

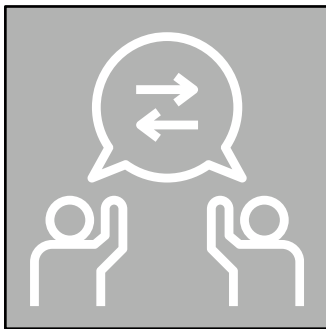
BUILDING BLOCKS FOR SUCCESS

Ensuring a strong start for *all* learners: **Early Maths**

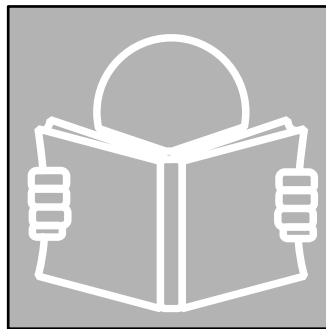


Early education should be ambitious for all, especially those who are disadvantaged. Early maths sets the foundations for learning, as mathematics gives children a range of transferable skills that they can use in everyday life including problem solving, reasoning, explaining and justifying. The learning environment supports children's growing mathematical understanding. At St Joseph's we aim to equip all children, without fail, with the knowledge and skills they need to make progress in Reception, through key stage one and beyond.

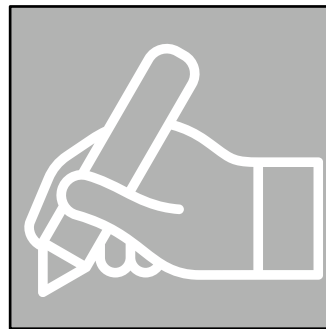
Our early years education provides children with strong foundations so that they can successfully learn how to:



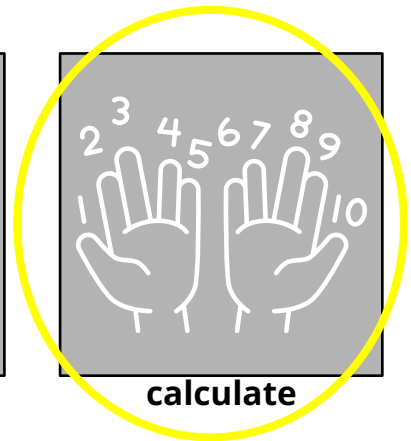
communicate



read



write



calculate

Executive function for learning and well-being

Physical, social and emotional readiness for learning

All children are entitled to a strong mathematical foundation, enabling them to show the characteristics of effective learning in mathematics. Early years teaching is underpinned by the belief that all children are effective mathematical learners, despite any previous experiences that may differ. In the early years of children's education, we have a commitment to:

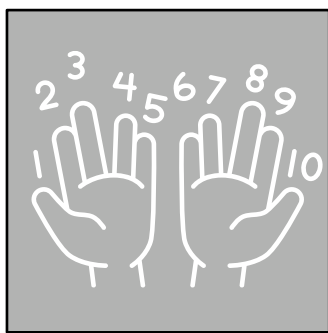
- Develop practitioners' understanding of how children learn mathematics.
- Dedicate time for children to learn mathematics and integrate this throughout the day.
- Use manipulatives and develop understanding.
- Ensure that teaching builds on what children already know.
- Use high quality targeted support to help children learn mathematics.

NUMBER IN RECEPTION

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 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.



calculate

Number

**Numerical
Patterns**



Number

Children at the expected level of development will:

- Have a deep understanding of numbers 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

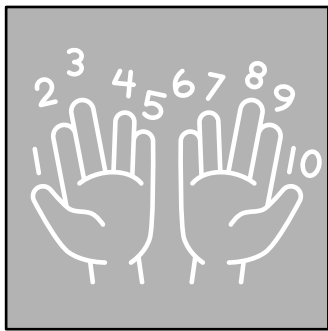
Children at the expected level of development will:

- 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.

NUMBER IN KEY STAGE ONE

The national curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing mathematical argument, justification or proof.
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication.



calculate

Number and place value

Addition and subtraction

Multiplication and division

Fractions



Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.

The principal focus of mathematics teaching in **key stage 1** is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources.

By the **end of year 2**, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

The expectation is that most pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

HOW CHILDREN LEARN MATHS

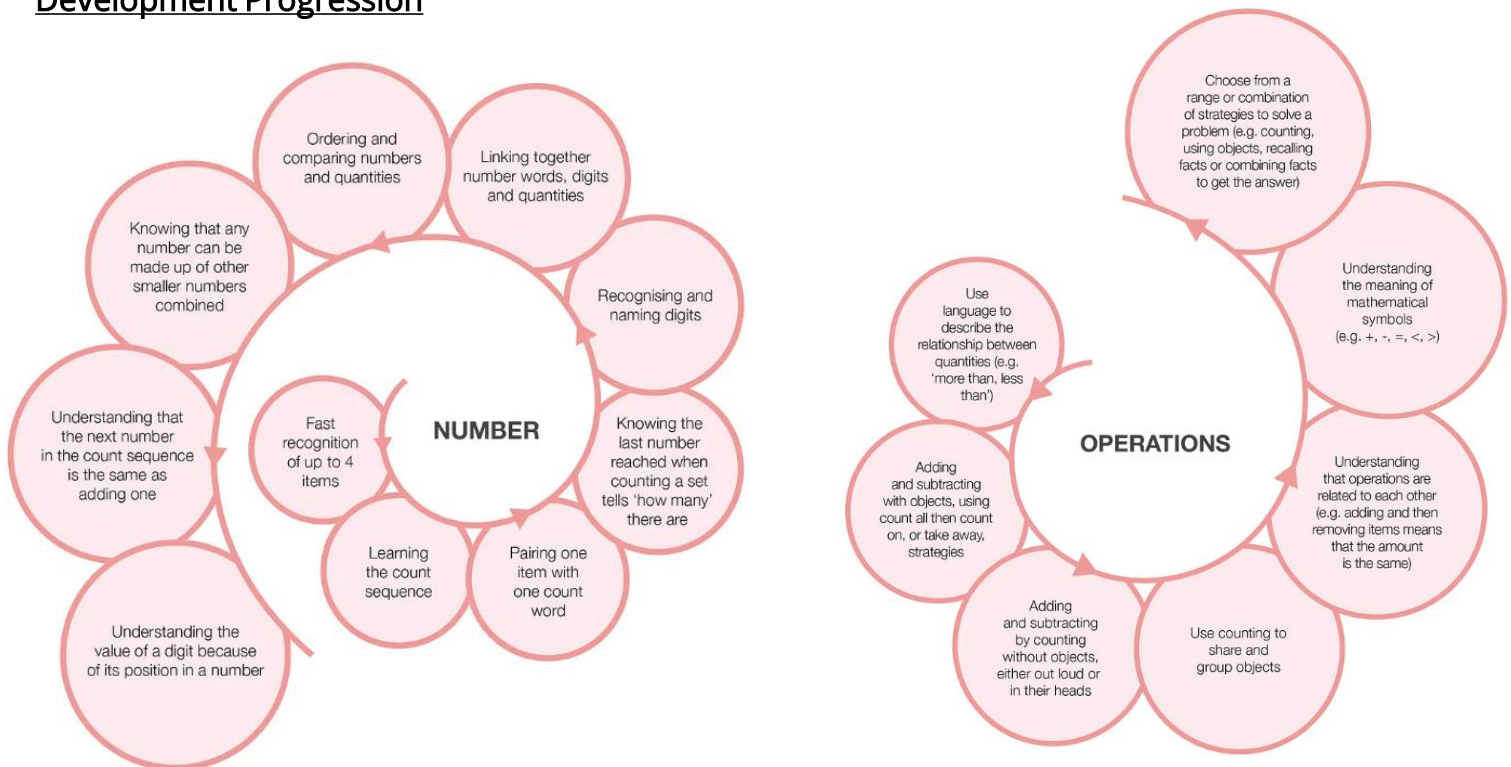
It is important that we invest time in developing our teachers own understanding of mathematics, their understanding of how children learn and how this relates to effective pedagogy. It is equally important to create a culture that supports children's curiosity, thinking, and problem-solving.

How children learn mathematical concepts is complex and developing a secure grasp of early mathematical ideas takes time. Confidence when reciting the count sequence of numbers does not necessarily mean that children have a full grasp of the underlying concepts (for example, the meaning of the numbers in the count sequence).

The rate of mathematical development does not rely only on specific mathematical knowledge and skills, but also on:

- **executive functions** such as working memory (the ability to hold information in your mind and manipulate it) and self-regulation and metacognition skills
- **language skills** that enable the effective communication of mathematical thinking, and a grasp of mathematical language important for the development of mathematical ideas.
- **motor skills** which are required for a variety of mathematical activities e.g., counting objects and writing numerals.
- children's **prior experiences** with mathematical materials and activities.
- children's **interests, enjoyment, and attitudes** towards mathematics.

Development Progression



Education Endowment Foundation 2024

Development progression diagrams (EEF,2024) summarise what we know about number and operations development. The development of each skill or concept is not discrete, instead there is considerable overlap in development so children may develop several skills in parallel. Children may also move through the spiral in different orders.

INTEGRATING MATHS INTO EVERYDAY ROUTINES

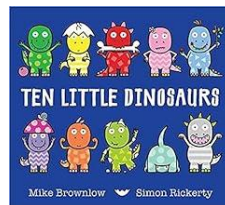
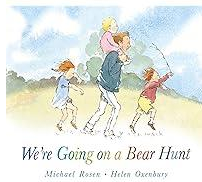
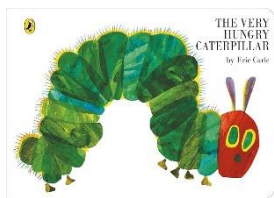
In the early years and Key Stage 1, there are opportunities throughout the day to learn about mathematics through the environment and through routines, as well as in dedicated teaching time. Throughout the day children should be exposed to mathematical language, both formal and informal, and adults should discuss mathematical ideas with children.

Plan daily activities targeting specific maths concepts and skills



Our teachers use whole-class, large and small groups to tailor instruction for children who need support on different aspects of content. Approaches will look different for children at different developmental stages.

Use storybooks to promote mathematical thinking and language.



Mathematics is explored through different contexts, including books, puzzles, songs, rhymes, puppet play and games. Using storybooks to teach mathematics can be particularly effective, through providing an opportunity for mathematical talk and questioning.

Use games to promote mathematical thinking and language.



Games can be an engaging way to practise and extend skills. They can build on children's mathematics knowledge, generate repeated practice in a motivating context, and give children and adults an opportunity to discuss strategies and ideas together.

Create opportunities for discussion of mathematics in the everyday.

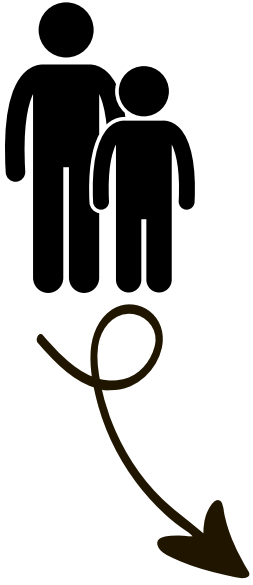
Adults in school seize every opportunity to reinforce mathematical vocabulary—for example by making a comment about which child is standing 'first', 'second', or 'fourth' in line, which child has 'more than' or 'fewer' objects than another child, or helping children rephrase statements that use ambiguous, non-mathematical language, such as refining 'big' when the child means 'tall'.

Mathematics can be highlighted through daily routines, during play, and in other curriculum areas. Everyday routines such as registration time, snack time, and tidying up provide opportunities for counting and making comparisons, as well as addition, subtraction, sharing, and time problems.



Helping *all* pupils to learn

Whilst our work to ensure we are establishing strong foundations for later success will benefit all pupils, it is particularly important for those whose early learning has been limited. In doing so, we follow some key teaching principles.



Role of the adult in developing children's mathematical language and understanding:

Adults have an important role in scaffolding learning and extending the learning during play. Through observing children's play, practitioners will identify 'teachable moments' in which they can join the play to add to the discussion, reinforce mathematical vocabulary, and encourage problem-solving.

Adults at St Joseph's:

- notice what children know and can do and intentional interact using mathematical questioning, challenging pupils to problem solve.
- are knowledgeable about stories, rhymes and songs to promote mathematical understanding
- make the best use of opportunities throughout the day to engage in mathematical conversations with the pupils.



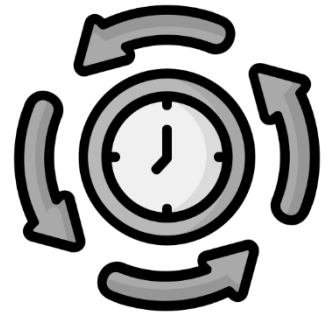
Every interaction is a teaching moment.

Role of routines:

Adults in school establish clear routines and take advantage of such time to support mathematical development.

Adults at St Joseph's:

- use everyday routines such as registration time, snack time, and tidying up provide opportunities for counting and comparison as well as addition, subtraction, sharing, and time problems.
- skilfully use song to indicate transition points.
- Use actions and gestures to support mathematical understanding.



Routines



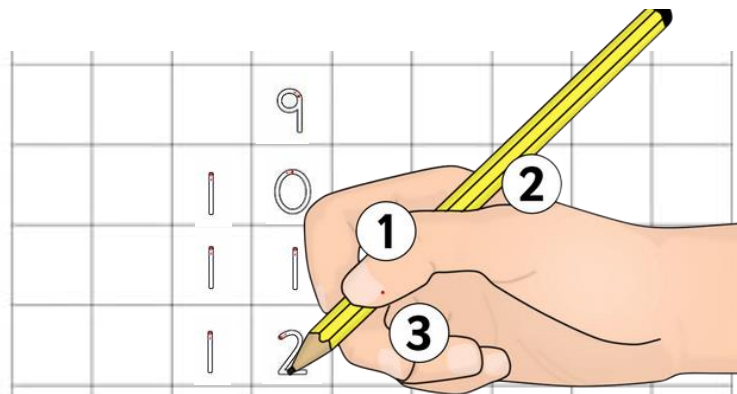
Parent Partnerships:

Involving parents, as the first educators of their child, is exceptionally important to us.

Adults at St Joseph's:

- engage with parents, informing them of how they can best help their child to progress with their learning. Sharing clarity of expectations and strategies that will help rather than hinder pupil learning.
- Regularly communicate what the children are learning.

Number formation and presentation



Set children up with the skills for success:

Number formation requires frequent and discrete, direct teaching. Children should be taught to hold their writing implement easily and correctly. Prioritising the physical skill of writing numbers ensures that bad habits are avoided, particularly in relation to number reversal.

Adults at St Joseph's:

- support children to correctly hold a pencil, noticing and correcting when incorrect pencil grip is being used.
- model using squared books correctly, building muscle memory and making number formation smoother and more consistent.
- teach children how to set out work with accuracy and clarity.

Plan for small steps, with enough teaching and practice:

Our curriculum clearly identifies important knowledge to be learned by all children by key points. This helps our teachers know what to emphasise in their teaching and assessment.

Adults at St Joseph's:

- use consistent learning sequences to provide children with the opportunity to build strong conceptual understanding of number before applying their knowledge to reasoning and problem solving.
- provide sufficient teaching and practice so that children are confident with the steps they need to take to be successful in any given task.
- Know that those who are not sufficiently fluent need more time to practice and consolidate their learning before moving on.
- prioritise effective mathematical talk, for all children, to develop their understanding of mathematical concepts.
- notice those children who may be less involved and actively seek to bring them into the learning.

		EYFS	Y1	Y2
Know and use numbers This concept involves understanding the number system and how they are used in a wide variety of mathematical ways.	Counting	Verbally count beyond 20, recognising the pattern of the counting system.	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Count, read and write numbers to 100 in numerals. Given a number, identify one more and one less.	Count in steps of 2, 3, 5 and 10 from 0 or 1 and in tens from any number, forward and backward
	Representing	Subitise (recognise quantities without counting) up to 5.	Identify, represent and estimate numbers using different representations, including the number line. Read and write numbers initially from 1 to 20 in numerals and in words.	Read and write numbers initially from 1 to 100 in numerals and in words.

