



## MATHS INTENT - to what do we aspire for our children?

Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

National Curriculum 2014

### **Our school's key drivers are to encourage children to “Be kind, be proud and strive for success.”**

These underpin everything we do at Stoke Park and as such, we look to promote and deliver a maths curriculum which has these values at its heart.

#### **Be Kind**

- Children are encouraged to collaborate, ask questions, make mistakes and to support each other on their mathematical journeys. We aim to create maths lessons where children feel supported, respected and are provided with the environment required for them to progress as mathematicians.

#### **Be Proud**

- Children are encouraged to celebrate their own and their peers' successes through a range of strategies including sharing work within the class, with senior leaders and at home.
- Through high quality modelling and consistently high expectations, children take pride in their work and this is reflected in the presentation of books.
- Classrooms are environments where children feel confident to share and articulate their mathematical reasoning and Stoke Park encourage children to be meta-cognitive mathematicians who use strategies which suit their own individual needs and preferences.

#### **Strive for Success**

- We recognise the vital skills which children must develop as young mathematicians from EYFS to the end of KS2 and work tirelessly to ensure that children leave with the fundamental knowledge required for KS3 and beyond.
- We promote a maths environment where children are challenged and have their knowledge deepened through questioning, investigations and oracy tasks.
- We encourage children to be reflective learners who are able to articulate their successes but also their next steps.

#### **Aims**

Our curriculum for mathematics aims to ensure that all pupils:

- Become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, 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 an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.
- understand the practical advantages of mathematics and its purpose in the real world



- develop a positive attitude towards mathematics and demonstrate resilience in their learning

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. They should also apply their mathematical knowledge to science and other subjects.

### **Oracy**

At Stoke Park Primary, we recognise the vital role that oracy plays in the lives of our children, both during their time in primary school and for the rest of their lives. Research shows that oracy not only acts as a powerful tool for learning but is a key skill in itself which employers actively seek. By ensuring that children have explicit opportunities to develop their oracy skills as well as opportunities to learn through oracy across the curriculum, we aspire to create young adults who are able to work confidently, articulately and collaboratively. We promote oracy through Maths by teaching vocabulary that allows the children to explain, discuss, debate and share their ideas and by providing regular opportunities for pupils to explain their reasoning. An oracy rich maths environment is one where children gain the benefits of 'learning to talk' as well as 'learning through talk'.

### **Long term sequence**

At Stoke Park, the children's journeys as mathematicians begin in Nursery where they benefit from an experience rich and practical exposure to the foundations of maths. Through both teacher led inputs and carefully planned continuous provision, children begin to explore the mathematical world around them. With a grounding in best available research, our Early Years curriculum explicitly teaches and develops children's subitising as the cornerstone on which their journey through number will be built. This is why we use Number Sense as our key curriculum resource for the teaching of number in Reception. This is supplemented by hands on and experiential learning through continuous provision and the delivery of the shape and space elements of the EYFS curriculum in sequence using White Rose as a resource.

With this foundation in place, Year 1 and Year 2 continue to prioritise factual fluency and understanding of number through the implementation of daily Number Sense sessions. These continue to build on the skills developed in EYFS and run alongside the carefully sequenced curriculum guided by White Rose. This continues into KS2.

Our maths curriculum is a spiral curriculum where key concepts are introduced, revisited and deepened over time. Sequencing of teaching and rehearsal, including spaced retrieval practise, allows children time to commit concepts, rules and principles to store in their long-term memory. Children's learning is developed through the Concrete-Pictorial-Abstract (CPA) approach in order to build on their existing understanding and to develop their conceptual understanding.

### **Assessment**

- Standardised assessments: EYFS Baseline, KS1 & KS2 SATs, MTC
- Formative assessment; ongoing during lessons and across units of work. Two forms of assessment that are used daily are the hinge question and the same day intervention model
- PiXL assessments and QLAs are used to identify gaps in learning and directly inform planning
- Rapid recall of multiplication and division facts are assessed through daily practise
- Spring 2023 introducing a trial assessment for KS1 Number Sense



## IMPLEMENTATION - how will we deliver the curriculum?

Maths is taught daily across the school. As a core subject, it is treated with the utmost importance and to realise our value of 'striving for success,' we have a profound responsibility to ensure children are given the best opportunity to leave at age related expectation.

Reception follows the Number Sense yearly overview which is carefully sequenced to ensure children are leaving EYFS with the core skills in number they will need to be successful in KS1. Each week, this will be adapted to suit the needs of the class and supplemented with teacher led tasks and activities within the continuous provision.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Autumn 1				Non-number		Number: Subitising quantities to 3	
				Spatial reasoning <i>Construction and 3D shapes</i>	Spatial reasoning <i>Construction 3D shapes</i>	Book 1: Subitising 1 - 2	Book 2: Subitising 1 - 3
	Continue spatial reasoning for rest of term through provocations in continuous provision						
Autumn 2	Non-number		Number: Subitising quantities to 5				
	Spatial reasoning <i>2D shapes and shape puzzles</i>	Spatial reasoning <i>2D shapes and shape puzzles</i>	Book 3: Subitising 1 - 4	Book 3: Subitising 1 - 4	Book 4: Subitising 1 - 5	Book 4: Subitising 1 - 5 (tens frames)	
	Continue spatial reasoning all term through provocations in continuous provision →						
Spring 1	Non-number		Number: Enumerating between 6 and 10 items				
	Pattern	Pattern	Book 5: Subitising 6 - 10	Book 5: Subitising 6 - 10	Counting out up to 10 items from a collection (not covered by EYNS)		
	Continue pattern all term through provocations in continuous provision →						
Spring 2	Non-number	Partitioning 2, 3, 4, 5 and 10 and 'number bonds' for these number					
	Spatial reasoning <i>Symmetry (incl. shape puzzles &amp; construction)</i>	Books 6 & 7: Partitioning 2 and 3	Book 8: Partitioning 4	Book 9: Partitioning 5	Book 10: Partitioning 10	Book 10: Partitioning 10	
	Continue spatial reasoning all term through provocations in continuous provision →						
Summer 1	Non-number		Composition of 6 - 9, and comparison of numbers to 10				
	Measures	Measures	Book 11: Composition of 6 - 9	Book 11: Composition of 6 - 9	Book 12: Comparing numbers to 10	Book 12: Comparing numbers to 10	
	Continue measures all term through provocations in continuous provision →						
Summer 2	Patterns in numbers to 10			Non-number			
	Book 13: Patterns in odd and even numbers	Book 13: Patterns in doubles	Book 13: Equal distribution	Pattern	Spatial reasoning <i>Maps and plans</i>	Measures	

As is the case in EYFS, staff in KS1 and KS2, whilst following the White Rose yearly overview, are encouraged to use their expertise, formative assessment and knowledge of the class to deliver a maths curriculum which is sequential and responds to their cohort's needs.



Example White Rose overview for Year 3:

<b>Autumn term</b>	<p>Number</p> <p><b>Place value</b></p> <p>VIEW</p>	<p>Number</p> <p><b>Addition and subtraction</b></p> <p>VIEW</p>	<p>Number</p> <p><b>Multiplication and division A</b></p> <p>VIEW</p>			
<b>Spring term</b>	<p>Number</p> <p><b>Multiplication and division B</b></p> <p>VIEW</p>	<p>Measurement</p> <p><b>Length and perimeter</b></p> <p>VIEW</p>	<p>Number</p> <p><b>Fractions A</b></p> <p>VIEW</p>	<p>Measurement</p> <p><b>Mass and capacity</b></p> <p>VIEW</p>		
<b>Summer term</b>	<p>Number</p> <p><b>Fractions B</b></p> <p>VIEW</p>	<p>Measurement</p> <p><b>Money</b></p> <p>VIEW</p>	<p>Measurement</p> <p><b>Time</b></p> <p>VIEW</p>	<p>Geometry</p> <p><b>Shape</b></p> <p>VIEW</p>	<p><b>Statistics</b></p> <p>VIEW</p>	<p>Consolidation</p>

Across a unit, the learning is generally built up in the following way:

- Key learning is broken down into small steps which are sequential and build upon each other
- CPA approach is integrated within each of these small steps so that children are able to develop a conceptual understanding and build upon their fluency and problem solving and reasoning skills
- Mathematical talk is used as a scaffold across the unit
- Vocabulary is introduced and revisited throughout the unit
- Children are exposed to varied representation across the unit in line with the calculation policy

### [Lesson design](#)

As is the case across all lessons at Stoke Park, maths sessions are delivered using the 'CEEAC' model. This lesson design model is based on best available research and is response to cognitive load theory. Teachers use this model to reduce cognitive overload and to bring consistency to the lesson design which in turn, reduces stress for all learners.



Connect



Explain



Example



Attempt



Apply



Challenge

Each lesson follows the model above.

- CONNECT to prior knowledge
- EXPLAIN new content, element of working scientifically and scientific vocabulary
- give and EXAMPLE of new learning
- Pupils ATTEMPT new learning with scaffolding
- APPLY new learning independently
- Pupils are CHALLENGED to integrate learning with prior knowledge

These steps should appear through the sequence of a lesson but can be looped and repeated as appropriate.

### Times Tables

Times tables are taught systematically, following the Ashley Down Times Table Scheme.

The idea behind this scheme is that the children learn about commutativity, starting with the biggest number first, e.g.  $9 \times 2 = 18$ . This means that when they learn their 9 times tables, they will have already learnt this fact along with many others, resulting in them only needing to learn  $9 \times 9 = 81$ .

The table below demonstrates that only 36 facts are needed to learn up to  $9 \times 9$ .

### 36 facts to take us up to $9 \times 9$ – Building block facts

Year 3	Year 3	Year 3	Year 4	Year 4	Year 4	Year 4	Year 4
2 x	5 x	3 x	4 x	6 x	7 x	8 x	9 x
2 x 2							
3 x 2	3 x 5	3 x 3					
4 x 2	4 x 5	4 x 3	4 x 4				
5 x 2	5 x 5						
6 x 2	6 x 5	6 x 3	6 x 4	6 x 6			
7 x 2	7 x 5	7 x 3	7 x 4	7 x 6	7 x 7		
8 x 2	8 x 5	8 x 3	8 x 4	8 x 6	8 x 7	8 x 8	
9 x 2	9 x 5	9 x 3	9 x 4	9 x 6	9 x 7	9 x 8	9 x 9
8 facts	7 facts	6 facts	5 facts	4 facts	3 facts	2 facts	1 fact

A Times Table Fact of the Day' is introduced daily before the maths lesson.

After all multiplication facts for this times table have been taught, the children complete a times table test booklet related to multiplication facts they have been learning. One test is completed after morning registration and one test is done following afternoon registration. Two minutes are allocated to each of these tests and they are marked with the children.

### SEND

In 'Striving for Success,' we are committed to this being for all pupils including the first 20% of our cohorts as well as those with additional needs. The use of the CEEAAC model and quality first teaching enables us to have an inclusive classroom environment within maths lessons. We do, however, recognise that some pupils need provision which is 'additional to' the quality first teaching in order to reach their potential as mathematicians. This includes:

- Carefully considered scaffolding
- Pre and post-teaching
- Pre-planned management of cognitive load



- Explicit instruction and modelling
- Structured challenge, without ceilings
- Alternative ways of recording
- Additional targeted adult support

In some instances, specialist adaptations are made to support the specific barriers of individual pupils.

### IMPACT - how do we know our curriculum is effective?

#### **Pupil Voice**

Pupils will use maths terminology, talk about subject specific concepts & skills, talk about the 'why' behind the work, explain how learning builds on previous knowledge, engage in and make progress regardless of starting points.

#### **High quality outcomes:**

Data with analysis from summative assessments, PiXL

Book studies demonstrate pride and effort. Children's work captures an increasing understanding of subject specific concepts and knowledge, and demonstrates a clear sequence of learning.