

*John Fletcher of Madeley*  
———— *Primary School* ————

# Mathematics Policy

## Rationale

We acknowledge that children learn in different ways, through a variety of experiences and we therefore recognise the need to develop strategies that allow all our children to learn and develop their mathematical knowledge and understanding in ways that best suit them.

## Aims

The aim of this policy is to provide a clear statement of the principle and practice of teaching and learning within Mathematics at John Fletcher of Madeley Primary School. This statement represents our agreed view of how we intend to encourage and support that learning. It provides a framework which enables teachers and support staff to be confident in developing their own practice and ensures that we are consistent in the way we work with our pupils.

The 2014 National Curriculum outlines the expectation that all pupils will:

- 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;
- **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.

At John Fletcher of Madeley we aim to deliver a mastery curriculum to all of our pupils which is structured to ensure depth of knowledge and application of skills for all learners. The large majority of children will progress through the mathematics curriculum at the same pace. Practice and consolidation within varied contexts will develop conceptual and procedural knowledge.

We aim to stimulate children's interest in mathematics and develop their understanding of its power as a tool for communicating and presenting information. We believe mathematics teaches children how to make sense of the world by developing their ability to calculate, to reason and to solve problems. It enables them to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, children will learn to appreciate the contribution made by many cultures to the development and application of mathematics.

We aim to help our children to:

- enjoy their learning through experiencing success, thereby increasing their self-esteem, by promoting an enthusiasm for learning mathematics through practical activity, exploration and discovery;
- become fluent with numbers and the number system;

- develop appropriate methods of recording and strategies for calculation;
- develop the use of mathematical language and their ability to solve, discuss and reflect on problems through decision making and reasoning in a range of contexts;
- develop an appreciation of mathematical pattern and the ability to identify relationships;
- become independent, confident learners who take increasing responsibility for their own learning and can make choices;
- become resilient, reflective, resourceful and reciprocal learners who can apply their mathematical skills, knowledge and conceptual understanding both within Mathematics and in other areas of the curriculum (Science, History, Geography and P.E);
- acquire the necessary skills for learning, now and in the future, by developing lively, enquiring minds and the ability to question, share ideas and work cooperatively;

### **Curriculum organisation**

The National Curriculum for Mathematics 2014, Development Matters and the Early Learning Goals 2012 (Number & Shape, Space and Measure) provide the long term planning for the mathematics taught in school.

Weekly planning in the Early Years Foundation Stage is structured around the statements from Development Matters and the Early Learning Goals.

In the rest of the school, medium term planning breaks the curriculum up into units of work that allow time for depth of learning. The children are taught in mixed ability classes. Teachers within a year group work together to plan detailed weekly plans which develop mathematical strands in greater depth and allow time for the development, consolidation and application of skills. Where necessary, these are adapted to suit the individual needs of particular classes. Planning is designed to allow opportunities to develop fluency, problem solving and reasoning in a range of contexts. Learning objectives are set for each lesson and Steps to Success are identified which wherever possible are process and concept based. These are referred to by teachers, teaching assistants and children when making assessments of the learning that has taken place in the lesson.

Digital copies of the weekly plans are stored centrally on the T-drive in class folders. Teachers may choose to annotate these based upon the Assessment for Learning (AfL) that has taken place or otherwise they annotate and store paper copies of their plans in their classrooms.

Coverage of the curriculum in Key Stage 1 and 2 is recorded on digital copies of the medium term planning and is also stored in the class folders. All plans are thus available for review by the Subject Leader and/or other members of the Senior Leadership Team.

### **Teaching and Learning**

The school uses a variety of teaching and learning styles in mathematics lessons. As in other areas of learning, it is important that we incorporate a range of teaching strategies within Mathematics in order to accommodate the differing learning needs of the children and the demands of the mathematics curriculum. Our principal aim is to support and develop children to become mathematically fluent learners who can reason mathematically and apply their knowledge and understanding within problem solving contexts.

## **Maths in the Early Years**

In the Foundation Stage, mathematics teaching is based on the Early Years Outcomes. Children take part in 2 adult-led Maths sessions every week and they begin to record by using marks they can interpret and explain. In addition to these sessions there is a designated Maths area in the classrooms that provides the children with mathematical resources that they can access during child-initiated time. The resources correspond with the focus topic of the week and they encourage the children to challenge themselves and utilise the skills they have been taught in adult-led sessions. The outside environment is also used to ensure that real life mathematical opportunities are planned for each week during both adult-led and child-initiated time. Having these opportunities in both the inside and outside environment is an effective vehicle for fostering mathematical concepts and developing positive attitudes to mathematics.

## **Maths in Key Stages 1 and 2**

Lessons are planned to take account of previous learning and match tasks to children's needs using a range of challenges. Grouping is flexible and made on a needs basis which may take into account pre-assessments from set tasks and/or marking of prior work as well as on-going Assessment for Learning (AfL) within lessons. Other adults working within the classroom will support a range of groups as directed by the class teacher. During the lessons, we encourage children to ask and respond to mathematical questions. Within every strand of learning, children will be given opportunities to make decisions, communicate their findings and develop reasoning and problem solving skills. When recording, they will be encouraged to develop and choose from a range of strategies including informal jottings, written methods and visualisation using models and images such as bar modelling.

Children have the opportunity to use a range of resources to support their work including class-based toolboxes, other manipulatives, working walls and mathematical dictionaries, where age-appropriate. Children should be able to select and use appropriate equipment and resources suitable to their task.

## **Mental Arithmetic**

Over the course of each week there are planned opportunities for oral/mental activities which will enable the children to learn mathematical patterns, rules and facts and to practise and recall these in order to develop fluency when calculating mentally. Some of these activities may be taken from 'Mental Maths in Minutes' or be quick number bond or times table activities.

During the year, through activities such as 'Knowvember' or 'Memory March', we have a whole-school focus on the recall of key facts.

## **Standard Written Methods**

Planning follows the school's calculation policy which makes explicit the stages to be taught when using a written method for each operation (see Calculation Policy). Children are encouraged to develop their own mathematical thinking by using their own written calculations moving towards standard written methods as they progress through the school. By the end of Key Stage 2, children need to have a repertoire of standard written

methods that satisfy the requirements of the 2014 National Curriculum as laid out in the Appendix.

## **Mathletics**

As part of our aim to promote an enthusiasm for mathematics across the school, each child has an individual log-in for Mathletics, a web-based learning programme. This can be used in the classroom both within mathematics lessons and at other appropriate points during the day. Children are also encouraged where possible to access this at home.

A hierarchy of incentives have been designed to encourage the children's active participation in this additional learning opportunity:

- Bronze and Silver certificates earned by the children are presented at a weekly ceremony during EYFS/KS1 and KS2 Collective Worship.
- Gold certificates are presented during the Friday morning Whole School Purple Book Assembly.
- Class trophies are presented weekly to the EYFS/KS1 and KS2 classes who earn the greatest number of activity points.
- Individual 'Oscar Owl Mathmagicians' are presented weekly to the child in each class who has earned the greatest number of activity points.
- Children who achieve a place on the daily UK or World Hall of Fame charts are presented with a Hall of Fame certificate each time they receive this recognition. On the first occasion, they also receive an individual metal badge which they may wear on their uniform. (Red for the UK Hall of Fame and Blue for World Hall of Fame.)
- Mathletics has a regular update slot on the school's weekly newsletter.

## **Homework**

Homework will be used to reinforce and extend learning as appropriate to the lesson and according to the set timetable.

## **Role of the Subject Leader**

- The Subject Leader will provide a strategic lead and direction for the subject in the school;
- The Subject Leader is responsible for the development, planning, implementing and monitoring the Scheme of Work and evaluating the quality of teaching and learning throughout the school;
- The Subject Leader will review children's work and make lesson observations;
- The Subject Leader is also responsible for organising resources and supporting staff.

## **Liaison**

The Subject Leader will liaise with governors as appropriate.

## **Professional Development**

Professional development is available to all staff and the Subject Leader will attend subject leader updates and pass on appropriate information and skills.

## **Assessment, Reporting and Recording**

Assessment is used to inform planning in the short term and to check on children's progress through formal testing procedures.

Assessment for Learning (AfL) judgements are made during the course of mathematics lessons and are used to adjust daily plans where appropriate, thereby making sure that work is appropriately challenging. Work is marked according to the Marking Policy and next steps for learning are identified. With the New National Curriculum, these will be steps aimed at helping the vast majority of children move towards the end of year Age Related Expectations (ARE).

These expectations are presented in a child-friendly 'Jigsaw' format in Years 1 to 6. Cohort-specific jigsaw target sheets are stuck into the front cover of each child's Maths book. If a child is working significantly below the age related expectations, teachers consult the SLT about which year group's jigsaw sheet would be appropriate to use.

To support teachers' ARE judgements, the school's Mathematics Assessment Frameworks for each year group contain guidance and exemplification of all the performance indicators at pre-ARE, working at ARE 'Mastery' and exceeding ARE 'Mastery with Greater Depth'. As soon as a teacher is confident that a particular objective has been achieved, they initial the corresponding jigsaw piece and the child subsequently colours it in. All children are encouraged to articulate, and prove, what they have achieved by referring to their individual jigsaw sheets and the related work in their books. Each half term, these sheets are colour-copied as evidence of the child's progress towards the end of year expectations. Where a teacher feels that a child is able to apply concepts at greater depth within these, a second sheet is stuck into the back of the book for completion.

Parents will be informed of their children's progress at Parents' Consultation Evenings and through their child's annual school report.

## **Resources**

There is a wide range of resources to support the teaching of Mathematics across the school. All KS1/KS2 classrooms have a range of appropriate small apparatus and Maths toolboxes. Mathematical dictionaries are available. Other resources are stored centrally in the Mathematics boxes in the resource area situated in the North Hall. A range of software is also available, as are appropriate programmes on the network and on the Internet.

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**Next review: May 2020**