

**ASHBURY MEADOW
PRIMARY SCHOOL**



Mathematics Policy

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Introduction

The intent of our mathematics curriculum is to maximise the development of every child's mathematical ability and provide our pupils with a variety of rich, mathematical opportunities underpinned by deep, conceptual understanding. We deliver lessons that are creative, engaging and enable pupils to master the skills of their developmental stage in order to prepare them for the next stage. We want children to make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. We intend for our pupils to be able to apply their mathematical knowledge in subjects across the wider curriculum and to gain a good understanding that mathematics is essential to everyday life, critical to science, technology and engineering, and necessary for most forms of employment.

The Mathematics 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 nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Teaching for maths mastery

At Ashbury Meadow Primary School, we strive to achieve the highest possible standards of teaching and learning in mathematics and that this is systemic across the school. To support this, we use a mastery approach starting in EYFS and use the Department for Education endorsed Maths No Problem Scheme of Work in Key Stages 1 and 2 to further support the teaching of mastery. This ensures that the five core mastery principles are routinely applied in teaching and learning:

- **representations** enable pupils to experience concrete, pictorial and abstract representations of a concept during a lesson. This strengthens pupils' conceptual understanding and fluency. Moving between the concrete, pictorial and the abstract helps children to connect abstract symbols with familiar contexts, thus providing the opportunity to make sense of mathematical concepts
- **mathematical thinking** enables opportunities for children to think deeply about the mathematical concepts at a relational level rather than as a set of rules or procedures. This involves pupils to learn through informal exploration before moving to more formal, structured learning. In addition, this encourages pupils to justify, reason, engage in debate and build on each others' ideas
- **fluency** enabling pupils to flexibly manipulate mathematics to support accurate and efficient working
- **variation** - *Conceptual variation* involves exposing pupils to different representations of the same mathematical idea. These multiple representations reveal to pupils the different conceptual ideas that underpin a mathematical concept. *Procedural variation* is used to support pupils' deeper understanding of a mathematical procedure or process. Using conceptual or procedural variation in the design of lessons and pupil tasks, encourages the dialogue that enables deeper understanding underpinned by reasoning.

Examples are carefully chosen to support pupils to make the desired connections and relationships and ultimately generalisations

- **Coherence and small steps** ensure that pupils are secure in their understanding throughout units of work and that misconceptions are addressed promptly. Units of work involve theory building leading to more complex ideas to enable depth. At each stage, different methods are introduced to solve problems supporting pupils' flexibility. The spiral-approach to progression allows pupils to progress through topics in smaller chunks and revisit them later, building on what has previously been learned and ensuring retention of knowledge and skills.

Mathematics Curriculum Planning

Mathematics is a core subject of the National Curriculum and at Ashbury Meadow Primary School we implement the statutory requirements of the programme of study. Teachers in the Early Years Foundation Stage base their teaching on skills broken down into stages from Development Matters supported by the Lancashire Grid for Learning teaching documents to ensure that the children are working towards and go on to achieve the Early Learning Goals for Mathematics and to ensure that they are school ready by the end of Reception. In Key Stages 1 and 2, we use the planning framework produced by the Maths No Problem Scheme of Work which organises the programmes of study into sequential units of work and supports teachers to plan for children's progression through a spiral approach which ensures that core concepts are revisited and that there is deep coverage of the curriculum. Teachers use the Maths No Problem planning documents to plan lessons which are supported through the use of pupil text books and work books.

Mathematics Lessons

In EYFS, teachers deliver daily whole class teaching and adult focus-led mathematical activities together with the teaching assistant. The children also access a range of maths-focused activities within the continuous provision and maths challenges are provided through the Rainbow Challenge which encourages children's independence. We give all the children ample opportunity to develop their understanding of number, measurement, pattern and shape and space, through varied activities that allow them to enjoy, develop curiosity, explore, practise and talk confidently about mathematics and their understanding.

Daily maths lessons in Key Stages 1 and 2 include the use of a three-part lesson:

1. **Anchor Task** – the whole class spends time on a problem or question guided by the teacher. The children are encouraged during this time to think of different possible ways to solve the question and to work collaboratively to offer different ideas, methods or solutions.
2. **Guided Practice** – children practise new ideas or skills in groups, pairs or individually, guided by the teacher with the support of the text book. The teacher facilitates discussion to enable pupils to construct their own understanding of mathematical concepts.
3. **Independent Practice** – children practise independently in their pupil work book. Activities become more challenging as scaffolding is removed. More able pupils are provided with Advanced Learning tasks to develop their relational understanding and targeted journaling opportunities.

The three-part lesson involves high levels of interaction and collaboration underpinned by reasoning and depth of understanding. Each class is resourced with manipulatives to enable pupils to develop understanding through different representations and facilitates their independence. High emphasis is given to oracy within maths lessons so that pupils communicate their mathematical ideas and reasoning well, including the correct vocabulary.

Vocabulary

The quality and variety of mathematical language that pupils are exposed to and use are key factors in developing their mathematical vocabulary and this is essential to presenting mathematical reasoning, justifications, arguments or proofs. It is expected that pupils acquire accurate and technical mathematical vocabulary for each mathematical concept learned. Strategies to develop mathematical vocabulary involve displaying relevant vocabulary on the maths learning wall in the classroom relevant to the current unit of work and introducing key vocabulary at relevant points within the lesson using the whole school vocabulary development approach: Select, Explain, Explore & Consolidate model.

Use of IT within lessons

To reinforce rapid recall of number facts and fluency, children use Times Table Rockstars and Mathletics for practice and consolidation purposes. Children are encouraged and expected to use their accounts at home for further practice opportunities.

Recording work and digit formation

In EYFS, children's recorded work or manipulation of concrete materials is captured through photographs and the use of tapestry. When children are ready, children in Reception use maths exercise books to record their work, for example, to record a number sentence or to draw a picture to represent how they solved a problem.

In Years 1-6, maths learning is recorded in pupil workbooks, in which tasks and practice activities are provided for pupils. In addition, pupils have an A4-sized blue maths journal. Journaling helps pupils to focus on their learning and take ownership of it by recording or reflecting on the key mathematical ideas at different points through a unit of work, for example, by reflecting on a preferred and efficient method and explaining why, or recording concrete or pictorial representations which supported solving a problem. By providing journaling opportunities, learners begin to shift the focus from the 'how' of mathematics (what tasks to perform), to the 'why' (reflecting on their own understanding).

Adult modelling of number and calculation work always involves the application of the school's digit formation and use of squared grids. We use the Nelson Thorne digit formation ensuring that there is one digit in one box where appropriate.

0 1 2 3 4 5 6 7 8 9

Opportunities for children to apply learning across the Curriculum

Mathematics contributes to children's learning in other subjects through its application. It is expected that children apply basic skills and relevant mathematical learning in other subjects where there is a specific reference to the application of mathematics in the Programme of Study of other subjects, for example, by collecting, analysing and presenting data in science and geography. Other opportunities are also sought where it is relevant and reinforces learning. This enables opportunities for pupils to apply their knowledge, skills and understanding in different contexts demonstrating pupils' mastery.

Children with Special Educational Needs and Disabilities (SEND)

At Ashbury Meadow Primary School, we teach mathematics to all children, whatever their ability and individual needs, and adapt the curriculum for SEND so that it is appropriate to a child's developmental stage if necessary. Through our mathematics teaching, we provide learning opportunities that enable all pupils to make at least good progress, for example, by providing resources or scaffolds. We ensure that teaching assistants working with pupils with Educational Healthcare Plans receive bespoke training to ensure that pedagogy used for teaching mathematics

is relevant and appropriate to the child. We use the Talking Maths programme with some SEND and EHCP pupils who are able to develop mathematical understanding of concepts through oracy, language development and practical apparatus.

Assessment for Learning

Teachers assess pupils' work in mathematics in order to plan for their progression and to obtain a good understanding of a child's performance. Formative assessments are made during lessons and from marking in books and adjustments are made to subsequent planning if needed to ensure that children's misconceptions are addressed swiftly. In EYFS, observations of children's mathematical work is recorded on Tapestry (an online assessment tool) with adult annotations to provide context and indication of a child's performance and is used to plan for progression.

At the end of each term, children in all Key Stages are assessed formally which provides summative assessment information for teachers. In order to make accurate summative assessments of progress, teachers draw upon a range of sources: teacher assessments based on evidence in books or Tapestry which are discussed in maths termly moderation meetings with other teachers; NFER tests/National Tests and subsequent question level analysis; feedback from teaching assistants and progress records on Times Table Rockstars & Mathletics. Attainment is recorded on the school's assessment tracker *Target Tracker* which is used to measure pupils' progress over time.

Statutory Key Stage assessments are undertaken at the end of the Reception year, at the end of Year 2 and the end of Year 6. At the end of Reception, a child is assessed to establish if he/she has achieved, exceeded or working towards the Early Learning Goal in Number and in Shape, Space and Measures. Statutory tests in Year 2 are used to support teacher assessment judgements about whether a child is working at, above, or below the expected standard in mathematics. In Year 6, statutory tests are used to indicate whether a child is working at the expected standard at the end of Key Stage 2 or above or below this standard. School performance in Key Stage 2 tests can be viewed on the school's website. Pupils' ability to recall times tables facts rapidly is assessed in the Multiplication Table Check at the end of Year 4.

Some pupils need support in mathematics to accelerate progress to ensure that a pupil is in line with their progress trajectory over the key stage or to support a pupil to work within their age-related expectations from lower starting points. These pupils are discussed at pupil progress meetings. Interventions take the form of:

- receiving pre-teaching of concepts before they are encountered as a class
- being part of an additional teacher/teaching assistant focus group during daily lessons, to address misconceptions or to consolidate understanding
 - Talking Maths groups to support pupils who are underachieving in maths due to language barriers such as EAL

Leadership

Monitoring of the standards of children's work and of the quality of teaching in mathematics is the responsibility of the mathematics subject leader and the headteacher which is carried out regularly. The subject leader is also responsible for supporting colleagues in their teaching, being informed about current developments in the subject, and providing a strategic lead and direction for mathematics in the school. Teachers receive regular feedback about the quality of their mathematics provision and are supported to develop their practice through continuing professional development opportunities.

Related policies:

- Problem Solving Curriculum Policy
- Marking and Feedback Policy

- SEND Policy
- Assessment policy

-Equality Policy