Mathematics Policy

July 2021

Mathematics is a creative and highly interconnected 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

- 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

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop **fluency, mathematical reasoning** and competence in **solving increasingly sophisticated problems.** They should also apply their mathematical knowledge to science and other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

Information and communication technology (ICT)

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' transition into secondary schools, where calculators will be used regularly. In both primary and secondary schools, teachers should use their judgement about when ICT tools should be used.

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.

(National Curriculum 2014)

Teaching and Learning

Although Mathematics has a range of cross-curricular links, it is usually taught discretely, on a daily basis. Where appropriate, opportunities from other subject areas are used to rehearse skills in a context.

Planning is based upon the National Curriculum 2014. The long term plans are taken from White Rose scheme of learning and the journey of mathematics is developed through the use of the 'S plan'. The 'S plan' states what the children should have covered by the end of the unit whilst also highlighting the concrete resources used to support, barriers the children may have within the learning, extended reasoning opportunities and Stem Sentences to enhance the children vocabulary and understanding. Class teachers are responsible for the relevant provision of their own classes and individually develop weekly plans which give details of learning objectives and appropriate differentiated activities. Although planned in advance they are adjusted on a daily basis to better suit the arising needs of a class and individual pupils.

During the planning stage, teachers will draw on their expert knowledge of mathematics and the pupils, identify potential misconceptions that children could develop. They will use this to plan interactive, engaging and challenging lessons. Teachers and teaching assistants will use the correct mathematical vocabulary and use of stem sentences to help determine the appropriate terminology to use in our teaching and children are expected to use it in their verbal and written explanations.

From Nursery 1 through to Y6, children will be taught in whole class groups of mixed ability. In some special cases, smaller groups may be removed from lessons for intervention purposes in order to enable all children to succeed.

Differentiation has now moved to focus on all children achieving the same learning outcome and the differentiation is the way that different groups of children are supported to achieve this. A high proportion of lesson time is devoted to direct teaching methods and vocabulary through modelled examples to ensure that children are fully confident to tackle independent tasks. Teachers demonstrate, explain and illustrate mathematical ideas to fully involve pupils and maintain their interest through appropriately demanding work.

Teachers use and expect pupils to use correct mathematical notation and vocabulary. Mathematical errors and misconceptions are dealt with as they are identified in a positive and supportive way, teaching addresses misconceptions and through appropriate question the depth of understanding is developed. Classroom assistants are used to support individuals or small groups of children.

The emphasis on pupil's learning begins with practical examples leading to informal jottings and mental strategies, and finally to formal representations as laid out in the calculation policy.

Progression in Calculation

Teachers use the school's maths calculation policy.

Times Tables

All children from year 2 will use Times Table Rock Stars to practise their times tables. In class, they will be taught and new times tables and will practise these as homework and using TTRS.

Assessment

Teachers follow the school's assessment policy. During the lesson, teachers and teaching assistants carry out Assessment for Learning. They are expected to discuss individual and group progress, and adapt future planning as needed. Assessment of Learning is carried out on a half-termly basis.

EYFS

The programme of study for the Foundation stage is set out in the EYFS Framework. Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shape, spaces and measures.

Resources

All classrooms are equipped with a wide range of mathematical resources and tools. When being introduced to new concepts the CPA (concrete, pictorial, abstract) approach is used enabling children to achieve. They will then choose whether to use the equipment in the future or move away from it when deeper understanding is gained. All classrooms have a maths resource area that children can access when required.

Marking and presentation

Teachers are expected to adhere to the schools marking policy when marking books.

Inclusion and equal opportunities

All children are provided with equal access to the mathematics curriculum. We aim to provide suitable learning opportunities regardless of gender, ethnicity or home background.

Role of the Subject Leader

The Mathematics Leader alongside SLT, is responsible for monitoring and evaluating curriculum progress. This is done through book scrutiny, planning scrutiny, lesson observations, pupil interviews, learning walks, data analysis and staff discussions.

The Mathematics Leader delivers professional development to staff as required through staff meetings and training sessions. They devise and evaluate annual mathematics action plans, and draw upon their knowledge of the school and current practice to update required policies.

Date of next review: September 2022