



Mathematics Policy

Respect Aspiration Resilience Integrity

Our Rationale

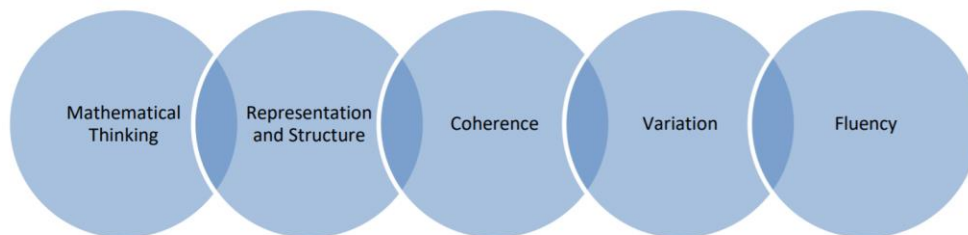
At West Park, teachers strive to deliver both depth and breadth and ensure that pupils grasp the fundamental concepts that unlock the door to mastery. We also want pupils to develop as visible learners, have a Growth Mindset 'can do' attitude, by being resilient, determined in the face of a challenge, be collaborative, creative and most important have a positive attitude toward making mistakes and seeking solutions.

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

The rationale behind our approach to teaching mathematics lay within the research of Guskey (2009) and Skemp (1976), the Mathematics Specialist Teacher Programme, the NCETM/Maths Hub led Mastery Specialist Programme as well as the 2014 National Curriculum, which states:

- The expectation is that most pupils will move through the programmes of study at broadly the same pace.
- 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.

Our teaching for mastery is underpinned by the NCETM's 5 Big Ideas. Opportunities for Mathematical Thinking allow children to make chains of reasoning connected with the other areas of their mathematics. A focus on Representation and Structure ensures concepts are explored using concrete, pictorial and abstract representations, the children actively look for patterns as well as specialise and generalise whilst problem-solving. Coherence is achieved through the planning of small connected steps to link every question and lesson within a topic. Teachers use both procedural and conceptual variation within their lessons and there remains an emphasis on Fluency with a relentless focus on number and times table facts.



5 big ideas

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At West Park, we equip pupils with a uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem-solving skills and the ability to think in abstract ways. Mathematics is important in everyday life. It is integral to all aspects of life and we endeavor to ensure that children develop a positive and enthusiastic attitude towards mathematics that will stay with them. It is vital that a positive attitude towards mathematics is encouraged amongst all our pupils to foster confidence and achievement in a skill that is essential in our society.

Our Mathematics Mastery curriculum has been developed to ensure that every child can achieve in Mathematics through practical, real life, relevant experiences. We want our children to master Maths. This means our children acquire and achieve a deep, long-term, secure and adaptable understanding of the subject. Our curriculum uses the concrete, pictorial and abstract approach to support our children with mastering mathematical concepts. We want to develop aspirational thinkers amongst our children, so we provide them with strategies to be able to develop their Mathematical thinking and the opportunities to apply these strategies to challenging reasoning problems. We encourage resilience, adaptability and acceptance that struggle is often a necessary step in learning. Fluency in Maths is also key to supporting children in developing a rich, deep understanding of Maths and this is integrated into the learning experience.

Every child should leave West Park with an appreciation of the beauty and power of mathematics and with the foundation for understanding our world

Underpinned by	High Expectations	Modelling	Language Rich	Teaching Fluency- Conceptual understanding
	<u>All</u> children are expected to succeed and make progress from their starting points.	Teachers teach the skills needed to succeed in mathematics by providing examples of good practice and having high expectations. Children succeed through the I do, we do, you do model of learning. Adults Model correct mathematical language to enable children to speak like mathematicians.	We intend to create a vocabulary rich environment, where talk for maths is a key learning tool for all pupils. Sentence stems scaffold language. Whilst pre-teaching key vocabulary and Maths Talk is a driver for pupil understanding and develops the confidence of pupils to explain mathematically.	We intend for all pupils to 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. Fluency in both conceptual understanding as well as number facts.
	Making connections- variation	Reasoning – mathematical thinking	Problem-solving- mathematical thinking	Learning Dispositions- Visible Learning
	All children will have opportunities to identify patterns or connections in their maths; they can use this to predict and	We intend for all pupils to reason mathematically by following a line of enquiry, conjecturing relationships and generalisations,	We intend for all pupils to solve problems by applying their mathematics to a variety of routine and non-routine problems with	Our learning is created to support the development of children having a growth mindset toward Mathematics. They use their

	<p>reason and to also develop their own patterns or links in maths and other subjects. This can be through variation.</p>	<p>and developing an argument, justification or proof using mathematical language. To be systematic and seek out patterns. This is a core principle of the Maths Mastery approach.</p>	<p>increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.</p>	<p>learning dispositions of being curious, creative, reflective, collaborative, and resilient to ensure a positive 'can do' attitude towards Mathematics.</p>
Implementation	<p style="text-align: center;">Maths Mastery</p> <p>Each class from EYFS to Y6 follows the Mathematics Mastery approach to learning which is based on the EY framework and the National Curriculum. Lessons may be personalised to address the individual needs and requirements of a class, but coverage is maintained. In order to further develop the children's fluency, reasoning and problem-solving, our learning journeys are carefully crafted using the 5 big ideas of maths mastery teaching. The structure of the lessons allow teachers to bring in the different dimensions of the 5 big ideas.</p> <p>The whole class is taught mathematics together, with no differentiation by acceleration to new content. We do not group children by ability. The learning needs of individuals are addressed through careful scaffolding, questioning and appropriate rapid intervention where necessary, to provide the appropriate support and challenge. The reasoning behind mathematical processes is emphasized. Teacher/pupil interaction explores how answers were obtained as well as why the method worked and what might be the most efficient strategy. Precise mathematical language, often couched in full sentences, is used by teachers so that mathematical ideas are conveyed with clarity and precision. We value 'mathematical talk' and children get lots of opportunities to talk about and evaluate their mathematics during lessons. Conceptual variation and procedural variation are used extensively throughout teaching. This helps to present the mathematics in ways that promote deep, sustainable learning.</p> <p>We use a range of planning resources including those provided by the NCETM, Power Maths and NRICH to enhance our children's maths diet.</p>	<p style="text-align: center;">Concrete- Pictorial- Abstract</p> <p>We implement our approach through high-quality teaching delivering appropriately challenging work for all individuals. To support this, we use a Concrete-Pictorial-Abstract (CPA) approach to teaching mathematical concepts. Reinforcement of learning is achieved by going back and forth between these representations, building pupils' conceptual understanding instead of an understanding based on completing mathematical procedures.</p> <ul style="list-style-type: none"> • Concrete - the doing: This is a 'hands on' component using real objects and it is the foundation for conceptual understanding. 'Concrete' refers to objects such as Tens Frames, Dienes apparatus, NUMICON, fraction tiles, counters, or other objects that can be physically manipulated. • Pictorial - the seeing: A pupil may also begin to relate their understanding to pictorial representations, such as a diagram or picture of the problem- bar model, part-whole model, arrays. • Abstract - the symbolic: A pupil is now capable of representing problems by using mathematical notation, for example: $12 \div 2 = 6$. This is the most formal and efficient stage of mathematical understanding. Abstract representations can simply be an efficient way of recording the maths, without being the actual maths 	<p style="text-align: center;">Retrieval Practice – Pre/Post teach</p> <p>We have walking into learning activities based on retrieval practice in each class whereby children are set a maths task to ensure general maths knowledge and fluency are maintained and developed; these may take many forms, for example, arithmetic, specific times tables or several questions maths topics covered yesterday, last week, last month, last term etc.</p> <p>While the class are solving the questions, the staff are able to support children with consolidation or pre-teaching ensuring they are confident with the skills required for the upcoming session.</p> <p>Post-teach is used to support overlearning of a concept once the session has been taught.</p>	

Assessment, Interventions and Challenge	Cross-curricular and whole school events	Online Maths
<p>Through our teaching, questioning and use of pre-unit and post-unit retrieval quizzes, we continuously monitor pupils' progress against expected attainment for their age, making formative assessment notes where appropriate and using these to inform our teaching. Summative assessments are completed at the end of each term using LA assessments for years 1,3,4 and 5 and statutory end of key stage past papers for Y2 and Y6.</p> <p>This data is then analysed using Excel QLA tool and further drilled by teachers to inform MTPs and to track children's progress across the year and put the appropriate support in place (interventions where needed).</p> <p>All assessment data in KS1 and KS2 form discussions in termly Pupil Progress Meetings and update our summative school tracker. The main purpose of all assessments is to always ensure that we are providing excellent provision for every child. In Reception, summative assessments take the form of termly 'Checkpoints'. Staff use their knowledge of the children alongside recorded evidence to make a judgement as to whether they are 'On Track' to reach the Early Learning Goal at the end of their Reception year. These judgements are accompanied by contextual discussions on children's achievements and next steps for learning. At West Park, pupils are given time and opportunities to fully explore mathematical concepts. The challenge comes from investigating ideas in new and complex ways – rather than accelerating through new topics. While there is only one curriculum, we recognise that not all learners come to each lesson at the same starting point. Therefore, teachers adapt tasks by increasing/decreasing scaffolding and may put constraints in place to ensure each child is working at the correct level of challenge to maximise their personal potential.</p>	<p>Maths is taught, where appropriate, across the curriculum, ensuring that skills taught in these lessons are applied in other subjects. We celebrate World Maths Day every year with a range of activities including knowing about famous mathematicians and their contributions, and maths through orienteering and cross-curricular opportunities.</p> <p>In addition, we have whole-school maths-themed days linked to the world around us, for example, we took part in a whole school Geometry Day this academic year. We also plan competitions across the school, for example on TTRS as well as family competitions such as the one on TIME this year where families were encouraged to make a clock with moveable hands. These bring the whole school together to concentrate on one theme.</p> <p>We also have whole-school-focused events informed by data analysis – this year's focus has been multiplication and division and also using bar models to interpret mathematical problems.</p>	<p>In order to advance individual children's maths skills in school and at home, we utilise Times Tables Rock Stars for multiplication practise, application and consolidation. The whole school is set homework on 'My Maths' which is set online. Tasks are also set on SeeSaw for children to complete in school and at home.</p>

CPD

We continuously strive to better ourselves and frequently share ideas and strategies that have been particularly effective. Ongoing, sustained and subject-specific professional development is at the heart of the Mathematics Mastery programme and therefore teachers, TAs and the Maths Subject Leader attend a range of CPD opportunities across the academic year. Some of these opportunities are in-house delivered by the subject lead who is a Maths Mastery Specialist and PD Lead trained by the NCETM. We also look out for other CPD opportunities from other organisations such as LA, Maths Hub, and the NCETM.

Impact	PUPIL VOICE	EVIDENCE IN KNOWLEDGE	EVIDENCE IN SKILLS	OUTCOMES
	Through discussion and feedback, children speak like mathematicians and can articulately using mathematical language and vocabulary about their maths lessons and speak with enthusiasm about how they love learning about maths. They can talk about the context in which maths is being taught and relate this to real-life purposes. Children show confidence and believe they can learn about a new mathematical concept and apply the knowledge and skills they already have.	Pupils know how and why maths is used in the outside world and in the workplace. They know about different ways that maths can be used to support their future potential. Mathematical concepts or skills are mastered when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations. Children are engaged and all challenged to their full potential. Children demonstrate a quick recall of facts and procedures. This includes the recollection of the 121 addition facts and times tables.	Pupils use acquired vocabulary in maths lessons. They have the skills to use methods independently and show resilience when tackling problems. The flexibility and fluidity to move between different contexts and representations of maths. Children show a high level of pride in the presentation and understanding of the work. The chance to develop the ability to recognise relationships and make connections in maths lessons. Children apply mathematical skills across different areas of the curriculum. Teachers plan a range of opportunities to use maths inside and outside school.	At the end of each year, we expect the children to have achieved Age Related Expectations (ARE) for their year group. Some children will have progressed further and achieved greater depth (GD). Children who have gaps in their knowledge receive appropriate support and intervention, so they are making progress from their starting point.

Review of the Policy

The next scheduled review of this policy is June 2024

Date reviewed: June 2022

Reviewed by: A Kabil