

Mathematics Policy

What is Maths?

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. (From The National Curriculum 2014.)

Our Aims

We aim in Mathematics to enable pupils to:

- learn the facts and techniques they will need in order to study the subject further and for everyday life;
- think logically, to prove ideas and hypotheses;
- solve problems using the most appropriate method;
- be creative and imaginative, to appreciate the power of mathematics;
- 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.

Organisation

In Key Stages 1 and 2, sessions last for 1 hour every day, and five Maths lessons are taught per week. Whereas children from Years 2 - 6 were previously grouped according to prior attainment, this is now being phased out, with a view to teaching all children in mixed ability groups. This is to ensure appropriate challenge and high expectations for all. In Years 1 - 6, children are taught in two groups, with three groups in Year 6.

Teaching

Teachers use the National Curriculum objectives for their year group to create their medium term plan and to teach their daily lessons. Where necessary, they will track back to objectives from previous year groups to ensure full understanding. In line with the 2014 National Curriculum, all teaching now focuses on three key aims; reasoning, fluency and problem-solving.

Fluency aims to ensure that children are confident with their numerical skills in order that they can calculate quickly and effectively with all four operations. All staff are encouraged to include some element of fluency work daily, for example through times table practice or written arithmetic questions. Reasoning is the ability to discuss, explain and conjecture about mathematical concepts; this can be in either written or verbal form. This allows children to have a deeper and more enriched understanding of what they are doing and why. Problem-solving involves children applying what they know to out-of-context situations, following a logical method in order to break down and solve a range of problems. When these three areas are mastered, children are able to demonstrate a sound understanding of their age-appropriate mathematical content, ready to move on to the next stage.

Planning

Medium Term Plans:

The National Curriculum is now divided up into different sections for each year group. These areas are:

Year 1:

- Number – number and place value
- Number – addition and subtraction
- Number – multiplication and division
- Number – fractions
- Measurement
- Geometry – properties of shape
- Geometry – position and direction.

Year 2:

- Number – number and place value
- Number – addition and subtraction
- Number – multiplication and division
- Number – fractions
- Measurement
- Geometry – properties of shape
- Geometry – position and direction
- Statistics

Year 3:

- Number – number and place value
- Number – addition and subtraction
- Number – multiplication and division
- Number – fractions and decimals
- Measurement
- Geometry – properties of shape
- Statistics

Year 4:

- Number – number, place value and rounding
- Number – addition and subtraction
- Number – multiplication and division
- Number – fractions, decimals and percentages
- Measurement
- Geometry – properties of shape
- Geometry – position and direction
- Statistics

Year 5:

- Number – number, place value and approximation
- Number – addition and subtraction
- Number – multiplication and division
- Number – fractions, decimals and percentages
- Measurement
- Geometry – properties of shape
- Geometry – position and direction
- Statistics

Year 6:

- Number – number, place value and approximation
- Number – addition and subtraction
- Number – multiplication and division
- Number – fractions, decimals and percentages
- Measurement
- Geometry – properties of shape
- Geometry – position and direction
- Statistics
- Ratio and proportion
- Algebra

Within these areas, there are statutory requirements which need to be covered and non-statutory requirements, which allow teachers some elements of flexibility. At the moment, the school does not use a particular scheme of work, however these are being investigated for the coming academic year.

Weekly Plans:

The compulsory weekly planning format for Maths has been removed, offering instead a more succinct and concise way of planning as an optional alternative. Teachers are advised to use the statements from the National Curriculum as a basis for their planning, and to focus their 'WALTS' around these statements. Teachers can access these on our assessment database; Target Tracker. In order to provide staff support with short-term planning, many subscriptions have been made to various websites, which provide resources and ideas for every statement in the curriculum. In addition to specifying what the children are learning, planning should also show the expected outcomes for children and how these are differentiated. Smart notebooks are used as evidence of teachers' planning, in addition to their written plans.

Resources

Most resources are kept in the classroom for the period of a unit of work and are accessible to all pupils. Other resources not being used are stored in the Maths resource area. Within this area, resources are clearly labeled and organised for ease. Resources are audited, organised and refreshed each year in line with the needs of staff and changes in the curriculum.

We teach children how to use resources, to recognise appropriate times to use them and to be able to choose the correct piece of equipment to suit their task. Staff are encouraged to use practical resources with children at all levels of attainment and all stages of learning, to scaffold their understanding and to provide support for all learning styles.

Mental Arithmetic

We want pupils to use a wide range of mental strategies wherever possible. We also teach children when to move onto either informal, and then formal, pencil and paper methods if appropriate. This is now particularly important in order to prepare children for the new end of KS2 assessments. A pupil should ask the following four questions of himself or herself when tackling a problem, moving onto the next stage only if the answer is no:

1. Can I do this in my head?
2. Can I do this with just some informal jottings?
3. Can I do this by using a standard written method?
4. Which will be the most efficient method in order to solve it?

After completing a calculation, children should ask themselves, "Does my answer look sensible/realistic?" In KS2, children are encouraged to make an estimate to accompany their working out, thereby gaining a rough idea of whether their actual answer is close or not.

Marking

Where appropriate, the 'WALT' of the lesson is used as the title for the piece of written work. This allows teachers to mark the work according to whether or not this has been achieved. All work is clearly marked and assessed in line with the school's marking policy: we use a "smiley face" approach, which provides fast and simple feedback to the children. The staff are also encouraged to provide the children, on occasion, with some written feedback, which the children then act upon at the start of the following lesson, to further develop their learning.

Assessment

Formative assessment takes place regularly, whereby staff use Target Tracker to assess the children's ability to meet the statements for the particular age group they are working on. They do this by highlighting the statements that the children have both covered and achieved. At the end of each half term, this will generate a 'step' for each child, which will give an indication as to whether or not that child is working at their age-related expectation.

We continue to prepare pupils for the statutory Key Stage 1 and Key Stage 2 SATS which take place in May each year. Teachers in Years 2 and 6 use the interim assessment frameworks to prepare for, and complete, these national assessments. At the end of Key Stage, children must

now complete three statutory papers; Arithmetic, Reasoning 2 and Reasoning 3. These assess all of the skills taught at that stage.

Each half term, the children complete a half-termly assessment in Maths. This has been created by their teacher, with activities which test the children on all that they have learned during that half term. This enables the teacher to see whether the child has retained, and can apply, their prior learning. The teacher will complete the target sheet at the end of the assessment, to highlight where the child has succeeded, and where they need to improve. One target will be highlighted, and a copy of this is stuck in the child's book. If the child later works on and/or achieves their target, the teacher will go back and annotate the target sheet to reflect this.

In addition to this, we are in the process of introducing and implementing the 'PiXL' programme throughout Key Stages 1 and 2. This has provided us with interim assessments, which will replace some of the half-termly assessments. These half-termly tests will provide teachers with an excellent gap analysis tool, thereby equipping them with the information they need to plan for the coming half term in order to fill the necessary gaps that children have. This is another way of ensuring that more children are able to achieve the age-related expectation for their year group band. When PiXL has been successfully implemented across the school, it will give us a clear calendar of – and tools for - regular formative and summative assessment.

Foundation Stage

Maths within the foundation stage is now divided into two sections: number and shape, space and measure. During the summer term, Reception teachers prepare the children for Year 1 by ensuring coverage of these areas of learning. They share their assessments in order to inform the Year 1 teachers of whether the children are working at emerging, expected or exceeding in relation to the Early Learning Goals.

Homework

Children are currently set Mathematics homework in accordance with the school's homework policy. This includes activities which reinforce the coverage of the National Curriculum, and aims to develop the three strands of fluency, problem-solving and reasoning. At the end of each academic year, booklets have been sent home which provide children with opportunities to practice any areas which they have found challenging during that year. These are then handed in to the child's new teacher at the start of the new academic year. Home learning is currently under review and may differ in the coming academic year.

Equal Opportunities

Work is differentiated (where appropriate) in terms of ability and catered to the requirements of both pupils with 'Special Educational Needs' and EAL pupils, so that all pupils have access to a full and broad curriculum. This policy has been written in accordance with, and meets the requirements of the Equality Act 2010.

Monitoring

The approaches detailed in this policy will be monitored by the class teacher, Mathematics co-coordinator and Headteacher in line with school policy.

See also:

DfES Primary Mathematics Framework

School Assessment Policy

School Equal Opportunities Policy

School Monitoring Policy

School Marking Policy

School Homework Policy

National Curriculum 2014

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