

Mathematics Curriculum

“The only way to learn mathematics is to do mathematics” - Paul R. Halmos

INTENT

At Whiteways, our mathematics curriculum is designed to develop children who are confident, agile mathematicians. We foster positive attitudes to learning as we believe all children can achieve in mathematics. We adopt strategies from the White Rose Maths scheme of learning to ensure children achieve fluency and mastery of the National curriculum.

We intend for all pupils to:

- Become fluent in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately;
- Be able to solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios;
- Reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language;
- Have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately to be successful in mathematics.

IMPLEMENTATION

Due to the careful setting for maths, children receive a step-by-step teaching approach that is bespoke to them enabling them to close gaps in their knowledge and make good progress towards national expectations. The fundamentals of maths, such as counting, understanding of place value and basic calculations develop our children's fluency in mathematical understanding and the children can establish firm foundations on which to build their understanding. Counting and oral reasoning is a key focus in school and this is expected in every lesson to ensure that children have fluency and the ability to link known number facts to one another.

We have adopted our concrete-pictorial-abstract approach in all areas of maths. As a result of this, children learn to see the connections in maths and understand that mathematics can be represented in different ways. The maths curriculum provides sufficient opportunities for planned revisits of previously learned knowledge, concepts and procedures; this is to ensure that, once learned, mathematical knowledge becomes deeply embedded in pupils' memories; freeing pupils' attention to work with independence, applying their mathematical knowledge to more complex mathematics.

Maths is assessed regularly in line with National Curriculum expectations.

Enrichment	Supporting Children
Where applicable links to maths will be made across the curriculum. Pupils have the opportunity to apply their mathematical skills and understanding in a wide range of different contexts. Data Handling for example is used in Science, History and Geography when comparing and analysing information.	Maths is designed to allow pupils to access the full curriculum offer. In EYFS and KS1 the focus is around securing basic skills by enhancing the provision with activities that aid and support retrieval from previous concepts taught. Children access interventions and the use of AfL supports the closing of gaps with the aim of ensuring all pupils keep up. Our lesson structure allows for all children to be supported throughout the lesson. Where areas of need are identified children are supported by the class teacher, a teaching assistant or a peer partner. Our feedback policy ensures that misconceptions are addressed either within the lesson or very quickly after. Each lesson also includes a skill sharp session which gives children an opportunity to embed their understanding of prior learning and develop their mathematical fluency. The maths curriculum is adapted for children with SEN and is bespoke to the needs of the children, ensuring that appropriate scaffolding is in place to support children making progress.
IMPACT	
Manipulatives and representations are used to support pupils engage with mathematical ideas. They are used purposefully and appropriately in order to have impact. As a result of our Maths teaching at Whiteways you will see: - Engaged children who are all challenged. - Confident children who can all talk about Maths and their learning and the links between maths topics. - A strong focus on essential number knowledge and mathematical language allows children to become fluent and flexible problem solvers. - Different representations of mathematical concepts. - Maths knowledge is challenged and strengthened by opportunities to reason threaded throughout lessons. - Learning that is tracked and monitored to ensure all children make good progress.	
Our maths curriculum teaches children life skills that will positively impact their future. We aim to deliver high-quality teaching and learning opportunities that inspire all children to succeed. We want to teach children how to cooperate and collaborate with others, as part of a team, understanding how to value other people's opinions to embed life-long values.	

Maths Curriculum

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
2 Yr Old Provision	Comparison introduce words like lots or more Counting introduce counting words Cardinality Spatial Awareness filling and emptying containers Shape non-standard 3d shapes (inset puzzles) Pattern Patterns in daily routines Measures Capacity -filling and emptying containers		Comparison Counting Says some counting words Introduce ascending counting rhymes (within 5) Cardinality Uses number words 1,2 3 Spatial Awareness Shape Use blocks to create their own simple structures and arrangements Pattern Becoming familiar with patterns in daily routines Measures Shows an interest in when things might happen now or at another time, in routines		Comparison uses words like lots or more Counting uses some counting words To engage in counting-like behaviour, making sounds and pointing or saying some numbers in sequence Cardinality To use number words, like one or two and sometime respond accurately when asked to give one or two things Spatial Awareness To crawl or squeeze themselves through holes and tunnels Shape To beginning to select a shape for a specific space To use blocks to create their own simple structures and arrangements Pattern To be familiar with patterns in daily routines, To Join in with and predicts what comes next in a story or rhyme to arrange items in their own patterns Measures To show an interest in size and weight To Explores capacity by selecting, filling and emptying containers, e.g. fitting toys in a pram	
Nursery	Comparison Beginning to compare and recognise changes in numbers of things, using words like more, lots or 'same' Counting Begins to say numbers in order, some of which are in the right order (ordinality) Cardinality (How many?) Beginning to count on their fingers.		Comparison Beginning to compare and recognise changes in numbers of things, using words like more, lots or 'same' C Counting Begins to say numbers in order, some of which are in the right order (ordinality) Cardinality (How many?) In everyday situations, takes or gives two or three objects from a group), Beginning to count on their fingers.		Comparison Beginning to compare and recognise changes in numbers of things, using words like more, lots or 'same' Counting Begins to say numbers in order, some of which are in the right order (ordinality) Cardinality (How many?) In everyday situations, takes or gives two or three objects from a group Spatial Awareness Moves their bodies and toys around objects and explores fitting into spaces,	

	Spatial Awareness Moves their bodies and toys around objects and explores fitting into spaces, Begins to remember their way around familiar environments Shape Chooses puzzle pieces and tries to fit them in, Makes simple constructions Pattern Joins in and anticipates repeated sound and action patterns Measures Beginning to anticipate times of the day such as mealtimes or home time	Spatial Awareness Moves their bodies and toys around objects and explores fitting into spaces, Begins to remember their way around familiar environments, Responds to some spatial and positional language Shape Chooses puzzle pieces and tries to fit them in, Makes simple constructions Pattern Joins in and anticipates repeated sound and action patterns, Is interested in what happens next using the pattern of everyday routines Measures Beginning to understand some talk about immediate past and future, Beginning to anticipate times of the day such as mealtimes or home time	Begins a group, Beginning to notice numerals (number symbols) Beginning to count on their fingers. to remember their way around familiar environments, Responds to some spatial and positional language, Explores how things look from different viewpoints including things that are near or far away Shape Chooses puzzle pieces and tries to fit them in, Recognises that two objects have the same shape, Makes simple constructions Pattern Joins in and anticipates repeated sound and action patterns, Is interested in what happens next using the pattern of everyday routines Measures Explores differences in size, length, weight and capacity, Beginning to understand some talk about immediate past and future, Beginning to anticipate times of the day such as mealtimes or home time
Foundation Stage	Getting to know you Just like me! It's me 1,2,3! Light and dark	Alive in 5! Growing 6,7,8 Building 9 and 10	To 20 and beyond First, then, now Find my pattern On the move
Year 1	Place Value (within 10) Addition and Subtraction (within 10) Shape	Place Value (within 20) Addition and Subtraction (within 20) Place Value (within 50) Length and height Mass and volume	Multiplication and Division Fractions Position and Direction Place Value (with 100) Money Time
Year 2	Place Value Addition and Subtraction	Money Multiplication and Division	Fractions Time

	Shape	Length and height Mass, capacity and temperature	Statistics Position and direction
Year 3	Place Value Addition and Subtraction Multiplication and Division	Multiplication and Division Length and Perimeter Fractions Mass and Capacity	Fractions Money Time Shape Statistics
Year 4	Place Value Addition and Subtraction Area Multiplication and Division	Multiplication and Division Length and perimeter Fractions Decimals	Decimals Money Time Shape Statistics Position and Direction
Year 5	Place Value Addition and Subtraction Multiplication and Division	Multiplication and Division Length and perimeter Fractions Mass and capacity	Fraction Money Time Shape Statistics
Year 6	Place Value Addition and Subtraction Multiplication and Division	Multiplication and Division Length and perimeter Fractions Mass and capacity	Fraction Money Time Shape Statistics

End of EYFS expectations:

By the end of the Early Years Foundation Stage (Reception), children should reach the following Early Learning Goal in:

Number- Children at the expected level of development will: - Have a deep understanding of number to 10, including the composition of each number; 14
- 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.

Number 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.

Characteristics of Effective Learning

All learning is underpinned by the Characteristics of Effective Learning

The pre-requisite for the Characteristics of Effective learning are:-

- **Children's ability to learn and think for themselves.**
- **Playing and exploring**
- **Active learning**
- **Creating and thinking critically**

A Unique Child

The best preparation for the future is to promote positive dispositions by providing living experiences of making choices, innovating, taking responsibility, facing challenges, thinking flexibly and critically, and knowing **how** to learn so that they will be able to respond to their unfolding futures. Supporting children in the Characteristics of Effective Learning, a statutory element of the EYFS, is a central responsibility in early years provision.

Each unique child is an active agent of their own development.

The Characteristics of Effective Learning represent the active role children adopt as they follow their curiosity and push themselves to become more competent and to understand more, and are rewarded by the inner satisfaction of mastering new skills and feeling their independence grow.

While the Areas of Learning and Development outline different elements of what children may learn during their first years, the Characteristics of Effective Learning describe how children learn. These learning dispositions, behaviours and habits of mind are particularly important in the EYFS because they build the foundations needed to support children to become lifelong strong learners and independent thinkers.

Play

Play and self-initiated activities are opportunities to build Characteristics of Effective Learning.

In play, children can follow their own innate curiosity and drive to find things out, to relate to others, and to be in charge of their own actions.

Adults provide an enabling environment for Playing and Exploring through experiences and interactions that respect children's ideas, autonomy and interests.

In play, children decide what they will do – often in collaboration with others -- what it is about, who they will play with and for how long. They follow their own curiosity and find their own challenges, using their senses to explore the world and their imaginations to act out what they know and how they feel. They are free to take a risk with new experiences, in open-ended activity.

In play children also have opportunities to engage in Active Learning, as they are intrinsically motivated toward their own goals. Adults can foster children's growing powers to concentrate with deep involvement, support resilience by helping children to develop a view that not getting the result they (or others) wanted or were expecting is not a failure, but an opportunity to try again, learn and develop, and that they can keep on trying and persisting even in the face of challenge or difficulties.

Thinking Creatively and Critically.

Children think of their own ideas, imagine possibilities, and can creatively combine ideas in spontaneous ways. They make meaning as they notice patterns and build their own working theories to make sense of their experiences, then make predictions and test them to refine their understanding. Problems are identified, possible solutions invented, and with support children become increasingly able to monitor their efforts, to alter their approach flexibly when needed, and to review how well it went and what they have learned. This critical thinking becomes more conscious and under children's control especially through talking with others about their thoughts, sharing and developing ideas together.

Parents

Parents and carers make a crucial difference to children's outcomes.

The benefits are greatest when practitioners and families work in partnership to develop ways to support children both at home and in the setting.

Working together ensures a good understanding of a child's needs, leading to appropriate provision within the setting and the possibility of supporting learning in the home.

Parents are children's first and most enduring educators.

Partnerships with parents can be truly effective only when parents and practitioners work together to enable children to create meaningful connections to their wider world and to foster a love of learning. Parents must feel included, listened to and trusted within their own teaching role.

Clear leadership regarding partnership with parents will provide the right foundation. Leaders should show commitment to developing a genuine interest in each family. Regularly reviewing the experience of families is essential for settings to develop their vision and practice.

Teaching Maths in the Early years uses a range of different teaching strategies from teacher directed tasks to child led provision activities and it is key that the quality first teaching and provision encompasses:

- Characteristics of Effective Learning
- Communication and Language- Listening and Attention and Understanding; Speaking
- Personal, Social and Emotional Development – Self regulation, Managing self, Building relationships
- Physical Development – Gross Motor skills, Fine Motor skills
- Literacy- Comprehension, Word Reading, Writing
- Understanding the World- Past and Present, People, Culture and Communities, The Natural World
- Expressive Arts and Design- Creating with Materials, Being Imaginative and Expressive

Appendices to support with the planning and sequencing for maths

1. Maths Policy (which includes calculation policy)
2. Key Knowledge Progression Grids
3. Teaching progression documents
4. Assessment Grids