

Mathematics

At Fawkham CEP School



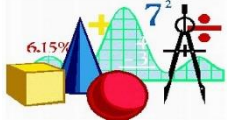
INTENT

At Fawkham, we provide a creative and highly inter-connected maths curriculum through the use of White Rose Maths (WRM). We have chosen to use WRM as it embeds challenge and mastery for all children within all lessons. Mixed age planning is embedded within the scheme which ensures thorough coverage for our mixed age classes when necessary. All lessons provide challenge for all children at all levels to ensure that mastery is achieved by all. Here at Fawkham, we use the three forms of Concrete, Pictorial and Abstract learning together, ensuring an understanding of the abstract through support of the concrete and pictorial images. Our goal is for children to become fluent when working with abstract symbols and representations, using concrete and pictorial representations to achieve this. We endeavor to ensure that children develop an enjoyment and enthusiasm for maths that will stay with them throughout their lives and empower them in the future, allowing them to live life in all its fullness. Our aim is to develop a positive culture of automaticity, deep understanding, confidence, competence, flexibility and efficiency in maths. We want learners to be equipped with an understanding of mathematics that will be relevant and useful in their lives. Our mathematicians are encouraged to dig deeper in their learning and be efficient and flexible in their working, using declarative and procedural knowledge of 'I know that..' and 'I know how...' to develop their conditional knowledge of 'I know when...'. Children will delve deeper into maths by exploring a range of 'encouraging deeper thinking' questions and challenges, allowing them to explore numbers at a greater depth.

We have chosen WRM as it ensures that place value is covered at the beginning of every year to secure the foundations of mathematics before moving on to number. This ensures that children have a good understanding of number before moving on to learn about measurement, statistics and geometry. This means our children can confidently apply their knowledge of number to reason and solve problems across all areas of maths. In addition, we have chosen to use WRM as it ensures that children explore each area of maths to a great depth and breadth as each topic is covered over several weeks in small-steps to ensure mastery before moving on. We ensure that maths at Fawkham is embedded into children's long-term memory by building opportunities to revisit areas during starters or early morning work using the daily Flashback Four resources.

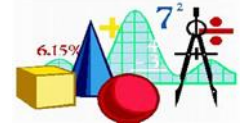
We make sure to implement a maths curriculum that is ambitious through its use of challenge within every lesson and that gives children the knowledge and cultural capital they need to succeed. We do this by ensuring maths is relevant and linked to children's everyday lives by making cross-curricular links where appropriate, including to discuss its impact within technology and science. Despite following the WRM scheme, we do regularly adapt our plans to meet the needs of children through continuous of-the-moment formative assessments (perhaps by extending the amount of time focusing on an area of learning if it is not yet mastered). This can also include making use of the NCETM resources and Ready to Progress Criteria to secure children's learning before progressing further through pre-teaching or 'keep up' sessions. Children's prior knowledge within each unit is assessed before beginning, allowing teachers to identify and address any gaps in knowledge before building on this further.

We intend for our children to be able to calculate accurately and rapidly, be able to reason mathematically and dig deeper, as well as have an appreciation for the power and importance of mathematics, developing increased motivation, love and curiosity within the subject.



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IMPLEMENTATION

Sequenced Learning and Mastery

Mathematical knowledge, concepts and procedure are sequenced carefully using White Rose Maths schemes of learning. Our progression in skills maps and mathematical policies are referred to when determining next steps in learning. Mathematical concepts are mastered before progressing to the next stage in learning, adapting the scheme as required to address the individual needs of the current cohort and requirements for a class while maintaining coverage. NCETM resources and Ready to Progress Criteria is used alongside the scheme to supplement learning and ensure lessons are well prioritised.

Early Years Foundation Stage

In Early Years, we use White Rose Maths, which provides resources linked with the new Development Matters framework. Maths learning is fun, engaging and playful, ensuring our youngest children acquire solid foundational knowledge and skills. The resources are fully editable and adapted to suit the needs of the cohort while keeping mastery in mind. Fluency, reasoning and problem-solving activities are introduced to the children before they have the opportunity to explore the maths independently in child-led activities. In Early Years, children are assessed in align with the Early Learning Goals and identified as either working towards the goals, needing monitoring to reach the goals or already achieving the goals.

Assessment

Through our of the moment, formative assessments and start of unit assessments, we continuously monitor pupils' progress and identify potential gaps in understanding to inform our teaching. As a result, we are able to address misconceptions or misunderstandings before progressing to the next sequence in the curriculum, ensuring mastery for all. To ensure children have retained knowledge over time, end of unit assessments focused on specific areas of maths, gathered from WRM, are carried out later in the term. Summative assessments, using Rising Stars papers in Years 1,3,4 and 5, and past SATs papers in Year 2 and Year 6, are completed at the end of each term, three times a year. Data is then discussed and tracked within staff meetings across the year, allowing for appropriate support to be implemented, such as Ready to Progress keep up sessions, interventions and pre-teaching tasks. Knowledge of children's attainment and progress along with formative assessment data in EYFS, KS1 and KS2 contributes to discussions in termly pupil progress meetings. The main purpose of all assessment is to always ensure that we are providing excellent provision for every child.

Ready to Progress Criteria

The Department for Education (DfE) Primary National Curriculum Guidance (Ready to Progress Criteria) is used across the school in conjunction with our White Rose Maths scheme of learning. Resources from the NCETM website are sometimes used to adapt lessons where appropriate, such as if a small-step needs to be repeated to secure mastery. We use the Ready to Progress Criteria to ensure our children are ready to make progress in the next academic year. Children who did not meet the expected standard in the previous year group, or who are identified (through of the moment or end of term assessments) as requiring additional support within particular topics, receive 'Ready to Progress Keep Up' sessions to close gaps and allow children to keep up and master maths learning. Where necessary, these gaps are addressed within lessons before beginning a new topic. Our SEND children working significantly below age-related expectations use the Ready to Progress Criteria at a suitable level as it prioritises the key steppingstones in maths. By highlighting the most important concepts, teaching and targeted support can be weighted towards these with the aim of our SEND children making accelerated progress at their level.

<p style="text-align: center;">Links and Connections</p>	<p style="text-align: center;">Vocabulary and Sentence Stems</p>
<p>Links and connections are made across all areas of maths, to other subjects and to 'real life' scenarios. Every day, children take part in 'Flashback Four' tasks, allowing children to make links back to their prior learning and consider how it connects with current topics. A links overview is produced for each topic and referred to throughout the term, considering how current maths learning is relevant in all areas – including advancements in technology and science.</p>	<p>Talk for maths is a key learning tool across all classes. Children are expected to use the correct mathematical terminology in written and verbal answers, strengthening their conceptual understanding and allowing them to explain and reason within maths. Our class environments are vocabulary rich and referred to each day. Reasoning sentence stems are available across all year groups, encouraging children to communicate with mathematical terminology and explain, convince, justify and prove their answers. Vocabulary sheets are shared and discussed at the beginning of each topic and referred to throughout.</p>
<p style="text-align: center;">Fluency and Conceptual Understanding</p>	<p style="text-align: center;">Encouraging Deeper Thinking</p>
<p>We intend for all pupils at Fawkham to become fluent within mathematics using carefully sequenced, daily maths lessons focused on the fundamentals of mathematics. Through varied and frequent practise of increasingly complex problems, our children can develop a conceptual understanding and apply their mathematical thinking. Through White Rose Maths, children are encouraged to become efficient and flexible mathematicians, using their prior knowledge, number facts and identification of links/patterns to answer questions and solve problems rapidly and accurately, rather than learning through rote. Children's daily use of Flashback Four enables them to retain past knowledge and use this learning to make connections across year groups and apply this as learning challenge progresses.</p>	<p>We aim for all pupils to reason mathematically; strategies to support this are embedded in the White Rose Maths Scheme and our daily mathematics lessons. All children will have opportunities to identify patterns or connections in their maths and can use this to reason. Children should be able to make connections and think: "If I know ____, then I also know ____."</p> <p>The children have opportunities to develop their mathematical thinking in every maths lesson and we support pupils to develop mathematical 'habits of mind' using our 'Encouraging Deeper Thinking' questions. Children across the school are encouraged to explain, prove and justify their answers where appropriate.</p>
<p style="text-align: center;">Concrete, Pictorial, Abstract</p>	<p style="text-align: center;">Mindset and Culture</p>
<p>To support our high-quality teaching, we use a Concrete-Pictorial-Abstract (CPA) approach to teaching mathematical concepts. We reinforce learning by going back and forth between these representations and by showing them alongside one another so links and connections can be seen. This therefore builds on pupils' conceptual understanding instead of an understanding based on completing mathematical procedures. There is an expectation that the CPA approach will be used across Early Years, Key Stage and Key Stage 2, both to teach new concepts and to prove findings.</p>	<p>At Fawkham, we want our children to enjoy maths and leave school with a positive attitude towards mathematics learning, understanding its importance and relevance in the world. We encourage children to maintain a growth mindset and an 'I can' attitude through our learning environments. Each academic year, we have a whole school maths week involving House Teams Days, in which children across the schoolwork together in maths challenges linked with cross-curricular and 'real life' topics. We lead a 'times-table-athon' and number bonds challenge each year, raising the profile of maths and outlining the importance of number facts. These events bring the whole school together to celebrate maths! We have also introduced a Maths Star of the Term award, celebrating mathematical proficiency of the children who work hard and give attention to detail in their maths working.</p>

High Expectations	Automaticity of Number Facts
<p>All children are expected to succeed and make progress from their individual starting points.</p>	<p>To develop children’s visual models of number, deep understanding of number and number relationships as well as fluency in addition and subtraction facts, we use the Number Sense Maths Fluency scheme of work throughout KS1 and where required within KS2. Number Sense Maths is a fluency programme that teaches a core set of number facts. All facts are taught comprehensively on the path to fluency. At Fawkham Primary, Years 1, 2 and 3 (Autumn term only) teach 15-minute daily number facts sessions alongside their maths lesson.</p>
Homework	
<p>One piece of meaningful maths homework is set each week, reviewing the previous term’s learning.</p>	<p>Using the number facts progression, we outline which number facts are important for children to recall with automaticity by set benchmarks, reducing cognitive load and allowing them to focus on the small steps being taught each lesson. We encourage our children to recall their number facts and multiplication facts swiftly and accurately through the use of frequent practise and review. Children are then assessed on their assigned number facts, with gaps addressed before continuing to the next phase. Our children are therefore able to apply essential number facts to reason across other areas of mathematics.</p> <p>Times Tables Rockstars is an enjoyable online resource used across the school, allowing children to practise their times tables at school and at home. This resource is used to accompany the teaching of times tables within our White Rose Maths scheme of learning, which encourages children to reason and make connections across their times table facts, securing their knowledge and conceptual understanding of number.</p>

IMPACT

- children can talk articulately using mathematic language and vocabulary
- children can discuss the importance of mathematics in everyday life purposes
- children can talk about the context of their maths learning and how connections can be made across subjects
- children show confidence in their maths learning and believe they can learn a new mathematical concept by applying the knowledge and skills they already have
- children 'dig deeper' in their maths learning, securing their number sense
- children master mathematical concepts and skills, using mathematical language to explain, justify and prove their ideas
- children can work independently to solve new problems in unfamiliar situations
- children are engaged and work hard to achieve their full potential
- children maintain a growth mindset and positive attitude towards maths learning
- children demonstrate a quick recall of facts and procedures (including times tables and number bonds)
- children use mathematical terminology in written and verbal answers
- children show resilience when tackling problems (both in groups and independently)
- children have flexibility when working in maths and can choose the most efficient strategies to find solutions to problems
- children are able to recognise relationships and identify patterns and connections in maths lessons
- children apply mathematical skills and knowledge within other areas of the curriculum and real-life
- children make progress in their maths learning from their level
- children achieve age-related expectations for their year group or work at the greater depth level