

Halfway Nursery Infant School



Maths Policy

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HALFWAY NURSERY INFANT SCHOOL

POLICY FOR MATHEMATICS

PURPOSE OF STUDY

Mathematics is a creative and highly inter-connected 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.

AIMS

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.

Spoken language

The national curriculum for mathematics reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof. They must be assisted in making their thinking clear to themselves as well as others and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

School curriculum

The programmes of study for mathematics are set out year-by-year for key stages 1 and 2. With the introduction of mastery in Maths each year group is given a set programme of study through which the pupils progress. A large proportion of time is spent reinforcing number to build competency. Teachers are expected to stay in the required key stage and develop a depth of understanding. All pupils have the opportunity to stay together as they work through the schemes as a whole group. Plenty of opportunities are given to build reasoning and problem solving elements into the curriculum. The most able children are offered additional challenge to allow them to develop fluency and competency within the curriculum area being covered.

All schools are also required to set out their school curriculum for mathematics on a year-by-year basis and make this information available online.

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Teaching and learning style

Our principal aim is to develop children's knowledge, skills and understanding in mathematics through the use of the EDUcate approach (Experience, Develop, Use):

Experience/Engage: Children should be exposed to and engaged in a concept/idea in as many different ways to gain experience of it. This is an essential part of the learning process. If children haven't seen, heard or felt part of an idea or concept then they can't possibly claim to have any experience of it. A child with limited or no experience of something cannot possibly develop learning to enable them to use this concept/idea in real life. It is our role as teachers to provide exposure to and experience of a whole range of notions, ideas and concepts to enable children to understand them and use them appropriately in the real world. Whilst providing experience its essential that teachers assess children as individuals' starting points will be very different. AfL at this stage will provide a valuable insight into what future learning needs to take place for children to gain a true understanding.

Develop: Once children have gained some experience of a concept/idea and teachers have activated prior learning and clearly identified gaps in learning, then together, teaching can be shaped to develop skills and knowledge to fill gaps in understanding and move learning on. It is in this stage where children should make most progress in developing basic skills and teachers should be constantly reflecting on learning and shaping (and re-shaping lessons) teaching to maximise progress for all children.

Use: Once children have developed skills and knowledge and can confidently use them in isolation, it is important we provide children with opportunities to use and apply these newly developed skills and knowledge in real life, purposeful and meaningful situations. It is only in these situations that children will truly show a genuine understanding of a concept/idea, as they should be able to transfer skills/knowledge in the real world, explaining what they have been learning, why they have been learning it and what use it is to them!

Teaching and learning sequence

- Maths sequences of learning will be taught over 2 or 4 weeks and can be extended if teachers feel that more time needs to be spent on consolidating learning.
- Sequences of learning will consist of Number, Measurement, Geometry and Statistics (Y2 ONLY).
- Maths sequences will identify clear learning objectives in relation to the above areas, but also very clear success criteria.
- Plenaries will no longer be used at the end of lessons. They will be replaced with 'revisit/reshape' times, which will be used by the teacher as and when necessary to move learning on or address misconceptions.
- Maths should still be taught though topics/themes and stories wherever possible and maths should still be made relevant to the children and meet their needs and interests.

STRUCTURE FOR MATHS PLANNING/DELIVERY
Week 1: Focus on giving experience of a concept/idea and developing basic skills/knowledge in isolation, but still using a highly infused VAK approach.
Week 2: Focus on using and applying skills/knowledge of a concept/idea in real life situations. This week could also be used to consolidate skills/knowledge for LAPs ready to use and apply at a later point in the term/year.
Week 3: Continue using and applying skills/knowledge of a concept/idea in real life situations. This week could also be used to consolidate skills/knowledge for LAPs ready to use and apply at a later point in the term/year.
Week 4: Promote fluency by making links to prior learning and exploring the concept in further depth.
Developing competency through the use of problem solving and reasoning activities will be threaded throughout all learning.

Mathematics curriculum planning

Mathematics is a core subject in the National Curriculum, and we use skills progression as the basis for implementing the statutory requirements of the programme of study for mathematics.

We carry out the curriculum planning in mathematics in three phases (long-term, medium-term and short-term). The staff have worked together to develop a long-term skills progression document that establishes a clear progression from F1 to Y2 identifying the key objectives to be taught in each year.

Our medium-term mathematics plans outline each learning sequence giving focus objectives, success criteria, topic links and key outcomes.

The weekly plans for the teaching of mathematics are based on the medium term plans. These weekly plans give a specific learning objective and the steps for success that will be used to achieve an intended outcome (differentiated into must/should/could). In addition to this differentiated adult led and enhanced provision activities are planned for. The enhanced provision will include independent investigation or problem solving activities and personalised maths tuition programmes accessed through iPads or desktop computers. All weekly planning will contain a reflect/reshape box for the purposes of AFL and 'closing the gap' analysis. The class teacher keeps these individual plans, and the class teacher and subject leader often discuss them on an informal basis.

The Foundation Stage

We teach mathematics throughout the Foundation Stage. In the Foundation Stage we relate the mathematical aspects of the children's work to the objectives set out in the Ages & Stages and Early Learning Goals and Early Years Foundation Stage documents, which underpin the curriculum planning for children aged from birth to five. 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. The yearly overview is also used in Foundation Stage but with less rigour and increased flexibility. This allows for a greater learning of mathematics through structured play experiences.

Contribution of mathematics to teaching in other curriculum areas

English

The teaching of Mathematics contributes significantly to children's understanding of English in our school 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 teaching sessions. In English lessons, too, maths can contribute: younger children enjoy stories and rhyme that rely on counting and sequencing, while older children encounter mathematical vocabulary, graphs and charts when reading non-fiction texts.

Personal, social and health education (PSHE) and citizenship

Mathematics contributes to the teaching of PSHE and citizenship. 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 older children with real-life situations in their mathematics work on the spending of money.

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. The study of famous mathematicians around the world contributes to the cultural development of our children.

Mathematics and IT

Information and technology enhances the teaching of mathematics significantly, because ICT is particularly useful for mathematical tasks. It also offers ways of impacting on learning which are not possible with conventional methods. Teachers can use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. Through the use of iPads and desktop computers the children are able to access a huge variety of age appropriate maths software. In addition to this all F2 and KS1 pupils will use RM Easimaths to independently access an online maths tuition programme to consolidate their learning in school and at home. Calculators should not be used as a substitute for good written and mental arithmetic. They should therefore only be introduced near the end of key stage 2 to support pupils' conceptual understanding and exploration of more complex number problems, if written and mental arithmetic are secure.

Mathematics and inclusion

At our 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. Extension tasks are always set to challenge able, gifted and talented children in mathematics, therefore ensuring every child is reaching their full potential.

For further details see separate policies: Special Educational Needs; Disability Non-Discrimination; Able, Gifted and Talented; 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. Assessment allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs.

Assessment for learning

Teachers will 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 teaching objectives. The children are also involved in their own self-assessment through the use of RAG assessment stamps.

We make medium-term assessments to measure progress against the key objectives, and to help us plan the next unit of work. Children in Key Stage One are assessed termly and individual records of progress are kept. Targets are also set for the coming term. Children in the Foundation Stage are assessed using observations in the Foundation Stage Profile on an ongoing basis.

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 end-of-year tests and teacher assessments. We use the national tests for children in Year 2. We also make annual assessments of children's progress measured against the level descriptions of the National Curriculum.

Resources

All classrooms have a wide range of concrete resources e.g. numicon, base 10, place value boards etc. Within the classroom environment pictorial representations and explanations of abstract methods are also displayed and used during teaching sessions. A range of software is available to support work with the computers. Each class has interactive maths display (O/M Maths wall) which is used, as an integral part of teaching, on a daily basis at the beginning of each lesson. Each class will also have a dedicated area for maths equipment, which should be freely accessible to all children.

Monitoring and review

Monitoring of the standards of children's work and of the quality of teaching in mathematics is the responsibility of the subject leader. The work of the subject leader also involves 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. The subject leader gives the head teacher an annual summary in which she/he evaluates strengths and weaknesses in the subject, and indicates areas for further improvement.