



Mathematics Policy

This policy represents the agreed principles for Mathematics throughout the school. This policy has been agreed by governors within the school and all teachers representing Early Years, Key Stage 1 (Years 1 & 2) and Key Stage 2 (Years 3, 4, 5 & 6).

School aims

Our school community (children, staff, parents and governors) aims to:

- Learn and grow together within a safe, caring and happy environment;
- Continually encourage achievement in all aspects of school life;
- Motivate all children with a broad and challenging curriculum;
- Treat everyone with honesty and respect;
- Ensure opportunities for all.

Shepherd Primary School Vision and Aims:

Shepherd Primary School aims for all pupils to engage in varied and frequent practice in the fundamentals of mathematics to enable them to develop their conceptual understanding. They will be able to solve problems of increasing complexity and reason using mathematical language. Good learning takes place when pupils are given opportunities to solve problems by developing their understanding and making links between different areas of mathematics and applying skills. Good teaching enables good learning to take place. It involves creating an appropriate, supportive environment where pupils can respond to high levels of expectation and challenge and develop their independence.

The aims of Mathematics are:

- to promote enjoyment and enthusiasm for learning through relevant and challenging activities;
- to promote confidence and fluency with numbers and the number system;
- to move fluently between different representations of mathematical ideas;
- to develop the ability to solve problems through decision-making and reasoning in a range of contexts;
- to develop a practical understanding of the ways in which information is gathered and presented;
- to explore geometry, and develop measuring skills in a range of contexts;
- to understand the importance of mathematics in everyday life.

As a result of good teaching and learning our pupils are encouraged to develop into individuals who are mathematically confident enabling them to reach their potential.

Teaching and Learning Styles

At Shepherd Primary School we use a variety of teaching and learning styles in Mathematics lessons. Our principal aim is to develop children's knowledge, skills and understanding in mathematics. We do this through a daily lesson that has a high proportion of whole-class and group-direct teaching. During these lessons, we encourage children to ask as well as answer mathematical questions, to look at a mathematics problem in a variety of ways and to enjoy learning through creative, engaging activities. They have the opportunity to use a wide range of resources such as number lines, number squares, digit cards and small apparatus to support their work. (Shepherd Primary School Calculations Policy shows the ways in which the four different calculations are taught.) Children use ICT in Mathematics lessons where it will enhance their learning. Wherever possible, we encourage the children to use and apply their learning in everyday situations.

In all classes there are children of differing mathematical ability. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies - through organising the children to work in pairs on open-ended problems or games and by providing the children with three levels of differentiated work allowing all children to reach or exceed their potential. Differentiation also takes place by grouping children into three (or more) ability groups and providing challenging tasks for each group, allowing for extension activities and support.

We acknowledge that children have different preferred learning styles – visual, auditory and kinaesthetic (VAK). We cater for these different learning styles in all Mathematics lessons, through careful planning.

We use Teaching Assistants to support children and to ensure that work is matched to the needs of individuals. This support caters for all levels including extending gifted and talented children. Where appropriate, additional booster groups are set up to provide small group support to specific groups of children.

Mathematics Curriculum Planning

Mathematics is a core subject in the National Curriculum, and we use the New Primary Mathematics Curriculum (2014) as the basis for implementing the statutory requirements of the programme of study for Mathematics.

We carry out curriculum planning in Mathematics in three phases (long-term, medium-term and short-term).

The New Primary Mathematics Curriculum (2014) gives a detailed outline of what we teach in the long term. Teachers in Key Stage 1 and 2 use the New Primary Mathematics Curriculum (2014) to plan work to suit the year group they teach. The school follows the Herts Immersion Planning framework to enable teachers to form rich and relevant links between areas of mathematics, and to spend time to ensure pupils have a secure understanding of an objective before moving on. Those pupils without a secure understanding will be supported through interventions.

Our medium-term Mathematics plans give details of the main teaching objectives for each term, defining what we teach. The immersion structure ensures progression, but allows for flexibility. The immersion plans ensure an appropriate balance and distribution of work across each term.

It is the class teacher who completes the weekly plans for the teaching of Mathematics. These weekly plans list the specific learning objectives for each lesson, broken down from the end of year objective on the immersion plan, and give details of how the lessons are to be taught. The class teacher keeps these individual plans as well as saving a copy electronically on the school's server. The subject leader, Leaders of Learning and Senior Leadership Team monitor this planning regularly. All teachers ensure that they plan for a weekly maths investigation activity to take place every Friday. These investigations have a focus on allow for skills learned during the week to be applied in a practical, investigative context. In addition to this, teachers will plan and teach a guided group lesson each and every Thursday which will be hand written onto the weekly plan. The aim of this weekly guided group is to draw together individual children (not necessarily all from the same ability group) who have failed to achieve a key objective so far during the week's lessons. This focused, teacher-led group should ensure that children have the opportunity to succeed and achieve this key objective before the end of the week. All lessons should include elements of 'working mathematically'.

Target Setting

Pupils are set targets in groups, using Assessment to Inform Planning. These targets are intended to address gaps in learning and to enable all pupils to make progress. Daily and weekly targets are set through WALT stickers setting out learning intentions, and next steps marking encourages pupils to meet these targets.

Times Tables

Times tables are taught throughout the school using a wide range of different strategies to help support different learning styles. Each child from Year 1 upwards has their own Times Tables booklet which shows their progress when learning times tables. Children are tested on a regular basis to ensure that they know all of their times tables by the expected stages in their education. Children are rewarded with Bronze, Silver, Gold and Platinum stickers to mark their achievements. Progress in these times tables booklets is shared at the start of every celebration assembly. It is expected that children will know all of their times tables to 12 x 12 by the end of Year 4. Children beyond Year 4 are given a 'Times Tables and Mathematics Facts 2' booklet which includes further targets to achieve such as learning multiples of larger numbers, square numbers and cube numbers. In Key Stage 2 pupils are given weekly practice in the form of speed tests, which allows pupils to monitor their own progress and have a full awareness of their own their own learning needs.

Early Years

We teach Mathematics (M) in Nursery and Reception classes as an integral part of work covered during the year. As the Reception class is part of the Early Years Foundation Stage, we relate the Mathematics aspects of the children's work to the objectives set out in the Early Learning Goals (ELGs) which underpin the curriculum planning for children aged birth to five. The children have the opportunity to explore Mathematics activities through both adult directed and child initiated activities using both their indoor and outdoor learning environments.

We give all the children ample opportunity to develop their understanding of number, measurement, pattern, shape and space through varied activities that allow them to enjoy, explore, practise and talk confidently about Mathematics. Children also have the opportunity to use ICT regularly in mathematics in Early Years.

EYFS children's progress is tracked through the Hertfordshire EYFS Progress Toolkit. In Reception, children's progress is also tracked through the Early Years Foundation Stage Profile (EYFSP). Targets are set regularly throughout the year for the children in the Foundation Stage. Assessments are gathered through observations of children during both adult initiated and child initiated learning and are cross referenced to the age related expectations.

Contribution of Mathematics to Teaching in other Curriculum Areas

English:

The teaching of Mathematics contributes significantly to children's understanding of English by actively promoting the skills of reading, writing, speaking and listening. For example, in Mathematics lessons we expect children to read and interpret problems, in order to identify the Mathematics involved. They are also improving their command of English when they explain and present their work to others during plenary sessions. Pupils are also required to be able to communicate explanations and reasoning in writing.

Personal, Social, Health and Citizenship Education (PSHCE) & Social Emotional Aspects of Learning (SEAL):

Mathematics contributes to the teaching of PSHCE and SEAL. The work that children do outside their normal lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each other's views. We present children with real-life situations in their Mathematics work.

Music:

Children learn and practise Mathematics skills during many Music lessons - learning to count the beats in a bar, beats in a particular note, clapping rhythms, time signatures etc. Counting is a large part of Music.

Spiritual, Moral, Social and Cultural development:

The teaching of Mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We group children so that they work together and we give them the chance to discuss their ideas and results.

Geography:

The graphing of rivers and data in this subject uses Mathematics data handling skills, map reading skills require an understanding of coordinates and when learning about time zones, pupils need to be able to use the 24 hour clock.

Science:

Mathematics supports many areas of Science and can be easily linked, specifically through understanding data, completing graphs and applying knowledge of scale and number.

ICT in Mathematics

Information and Communication Technology enhances the teaching of Mathematics significantly. It offers new ways of engaging children in their learning, which are not as effective or not possible with conventional methods. Teachers can use their class interactive whiteboard and a range of mathematical software to present information visually, dynamically and interactively, so that children understand concepts more quickly.

Younger children use ICT to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables when explaining their results, or when creating repeating patterns, such as tessellations. When working on control, children can use both standard and non-standard measures for distance and angle. They can also use simulations to identify patterns and relationships.

The children are given opportunities to work on the laptops, computers in the school ICT suite, and use Mathsframe during Mathematics lessons. Digi-blue cameras, flip cameras and digital cameras allow children to record their learning in new ways, using ICT.

Mathematics and Inclusion

At Shepherd Primary School, we teach Mathematics to all children, whatever their ability and individual needs. Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our Mathematics teaching, we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents and those learning English as an additional language, and we take all reasonable steps to achieve this. For further details, see separate policies: Special Educational Needs; More Able Children; English as an Additional Language (EAL).

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style and differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Regular assessment against the New National Curriculum (2014) allows us to consider each child's attainment and progress against end of year expectations. Pupil progress meetings are held on a termly basis to ascertain if there are children whose progress is not meeting expectations and intervention is introduced where it is needed.

Teachers also use Assessment for Learning (AfL) during teaching and marking of pupils' work. The use of self assessment and traffic lighting in books ensures that our teaching is matched to the child's needs.

Intervention is also offered for children with special educational needs through individualised maths targets set out in Individual Education Plans (IEPs).

We enable all pupils to have access to the full range of activities involved in learning Mathematics. Where children are to participate in activities outside the classroom (a 'maths trail', for example), we

carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

Assessment

Class teachers assess children's work in Mathematics from three aspects (long-term, medium-term and short-term). We use short-term assessments to help us adjust our daily plans. These short-term assessments are closely matched to the learning objectives and steps to success for each lesson. Class teachers make daily assessment notes on their mathematics weekly planning and take note of the traffic lighting system the children use in their books to show how they have understood the lesson. All teachers from Year 1 to Y6 track and assess pupils' matched to the statutory requirements of the New National Curriculum 2014. Teaching assistants supporting pupils record progress on plans or on post it notes, and attach to teacher planning.

We make medium-term assessments to measure progress against the key objectives, and to help us plan the next unit of work. As appropriate, class teachers complete assessments with the children after each unit of work and use this to inform their planning the next time they teach that area of Mathematics. Teachers use this assessment to identify key areas for development as well as resources and support required. These assessments feed in to the pupil progress meetings, which happen once a term and are used to determine how much the children have progressed.

We make long-term assessments towards the end of the school year, and we use these to assess progress against school and national targets. We can then set targets for the next school year and make a summary of each child's progress before discussing it with parents. We pass this information on to the next teacher at the end of the year, so that s/he can plan for the new school year. We make the long-term assessments with the help of teacher assessments. We use the National Tests for children in Year 2 and Year 6.

Each teacher uses marking to assess whether children have achieved each lesson objective. In addition to this, WALT (We Are Learning To) and Steps to Success target stickers are put on each child's piece of work on a daily basis. Teachers then mark each piece of work to show whether each step to success has been achieved. During a week of Mathematics teaching, each child should have their book 'improvement marked' by their teacher. This usually involves using 'two stars and a wish' – children are given two things which they have done well in their work (two stars) and one thing they could improve upon (a wish linked to the WALT) in the form of a task or question. Children are then given daily 'response time' each morning where they are encouraged to respond to their teacher's comments and/or complete a task using a 'polishing pen'. This improvement marking is directly linked to pupil's individual targets which are kept in the front of their Mathematics books.

Class teachers regularly assess children's progress towards achieving the Hertfordshire Assessment Criteria (HAC) for the phase (ABCD) and steps (0123) appropriate for their year group. Teachers regularly highlight the curriculum expectations in order to provide a termly level (e.g. C1, C3) based on percentage of aspects, including key skills, highlighted. Year 2 and Year 6 use ITAF (Interim Teacher Assessment Framework) to support judgements.

Assessment for Learning – Self and peer assessment

All children from Nursery to Year 6 are asked to make judgements about how they can improve their own work, through a range of self assessment techniques (e.g. traffic light colours, thumbs up – thumbs down). Children are also given the opportunity to take part in peer-to-peer assessment where they support their peers in looking at how to improve their work. At the end of every lesson, each child uses traffic light colours and/or smiley faces to show their understanding of the learning objective. In response to this, after the teacher has marked the child's work, they also traffic light the work, or tick WALT sticker to show how much the child has understood. Discrepancies between child and teacher assessments are then addressed if necessary.

Resources

There are a range of resources to support the teaching of Mathematics across the school. All classrooms have a number line, number square, maths working wall and a wide range of appropriate small apparatus. Calculators, a range of audio and visual aids and software to support work using the computers are available in classrooms. Each class from Nursery through to Year 6 has a large interactive whiteboard and a visualiser, which can be used by the children as well as the class teacher.

Sustainability

Through our work towards the Sustainable Schools Award, Shepherd Primary School is committed to being environmentally sustainable and educating our children and wider school community about sustainability for the future.

In moving towards being sustainable, we are attempting to reduce our ecological footprint or to tread more lightly on the Earth. This equates to reducing the amount of resources we use and buy, the waste we produce and the emissions we produce.

Class teachers plan to teach children about sustainability issues, through the teaching of Mathematics, where appropriate and relevant.

Monitoring and review

Monitoring of the standards of children's work and of the quality of teaching in Mathematics is the responsibility of the Mathematics subject leader. The work of the Mathematics subject leader also involves supporting colleagues in the teaching of Mathematics, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school.

Class teachers analyse the results of EYFS Profiles in the Foundation Stage, the National Tests in Year 2 and Year 6 to identify areas of strength and weakness. These areas are then fed back in to the teaching process throughout the school.

The Mathematics subject leader reviews samples of children's work and undertakes lesson observations of Mathematics teaching across the school on a regular basis. The Mathematics subject leader also gathers 'pupil voice' feedback to find out children's opinions of Mathematics.

The Mathematics subject leader gives the headteacher an annual summary in which s/he evaluates strengths and weaknesses in the subject and indicates areas for further improvement, as part of the School Improvement Plan. An ongoing 'initiatives' document is used throughout each academic year to keep track of any Mathematics-related events which take place in school.

One named member of the school's governing body is briefed to oversee the teaching of Mathematics. The aim of this governor is to meet termly with the subject leader to review progress, and report back to the Governing Body, where necessary.

This policy is reviewed every year or earlier if necessary.