



Mathematics Policy

This policy was reviewed in September 2019 by:

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The policy was adopted by the SD Committee on 7 November 2019

This policy is reviewed biennially

Date of next review: Autumn Term 2021

INTRODUCTION

The National Curriculum for Mathematics (July 2014) states that:

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

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

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.

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.

Key stage 1 - years 1 and 2

- The principal focus of teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the 4 operations, including with practical resources [for example, concrete objects and measuring tools].
- At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.
- By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.
- Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Lower key stage 2 - years 3 and 4

- The principal focus of teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the 4 operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.
- At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.
- By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.
- Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word-reading knowledge and their knowledge of spelling.

Upper key stage 2 - years 5 and 6

- The principal focus of teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.
- At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.
- By the end of year 6, pupils should be fluent in written methods for all 4 operations, including long multiplication and division, and in working with fractions, decimals and percentages.
- Pupils should read, spell and pronounce mathematical vocabulary correctly.

THE MATHEMATICS CURRICULUM

- The National Curriculum for Mathematics sets out programmes of study year-by-year for key stages 1 and 2. Schools are, however, only required to teach the relevant programme of study by the end of the key stage.
- Within each key stage, schools have the flexibility to introduce content earlier or later than set out in the programme of study. In addition, schools can introduce key stage content during an earlier key stage, if appropriate.
- All schools are required to set out their school curriculum for Mathematics on a year-by-year basis and make this information available online. The Mathematics curriculum for this school is available in the curriculum section of the school's website.

MATHEMATICS IN THE SCHOOL CURRICULUM

Whilst the basic lesson structure is as outlined below, teaching staff may adapt this form to reflect the age and needs of the children.

Starter (recapping units previously covered)	5 minutes
Two oral and mental calculation activities	20 minutes
Main teaching activity	30 minutes
Review – plenary session	5 minutes

Lessons will have clear learning objectives that are communicated to the pupils. All objectives from the National Curriculum will be taught, and wherever possible children will progress through the 6 Stages of Learning:

Stage 1: Teaching and Learning

Stage 2: Practice and Consolidation

Stage 3: Problem Solving

Stage 4: Reasoning

Stage 5: Hybrid

Stage 6: Mentoring

Some pupils may be accelerated through this process to ensure a greater depth of understanding and guarantee higher performing children are challenged. Some children may find practice and consolidation (Stage 2) a challenge, and so remain on this for longer to improve accuracy and fluency.

ASSESSMENT & RECORDING

Assessment is integral to high quality teaching and learning. It helps us to ensure that our teaching is appropriate and that learners are making expected progress. We also use the outcomes of assessment to check and support our teaching standards and help us improve. Children are assessed regularly in class and objectives successfully achieved are highlighted off on our online assessment tool (EAMAG). If possible, this is also evidenced with a picture, date or reference to children's books.

At the end of every term (and the beginning of Autumn term 1), pupils take a Head Start Assessment Test. This assists teacher's judgements of whether the pupils are making good progress. This score is used in conjunction with more formative assessment methods conducted on a daily/weekly basis.

Pupil Progress meetings are held on a termly basis, where pupils' attainment and progress are discussed with SLT, and an action plan agreed for those who are not progressing as they should. Teachers will decide whether a pupil is working towards the expected level, working at the expected level or performing at a Greater Depth standard. Some children may even be working towards objectives in the Year below the year they are in. These children should be well catered for during Maths lessons.

A test is taken at the beginning of Autumn 1 to judge the children's starting points. These tests are then analysed and lessons are taught focussing on children's weaknesses. Progress can then be measured and reviewed, with SLT helping the class teacher to set targets and focus groups for the next half term.

RESOURCES

All resources are stored in corridors and are available for all. Concrete objects should form a large part of differentiation and are not limited to any particular Key Stage. In Key Stage 1, the resources are stored in the large cupboard in the dining hall. Resources here include scales, tape measures, multibase, pinboards and Maths board games (a copy of aims and objectives for each game can be found on the inside door of the cupboard). Resources in the Key Stage 2 area are mainly outside room 12 but also along the corridor. Each classroom should have an enable table set up so the children can access resources at all time. These tables should include:

- Number fans
- Place Value counters, cards
- Multiplication grids
- Number squares
- Think Pink cards
- Timers
- Dice
- Number Lines
- Calculators

Each child should have access to their own set of 0-9 digit cards and folders which have important re-useable photocopies sheets, such as:

- 100 square
- Larger than and smaller than grid
- Target board
- Shape properties
- Whole – Part – Part diagram

WALL DISPLAYS

Each classroom should have a Maths working wall. These should include examples of children's work, moving through the stages of learning. The display should also have a problem of the week with a place for children's answers. It might also have methods for calculation displayed which the children can use during their lessons.

MONITORING & REVIEW

Pupils books will be regularly monitored (once a term) in a staff meeting book scrutiny. An outline of aims and expectations will be outlined to staff prior to the scrutiny. (These will change depending on the schools needs and focuses). Staff will have a professional dialogue with another member of staff, sharing good practice and widening their understanding of the numeracy curriculum. Staff will also agree on 2 areas for development which will be checked 1 month after the scrutiny meeting.