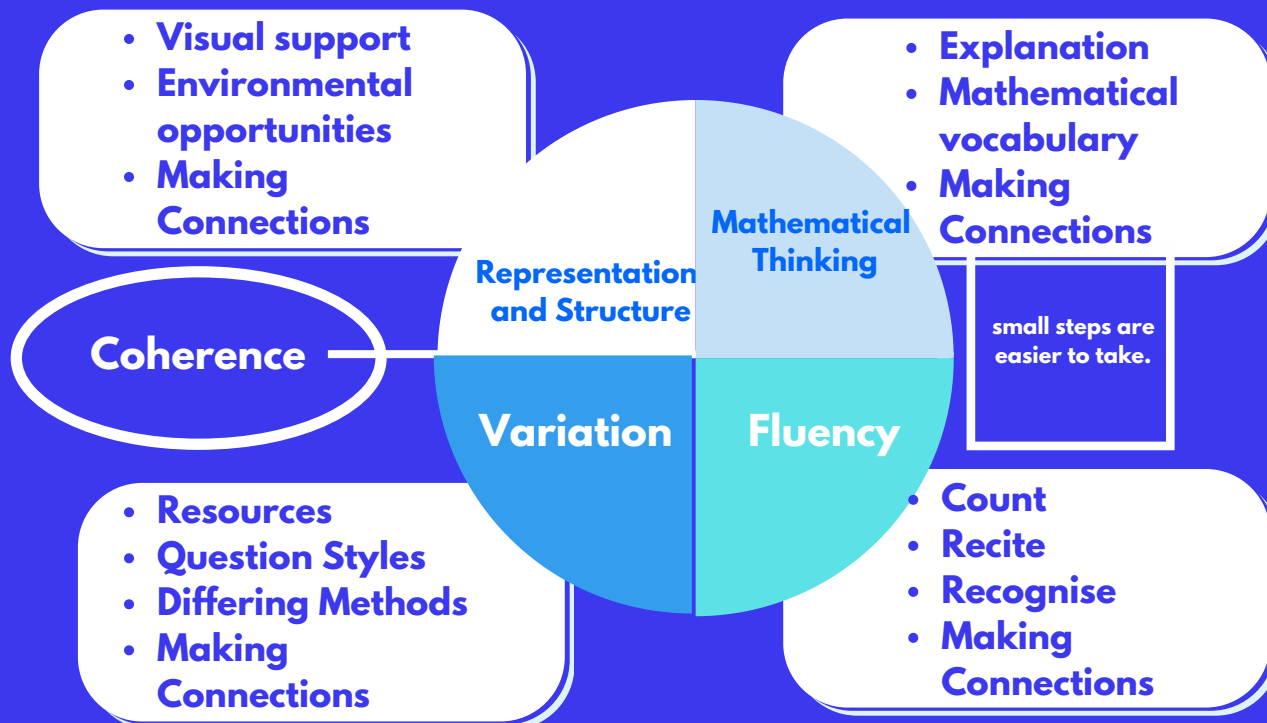
Look for and find **patterns** to help our mini mathematicians to notice and understand mathematical relationships.



We notice what happens when **shapes** move, or combine with other shapes, helps develop wider mathematical thinking.



We **measure** in terms of units (number of cups etc.) to compare different aspects such as length, weight and volume, as a preliminary to using units to compare later.





Coherence

In helping children to develop mathematical coherence we understand that:

- Small steps are easier to take
- Focussing on one key point each lesson allows for deep and sustainable learning
- Certain images, techniques and concepts are important pre-cursors to later ideas
- Sequencing is an important skill in planning and teaching for mastery
- When something has been deeply understood and mastered, it can and should be used in the next steps of learning.

Representation and Structure

Children are encouraged to understand mathematical representation and visualising structures by:

- Representing concepts visually and exposing structures explicitly (e.g. of numbers, amounts or shapes)
- Aspiring for children to be deep mathematical thinkers without the need for visual structures or representation.
- Using stem sentences to describe representation to help children to move to working in the abstract.
- Introducing children to key representations systematically to demonstrate their importance
- Showing that 'pattern' and 'structure' are related but different concepts
- Understanding that children may have seen a pattern without yet understanding the structure which causes that pattern.

Variation

Teaching with variation is to highlight the essential features of a concept or idea in a range of different ways. This helps children to understand:

- What the concept is (as varied as possible), and what it is not
- How the examples are connected and the mathematical structures that are being highlighted.

This involves careful consideration of the resources that are provided, the use of different question styles or methods of teaching and learning.

Fluency

Children are supported and encouraged to develop fluency through their mathematical thinking and explorations. Fluency demands:

- The flexibility to move between different contexts and representations of mathematics.
- The ability to recognise relationships and make connections and to make appropriate choices from a whole toolkit of methods, strategies and approaches
- More of learners than memorisation of a single procedure or collection of facts. It encompasses a mixture of efficiency, accuracy, and flexibility.

This involves supporting children to learn how to count accurately and confidently, and to recognise patterns, relationships, similarities or differences.



Mathematical Thinking

Mathematical thinking is central to deep and sustainable learning of mathematics. We aspire for our children to:

- Deeply understand and enjoy experiencing mathematics learning and teaching.
- Take ownership of ideas and concepts and use them in their own context, rather than passively receiving them.
- Develop thinking, reasoning and discussion skills to enable them to communicate like a mathematician
- Reason logically, using skills of explaining, estimating improving.
- Use their mathematical thinking skills to look for patterns in order to determine structures look for relationships and connecting ideas.

This involves being able to provide explanations and having a wealth of mathematical vocabulary.

We use the characteristics of effective learning to recognise mathematical mastery and support children's development of mastery dispositions and skills. Children are supported to develop 'mastery orientation' by *playing and exploring (engagement)* and putting their learning into practice. They use *active learning (motivation)* to engage their brain and body and deeper meaningful ways linked to their interest and fascinations, which leads to *creating and thinking critically (thinking)* as they understand and master the concepts, skills and knowledge that they have learned in meaningful ways.

This is in illustrated in the diagram.



The foundations in Early Mathematics, truly prepare our mathematicians for the next stages in their learning journey along Katherine Court. "Maths - Everyone Can".

