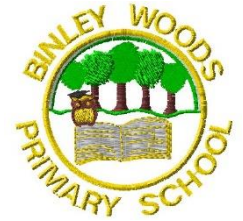




Curriculum statement for the teaching and learning of Maths 2022/2023



Our Vision

At Binley Woods Primary School, we want our children be resilient mathematicians, who enjoy the sense of curiosity and discovery that Mathematics brings. Mathematics teaches us how to make sense of the world and our aim is for all children to leave school with the foundation for understanding the world. Our children are given opportunities to make connections to other subjects and everyday life regularly to support this understanding.

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 to master 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 word problems. Fluency in Maths is also key to supporting children in developing a rich, deep understanding of Maths and therefore children take part in regular Maths Meetings, away from their lesson, to develop their fluency and enjoyment. Every child should leave Binley Woods with an appreciation of the beauty and power of mathematics and with the foundation for understanding our world.

INTENT	At Binley Woods Primary School, we work in partnership with Mathematics Mastery (Ark Curriculum Plus) and follow their programme of study. Together, our mission is to enable all learners to enjoy and succeed in mathematics. We want learners to think about maths beyond what is tested in national examinations and to be equipped with an understanding of mathematics that will be relevant and useful in their future studies and/or in the world of work. The Mathematics programme is based on three core principles: to provide learners with a deep conceptual understanding of mathematical principles, the ability to confidently communicate in precise mathematical language, while becoming mathematical thinkers. We are confident that if a pupil understands the core principles, they will be able to remember more and do more maths, within whichever context they encounter it.			
Underpinning Principles	<u>High Expectations</u>	<u>Modelling</u>	<u>A Vocabulary Rich Environment (Language and Communication)</u>	<u>Pattern and Connection Identification</u>
	All children are expected to succeed and make progress from their starting points.	Teachers teach the skills needed to succeed in mathematics, providing examples of good practice and having high expectations. Adults model correct mathematical vocabulary throughout each Mathematics lesson.	Mathematical language strengthens conceptual understanding by enabling pupils to explain and reason. Therefore, we intend to create a vocabulary rich environment, where talk for maths is a key learning tool for all pupils.	All children will have opportunities to identify patterns or connections in their maths; they can use this to predict and reason and to also develop their own patterns or links in maths and other subjects.
	<u>The Teaching of Fluency (Conceptual Understanding)</u>	<u>The Teaching of Reasoning (Mathematical Thinking)</u>	<u>The Teaching of Problem Solving</u>	<u>Mindset</u>
	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, which link to real life situations. This enables pupils to develop conceptual understanding and apply their mathematical thinking, allowing them to develop their ability to recall and apply knowledge rapidly and accurately.	We intend for all pupils to think mathematically and reason mathematically. This a core principle of our Mathematics Mastery programme. The children have opportunities to develop their mathematical thinking in every Maths lesson and we support pupils to develop mathematical 'habits of mind' - to be systematic, generalise, make conjectures and seek out patterns.	We intend for all pupils to solve problems by applying their mathematics to a variety of problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.	We want our children to enjoy Mathematics and leave school with a positive attitude towards Mathematics. Our learning environments are created to support the development of children having a growth mindset towards Mathematics.

Mathematics Mastery

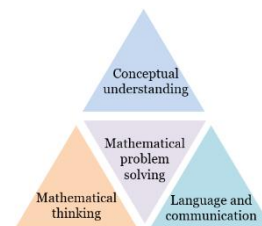
Every class from EYFS to Y6 follows the Mathematics Mastery scheme of learning and adaptations have been made using the NCETM Curriculum Prioritisation Framework to ensure the curriculum is well sequenced. To build the foundations of number, EYFS start the year following the NCETM Mastering Number programme. Lessons are personalised to address the individual needs of the current cohort and requirements for a class but coverage is always maintained.

Most Mathematics lessons are split into six-parts, however (at the teacher's discretion) some lessons may focus on specific elements to develop fluency or/and reasoning further. This six-part lesson gives a structure through which to implement the pedagogical principles of the curriculum. The different parts of the lesson allow teachers to bring the different dimensions of depth to the foreground. Having a consistent structure for each lesson ensures that learners are exposed to the pedagogies associated with each dimension. In Reception, the lesson is structured differently and they complete the 'Do Now', 'New Learning' and 'Talk Task' before going into continuous provision, which will include at least one activity that matches the lesson they have just been taught. There will also be activities from the previous week's Maths learning available to them in the continuous provision. The teacher would expect to see the children accessing this learning independently at this point. This lesson structure is slightly different compared to the rest of the school to ensure our Early Years children learn in ways best suited to their age and stage of development.

The Dimensions for Depth

The Dimensions for Depth are the core principles in our Mathematics Mastery programme and underpin every lesson.

"In order to solve problems (real-life or otherwise) effectively we need to engage each of these three principles" (Helen Drury, 2014).



Principle 1: Conceptual Understanding

Mathematics tasks are about constructing meaning and making sense of relationships. Learners deepen their understanding by representing concepts using objects, pictures, symbols and words (CPA Approach).

Principle 2: Language and Communication

Mathematical language strengthens conceptual understanding by enabling pupils to explain and reason.

The content of our curriculum carefully progresses in order to induct learners into the mathematical community. This often starts with more informal language initially, building up to formal and precise mathematical language. Talk tasks are part of every lesson in the curriculum to help with this development.

Principle 3: Mathematical Thinking

Our curriculum is designed to give learners the opportunities to think mathematically.

Throughout the curriculum, tasks are set that require learners to specialise and generalise, to work systematically, to generate their own examples, to classify and to make conjectures.

Concrete-Pictorial-Abstract (CPA)

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.

- **Concrete – the doing:** A pupil is introduced to an idea or a skill by acting it out with real objects. This is a 'hands on' component using real objects and it is the foundation for conceptual understanding. 'Concrete' refers to objects such as Dienes apparatus, 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.
- **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.

We also use a range of planning resources including those provided by the NCETM and NRICH to enrich our children's maths diet.		
Maths Meetings and Consolidation/Pre-Teaching Maths Meetings are a vital part of our maths teaching and are used to consolidate key learning away from the point when a concept is introduced. Each Maths Meeting lasts between 10 and 20 minutes and they happen regularly throughout the week. Each year group in school from Reception to Year 6 participates in Maths Meetings. Maths Meetings provide an opportunity to teach and revise 'general knowledge maths' which may not explicitly be covered during the maths lessons that week, such as telling the time, and also allows the daily integration of maths into the surrounding environment. This means that children are practising concepts and skills on a regular basis, ensuring they are continually building on their mastery of these concepts. Maths Meetings are a fantastic way for staff to support children with consolidating their knowledge and pre-teaching upcoming concepts, ensuring they are confident with skills required for the upcoming lesson.	Assessment, Interventions and Challenge Through our teaching, questioning and use of pre-unit and post-unit 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 half term using appropriate assessments for the cohort. At the end of every term, we assess KS2 using NFER assessments as these give us detailed data to track children's progress across the year and put appropriate support in place (interventions / focus groups where needed). Year 6, only sit NFER assessments at the end of the Autumn term to support them with their SATS preparations. Knowledge of children's attainment and progress along with formative assessment data in EYFS, KSI and KS2 contributes to discussions in termly pupil progress meetings and an update of our summative school tracker. The main purpose of all assessment 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 Binley Woods, 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.	<u>Department for Education (DfE) Primary National Curriculum Guidance (June 2020) and the NCETM Curriculum Prioritisation Framework.</u> At Binley Woods Primary School, we use the DfE guidance produced in June 2020 alongside our Mathematics Mastery scheme of work to ensure our children are ready to make progress in the next academic year. We have also used the NCETM Curriculum Prioritisation framework to adapt the Mathematics Mastery (Ark Curriculum Plus) whole school long term to ensure our long-term plan is right for our children at Binley Woods Primary school. Teachers use the materials from the NCETM to adapt lessons where appropriate.

Cross Curricular and Whole School Events

Maths is taught, where appropriate, across the curriculum ensuring that skills taught in these lessons are applied in other subjects. We also run an after-school maths club.

We celebrate World Maths Day and have whole school maths themed days linked to the world around us, for example, we took part in a whole school Census Day afternoon in March 2021. We also plan competitions across school, for example on TTRS. These bring the whole school together to concentrate on one theme.

Online Maths Tools

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 optional homework on 'Maths with Parents' which is set online, however most activities are open-ended and completed offline. Families are encouraged to explore maths at home together using everyday objects without being glued to a screen. The teacher set activities, which match what the children are currently learning in class, and there is a useful video for parents to watch with their children to show the mathematical method the child has learnt in school.

Homework

Each week all children (from Reception to Y6) are set a maths activity weekly based on the learning they completed that week in class. Reception start Maths homework later in the academic year. This homework has been designed to consolidate the learning the children have completed in class.

Homework is not enforced, but we reward those who do complete it by way of encouragement. However, we do strongly encourage children to engage with homework in Years 5 and 6, by way of preparation for secondary school. Therefore, homework may also increase in volume for Year 6 children as they come to the end of the academic year.

Continuing Professional Development (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 are given a range of CPD opportunities across the academic year. We also look out for other CPD opportunities from other organisations such as Maths Hub, Gateway Alliance and the NCETM. Currently, we follow the Mastering Number programme in Reception, Year 1 and Year 2. The Maths Subject Lead is part of the 'NCETM Teaching for Mastery in Maths' programme and we are now starting the 'Embedding Year'.

IMPACT	PUPIL VOICE	EVIDENCE IN KNOWLEDGE	EVIDENCE IN SKILLS	OUTCOMES
	Through discussion and feedback, children talk articulately using mathematical language and vocabulary about their maths lessons and speak with enthusiasm about their love of learning in 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 times tables.	Pupils use acquired vocabulary in maths lessons. They have the skills to use methods independently and show resilience when tackling problems. They have 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. They have 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.