Wood End Primary School

Maths Policy

INTENT

Purpose of Study
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.
Intent from Subject
The curriculum at Wood End Primary is designed to provide a broad and balanced education that meets the needs of all children. It provides opportunities for children to develop as independent, confident and successful learners, with high aspirations, who know how to make a positive contribution to their community and the wider society. The curriculum ensures that academic success, creativity and problem solving, reliability, responsibility and resilience, as well as physical development, well-being and mental health are key elements that support the development of the whole child and promote a positive attitude to learning. The curriculum celebrates the diversity and utilises the skills, knowledge and cultural wealth of the community while supporting the children's spiritual, moral, social and cultural development, ensuring that children are well prepared for life in modern Britain. At Wood End Primary, we take a mastery approach to the teaching and learning of Mathematics. Essentially, our ethos is that all children can be successful in the study of mathematics. We do not accept that 'some children cannot do maths' or that children should be limited by prior attainment. Maths is for everyone! We teach the skills to ensure our children are resilient learners who become life-long Mathematicians. We aim to deliver an inspiring and engaging Mathematics curriculum through high quality teaching. In order to improve our mastery approach and improve the quality of our maths teaching, we have implemented the Power Maths approach this year. The Power Maths approach enables children to be numerate, creative, independent, inquisitive, enquiring and confident. Children should not be afraid to make mistakes and should fully embrace the fact that mistakes are part of learning! A mastery curriculum promotes a deep, long-term, secure and adaptable understanding of the subject, so that children become fluent in calculations; possess a growing confidence to reason mathematically and hone their problem-solving skills. The intention of the Maths curriculum at Wood End Primary is for children to be excited about Maths! Developing a positive attitude to this subject is essential. Teachers promote children's enjoyment of Maths and provide opportunities for children to build a conceptual understanding of Maths before applying their knowledge to everyday problems and challenges. We ensure that challenge is provided for all children, whatever their understanding. Children are encouraged to be brave and push the boundaries, deepening their understanding further.

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The only way to learn Mathematics is by doing Mathematics!

Aims from National Curriculum

The national 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

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.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on 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.

IMPLEMENTATION

Teaching & Learning

Overview
Link

Year Group Progression Overviews
Link

Organisation and Curriculum Coverage
At Wood End Primary, we recognise that children need to be confident and fluent across each yearly objective. To ensure consistent coverage, teachers follow the Power Maths scheme of learning to support their planning. Teachers are also developing their understanding of mastery whilst working within the Maths Hub and regular in house CPD. Power Maths is an exciting and inspiring class mastery approach, which has been recommended by the Department for Education.

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Every year group has a daily 50-minute Power Maths lesson. They also have daily fluency practice for 10 minutes. The fluency lesson focuses on consolidating and preparing for lessons as well as keeping up general fluency. This accelerates progress which can then be applied in different contexts. Every Power Maths lesson is divided into sections that involve discovery, sharing, thinking together, practice and reflection.

Children begin with a short 'Power Up' activity which supports fluency in and recall of number facts. Following this, the main lesson begins with a 'Discover' and 'Share' task in which a contextual problem is shared for the children to discuss with partners. This helps promote discussion and ensures that mathematical ideas are introduced in a logical way to support conceptual understanding. In KS1, these problems are almost always presented with objects (concrete manipulatives) for children to use. Children may also use manipulatives in KS2. Teachers use careful questions to draw out children's discussions and their reasoning and the children learn from misconceptions through whole class reasoning.

Following this, the children are presented with varied similar problems which they might discuss with a partner or within a small group. At this point, scaffolding is carefully reduced to prepare children for independent practice. This is the 'Think together' part of the lesson and the children might record some of their working out in their Maths books or on a mini whiteboard. The teacher uses this part of the lesson to address any initial errors and confirm the different methods and strategies that can be used. The children are then shown a 'challenge' which promotes a greater depth of thinking.

The class then progress to the 'Practice' part of the lesson, which is designed to be completed independently. This practice uses conceptual and procedural variation to build fluency and develop greater understanding of underlying mathematical concepts. Children are supported through the practice and those with understanding issues identified and supported. A challenge question and links to other areas of Maths encourages children to take their understanding to a greater level of depth. Children who complete this are provided with further challenges.

The final part of the sequence is a 'reflect' task. This is an opportunity for children to review, reason and reflect on learning and enables the teacher to gauge their depth of understanding.

Children are encouraged to solve problems each day through the use of concrete resources, pictorial representations and abstract thinking. Each child has their own Practice Book in which they answer questions and discuss their thinking with their teacher.

At the heart of this programme is the idea that all children can be successful mathematicians with the right mind-set. Children learn alongside five characters, each with different mathematical characteristics. These characters are:

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High quality resources are used in conjunction with Power Maths, such as NRich and NCETM to support, stretch and challenge all children within the classroom. In addition, the school's calculation policy is used to ensure a coherent approach to teaching the operations across our school.

Our curriculum builds on the concrete, pictorial, abstract approach. By using all three, the children can explore and demonstrate their mathematical learning. Together, these elements help to cement knowledge so children truly understand what they have learnt. All children have access to a wide range of concrete Mathematical resources to help them build on their concrete understanding of Mathematical concepts.

All children, when introduced to a new concept for the first time, are encouraged to physically represent mathematical concepts. Objects and pictures are used to demonstrate and visualise abstract ideas, alongside numbers and symbols. Throughout Wood End Primary, you will see these three methods being used:

Concrete – children have the opportunity to use concrete objects and manipulatives to help them understand and explain what they are doing.

Pictorial – children then build on this concrete approach by using these pictorial representations, which can then be used to reason and solve problems.

Abstract – with the foundations firmly laid by using the concrete and pictorial methods the children can move onto an abstract approach using numbers and key concepts with confidence.

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Teachers teach Maths using the online interactive tool and their white boards, enabling them to model pictorial and abstract concepts which children can replicate and apply to their own learning.

Children practise their times tables as a regular part of the majority of Maths lessons:
Year 1: Count in multiples of 2,5 and 10. Recallings and using all doubles to 10 and corresponding halves.
Year 2: Recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers.
Year 3: Recall and use multiplication and division facts for the 3,4 and 8 multiplication tables.
Year 4: Recall and use multiplication and division facts for multiplication tables up to12x12.
Year 5: Revision of all times tables and division facts up to 12x12.
Year 6: Revision of all times tables and division facts up to12x12.

All children (from Y1-Y6) have access to Times Table Rock Star https://play.ttrockstars.com/. Children regularly practice their times tables under timed conditions, similar to those they are tested under in the national Year 4 Multiplication Tables Check in Spring.

Resources
The use of Mathematics resources is integral to the concrete – pictorial – abstract approach and thus planned into teaching and learning. The school has a wide variety of good quality equipment and resources, both tangible and ICT based, to support learning and teaching.

These resources are used by our teachers and children in a number of ways including:

- Demonstrating or modelling an idea, an operation or method of calculation. Resources for this purpose would include: a number line; place value cards; dienes; place value counters and grids; money or coins; measuring equipment for capacity, mass and length; bead strings; the interactive whiteboards and related software; 3D shapes and/or nets; Numicon and related resources and software; multilink cubes; clocks; protractors; calculators; dice; number and fractions' fans; individual whiteboards and pens; and 2D shapes and pattern blocks, amongst other things
- Enabling children to use a calculation strategy or method that they couldn't do without help, by using any of the above or other resources as required

Standard resources, such as number lines, multi-link cubes, dienes, hundred squares and counters are located within individual classrooms. Resources within individual classes are accessible to all children who should be encouraged to be responsible for their use.

An interactive teaching tool for the purpose of modelling strategies is available to all teachers as part of the Power Maths scheme. Resources to support teachers' own professional development and understanding of new approaches as part of a mastery approach are available on the Power Maths 'activelearn' platform. As well as overviews of learning, these include short videos which demonstrate new methods to ensure accuracy.

High quality textbooks and practice books, approved by the DfE, as part of the national approach to teaching for mastery are used in each year group and a digital version of the Power Maths textbooks allows these to be shared with the class, during the main teaching. Teachers

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are encouraged to use out door space when possible, for example, when teaching length, area or perimeter.

EYFS
Children in Nursery have a short daily Maths teaching session, during which time they begin to develop their understanding of simple mathematical concepts such as counting to 20, maintaining 1 to 1 correspondence, simple addition and subtraction facts, to recognise and describe simple 2d and 3d shapes. Children are taught these concepts using physical resources, pictorial resources, songs, games and role-play.

In Reception, children also follow the Power Maths curriculum. There is a focus on teachers to ensure a secure a good balance between whole class work, group teaching and individual practice. Teachers establish regular routines thereby maximising teaching time. Assessment on a daily basis is supported, as well as individual feedback to children, ensuring that children receive immediate intervention as required during the supported focus activity.

In both Nursery and Reception, the independent activities at the Maths tables link to the focus for the week. We recognise the importance of play-based learning and therefore encourage children to develop their understanding during their play. Such opportunities are provided in both the inside and outside environment.

Regular observations and assessments help to ensure that children that need additional intervention to consolidate their mathematical understanding are identified and supported by appropriate interventions.

Calculation Policies
https://drive.google.com/drive/folders/1zfDK_FNjDUFel8hUPbhUOwbvstA4zTCh

Home learning
Home learning is set weekly using Mymaths. Home learning is set on a Thursday and should be completed by Tuesdays. Teachers will ensure children have equity and so all children will have the opportunity to complete home learning. If they do not have access to computers, computers are made available during school time or alternative arrangements are made. Home learning is marked on mymaths.

Displays
Each class is expected to have an up to date Maths working wall with information and visuals regarding the current unit, key vocabulary and more general maths visuals aimed at the needs and learning of their class.

Presentation
High standards are expected across the curriculum. Presentation must be clear and good quality but the focus must be on mathematics. Staff will model the expectations throughout the curriculum.

Planning
All planning should be readily available in planning folders by the before the start of the week and should be accessible to TAs and any cover teachers.

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Cross Curricular Links

Teachers plan strategically and are expected to look for links to mathematics within other subject areas.

Inclusion

Taking a mastery approach, differentiation occurs in the support and intervention provided to different children, not in the topics taught, particularly at earlier stages.

There is little differentiation in the content taught but the questioning and scaffolding individual children receive in class as they work through problems will differ, with higher attainers challenged through more demanding problems, which deepen their knowledge of the same content before acceleration onto new content. Children's difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support the same day.

Teachers are aware of the special educational needs of the children in their Maths class, as well as those who have English as an additional language and support is given.

Although the expectation is that the majority of children will move through the programmes of study at broadly the same pace, the 2014 National Curriculum states: 'Decisions about when to progress should always be based on the security of children's understanding and their readiness to progress to the next stage.'

If a child's needs are best met by following an alternative plan, including coverage of the content from a previous year, this will be directed by the SENDCo, in collaboration with the class teacher and with the knowledge of SLT. Specific arrangements for the provision of children with SEND will be communicated to parents and carers during SEND reviews.

Equal Opportunities

The school is committed to ensuring the active participation and progress of all children in their learning.

All children will be given equal opportunities to achieve their best possible standard, whatever their current attainment and irrespective of gender, ethnic, social or cultural background, home language or any other aspect that could affect their participation or the progress of which they are capable.

Enrichment Opportunities

At Wood End Primary, we believe that children learn best when they are engaged, inspired and motivated to learn. We offer a range of experiences and challenges that enrich our core curriculum. This allows our pupils to learn outside the classroom and develop the skills for the world beyond primary education e.g.

- STEM focus activities

- Problem solving challenge days.

Community Links

The subject leader role will also develop links with our community, invite members of the community into school for special events and celebrations and organise school community events.

IMPACT

Assessment

Children receive effective feedback through teacher assessment and AfL is integral to the design of each lesson;

- The structure of the teaching sequence, ensures that children know how to be successful in their independent work. Guided practice, which takes place within the 'Think Together' part of the lesson, provides further preparation for children to be able to apply the skills, knowledge and strategies taught during the 'Discover and Share' phase. Common misconceptions are addressed within the teaching sequence and key understanding within each 'small step' is reviewed and checked by the teacher and the children before progression to further depth.
- At the end of the lesson, the children review their work and self and peer assessment are used consistently as outlined by the school's 'Assessment and Feedback Policy'. The children then indicate how confident they feel about their learning using a traffic light assessment
- The children's self-assessment is reviewed by the teacher during review of the children's work to inform where consolidation might be required. Opportunities for additional practice and correction are provided by the teacher, as appropriate, during marking, with a focus on promoting and achieving a growth mindset within the subject.

Formative assessment
Short term assessment is a feature of each lesson. Observations and careful questioning enable teachers to adjust lessons and brief other adults in the class if necessary. The lesson structure of Power Maths is designed to support this process and the reflect task at the end of each lesson also allows for misconceptions to be addressed.

Summative assessment
At the end of each blocked unit of work, the children also complete the End of Unit Assessment'. The outcome of this is used by the teacher to ensure that any identified gaps in understanding can be addressed before the next unit is taught. Each child's scores are also input into Insight. This also informs dialogue with parents and carers during open evenings, as well as the judgements made at the end of the term as to the extent that each child has demonstrated mastery of each 'fundamental' objective.

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Teachers administer a termly PUMA progress test which focuses on arithmetic, reasoning and problem-solving. It is used to gauge the general level of mathematical understanding.

Termly teacher assessment data along side PUMA scores are reviewed throughout the year to inform interventions and to also ensure that provision remains well-informed to enable optimum progress and achievement. End of year data is used to measure the extent to which attainment gaps for individuals and identified groups of learners are being closed. This data is used to inform whole school and subject development priorities for the next school year.

Children's attainment, progress and barriers to learning are discussed in year group Pupil Progress Meetings. Senior leaders and the maths lead are continually reviewing data and are available to help with any issues identified.

Monitoring and Evaluation

Subject leads play an active role in the school self-evaluation cycle and throughout the year they will participate in:

- Ensuring there is clear progression throughout the school
- Creating of termly data reports
- Reporting to SLT & Governors
- Pupil voice
- Work samples
- Learning exploration blinks
- Identify any training needs and offer extra support and guidance to staff when it is appropriate
- Ensure that there are suitable resources to help with the teaching and learning of their subject

Review Date

Policy Agreed: April 2023
Policy Review:

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Appendices

KS1 Presentation Expectations for Books	KS2 Presentation Expectations for Books
Y1 Maths Presentation Expectations KS1 Maths Presentation Expectations	KS2 Maths Presentation Expectations

Maths Curriculum Map	Maths Fluency Programme of Study	Maths Progression Map
Roby Park Maths Curriculum Map	Maths Fluency Programme of Study	Roby Park Maths Progression Map EYFS Progression KS1 Progression

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		KS2 Progression

KS1 Maths Calculation Policy	LKS2 Maths Calculation Policy	UKS2 Maths Calculation Policy
KS1 Calculation Policy	LKS2 Calculation Policy	UKS2 Calculation Policy

Maths Cultural Capital Events	Subject Lead Monitoring Schedule
Roby Park Maths Cultural Capital Enhancement Events	Annual Subject Leaders Monitoring Cycle

Maths Resource List	
Power Box Resource Lists Reception Practical Resource List by Lessons Y1 Practical Resource List by Lessons Y2 Practical Resource List by Lessons	Y3 Practical Resource List by Lessons Y4 Practical Resource List by Lessons Y5 Practical Resource List by Lessons Y6 Practical Resource List by Lessons

Half Termly Key Vocabulary						
Y1	Aut 1 Key Vocab	Aut 2 Key Vocab	Spr 1 Key Vocab	Spr 2 Key Vocab	Sum 1 Key Vocab	Sum 2 Key Vocab
Y2	Aut 1 Key Vocab	Aut 2 Key Vocab	Spr 1 Key Vocab	Spr 2 Key Vocab	Sum1 Key Vocab	Sum 2 Key Vocab
Y3	Aut 1 Key Vocab	Aut 2 Key Vocab	Spr 1 Key Vocab	Spr 2 Key Vocab	Sum 1 Key Vocab	Sum 2 Key Vocab
Y4	Aut 1 Key Vocab	Aut 2 Key Vocab	Spr 1 Key Vocab	Spr 2 Key Vocab	Sum 1 Key Vocab	Sum 2 Key Vocab
Y5		Aut 2 Key Vocab	Spr 1 Key Vocab	Spr 2 Key Vocab	Sum 1 Key Vocab	Sum 2 Key Vocab

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	Aut 1 Key Vocab					
Y6	Aut 1 Key Vocab	Aut 2 Key Vocab	Spr 1 Key Vocab	Spr 2 Key Vocab	Sum 1 Key Vocab	Sum 1 Key Vocab