

Thatto Heath Community Primary School

Maths Policy



November 2017

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1.Introduction & background

This policy outlines what we are aiming to achieve in respect of pupils' mathematical education. It also describes our agreed approach to the planning, delivery and assessment of the mathematics curriculum. The mathematics taught and the methods used reflect the recommendations outlined in the guidance contained in the documents:

- The Revised Early Years Foundation Stage Framework – Development Matters and Early Years Outcomes
- The National Curriculum for Mathematics KS1 and KS2.

In accordance with the school improvement plan, the school is working hard to improve the quality of teaching and learning in mathematics throughout all age groups. Planning for school development takes into account local and national initiatives designed to raise educational standards in mathematics

2. Aims

Mathematics teaches us how to make sense of the world around us through developing a child's ability to calculate, to reason and to solve problems. It enables a child to understand and appreciate relationships and pattern in both number and space, in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics. As described by the National Curriculum, *'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 Aims of Mathematics in our School are:-

Pupils should be able to:

1. Solve problems
2. Reason mathematically
3. Become fluent in the fundamentals of mathematics

In order to achieve these aims the school aims to:

- To promote enjoyment and enthusiasm for learning mathematics through practical activity and use of concrete/ visual resources , exploration and discussion through which all children gain some success.
- To develop mathematical understanding through systematic direct teaching of appropriate learning objectives linked to age and ability.

- To develop the ability to solve problems through decision making and reasoning within a range of contexts, working logically, systematically and accurately.
- To encourage the efficient use of mathematics as a tool in a wide range of activities within school and in everyday life. This is particularly facilitated through the development of cross-curricular themes and themed weeks within the curriculum.
- To encourage children to work systematically, independently and co-operatively.
- To develop in the children the ability to express themselves fluently, to talk about mathematics with assurance and using correct and appropriate vocabulary.

3. Curriculum Planning

EARLY YEARS

The coverage of mathematics in the Early Years Foundation Stage consists of long, medium and short-term planning. Long term plans follow the developmental steps set out for children in the Development Matters and Early Years Outcomes documents. Medium term plans group and allocate specific developmental steps and learning experiences to be taught in an appropriately cumulative and challenging manner. However, the nature of teaching and learning through child-initiated activities in the EYFS necessitates the ability for teachers to be flexible in their medium term planning in order to best benefit active learning in an enabling environment. These aspects in turn inform short term planning, which includes not only adult-led activities, but also Continuous Provision resourcing, Enhancements and Child-Initiated Learning.

The Specific Aspect of Mathematics in the Revised EYFS consists of two parts:

- Number
- Shape, space and measures

The Revised Framework also outlines the three Characteristics of Effective Learning. *‘The ways in which the child engages with other people and their environment – playing and exploring, active learning, and creating and thinking critically – underpin learning and development across all areas and support the child to remain an effective and motivated learner.’* (Development Matters in the Early Years)

The Characteristics of Effective Learning are:

Playing and exploring – engagement

Finding out and exploring
 Playing with what they know
 Being willing to ‘have a go’

Active learning – motivation

Being involved and concentrating

Keeping trying

Enjoying achieving what they set out to do

Creating and thinking critically – thinking

Having their own ideas

Making links

Choosing ways to do things

EYFS Short Term Planning

In Nursery, teachers plan for at least one specific adult-led mathematics activity each week. Mathematics is also addressed daily in Key Group sessions through activities such as counting, number rhymes and simple problem-solving in 'real life' contexts. The Maths Area specifically addresses mathematical learning through Continuous Provision, but mathematical learning opportunities and developmental steps are also identified and displayed in each of the other areas of provision.

In Reception, teachers plan daily adult-led mathematics sessions which consist of a starter activity, main activity, guided/group/independent work/Continuous Provision and a plenary. As in Nursery, mathematics forms an integral part of the Reception day through regular activities and Continuous Provision.

KS1 and 2

We carry out the curriculum planning in mathematics in three phases (long term, medium term and short term). The National Curriculum for Mathematics for KS1 and KS2 gives a detailed outline of what we teach in the long term, alongside an overview of all the main objectives for each year group. Our yearly teaching overview identifies the key objectives in mathematics that we teach in each year.

The school uses the Collins Busy Ants Maths Scheme as its basis for teaching from year 1 through to year 6. The school's long term, medium and short term planning is based on this scheme. Mathematics teaching across all year groups is therefore broken down into 12 units including; number, geometry, algebra, measurement, ratio and proportion and statistics.

The mathematics within the units is connected so that, as you progress through the scheme, learning builds on previous experiences. The scheme is used as a basis and should be adapted based on individual class or whole school needs.

Medium and long term planning

The units form the basis of the long term and medium term planning for the school. Each unit brings together learning objectives from the NC and provides a weekly overview success criteria and pupil targets.

Medium term plans allow for flexibility in terms of the teacher being able to spend more time on certain objectives and less on others if necessary.

Short term planning

The Busy Ants Scheme provides weekly short term plans for each unit which consist of 4 days worth of teaching. The final day of the week is to be used at the teachers discretion for example, arithmetic focus, consolidation or pre-learning. The class teacher is expected to adapt the weekly plans from the scheme to meet pupil needs.

It is the class teacher, working, where appropriate, in consultation with year group staff, who completes the weekly plans for the teaching of mathematics. These weekly plans list the specific learning objectives for each lesson, mental and main activity, key vocabulary for the day. They provide details of how the lessons are to be taught. When preparing the weekly plan the class teacher takes into account the differing needs and abilities of pupils, and ensures a thorough coverage and challenge appropriate to ability and age related expectations. Teacher's planning incorporates a specific focus on guided groups, including G&T pupils, identified by the tracking system. Teachers plan in 'deeper learning' activities-based on age related expectations- for AA pupils were appropriate to deepen knowledge and understanding.

The class teacher keeps short term plans and makes them available to the Team Leader or member of the SLT with whom they can be discussed on an informal basis.

4. Assessment

We recognise the importance of responding to children's work, whether orally or in writing. We seek to encourage children by highlighting positive achievements. This could include praise for use of a viable method even if the end result were incorrect. Children are given opportunities, and actively encouraged, to explain their work to others and to display their work when it seems appropriate. They are encouraged to value and respect the work of others.

After each lesson both pupils and teachers give an indication of their assessment of how well the Lesson Objective has been met. Teachers are encouraged to set extension and reinforcement challenges, where appropriate in their marking. (See Marking Policy). Children are expected to correct work where appropriate.

We assess children's work in mathematics from three aspects (short term, medium term and long term).

We make short term assessments, which we use to help us adjust our daily plans. These short term assessments are closely matched to the teaching objectives and arise naturally from what is taking place in the classroom.

In Nursery and Reception Years, assessments require knowledgeable and insightful contributions from pupils' allocated key person. Key persons develop warm and trusting relationships with pupils and make daily observations of their needs and interests. Class teachers utilise this information to plan for and assess pupils within the Early Years, specifically in relation to Development Matters Statements, Early

Years Outcomes and The Early Learning Goals as set out in the Revised EYFS Framework.

The medium term assessments, based on all the evidence that teachers have collected, the results of teacher assessments are recorded digitally each half term on the School Pupil Tracker. Data from the School Pupil Tracker is used to track pupil progress and inform grouping, planning, target setting and teaching.

Teachers are encouraged to use example ‘test’ questions regularly to prepare children for Year 6.

National Curriculum tracker grids (tick sheets) have been used September 2015 rather than APP grids. Prior to the year starting, children complete pre-learning tasks based on the key objectives. They will then complete post-learning tasks related to these, throughout the year, in order to check progress.

In all cases, the use of tests provides a guide for teachers to form their own judgement of pupil attainment using School Pupil Tracker. The final judgement of attainment will be made by teachers against NC objectives.

Pupils from year one are assessed on their times table knowledge at the end of each term. This data is fed back to the Maths Co-Ordinator who analyses the data and provides an overview sheet which is then discussed with class teachers.

Assessments form the basis of discussions with receiving teachers at the end of the school year and are used during discussions with line managers during performance management procedures and with the mathematics team leader.

They are also used to inform discussions with parents during the school’s two parental interview evenings and the Annual Report to Parents. In all year groups pupil’s level of achievement against national standards is included as part of their annual written report.

In all year groups, each child receives a progress report during the two parents evenings across the year. This informs parents of previous year’s level, current level, end of year target and progress points made so far.

5. Curriculum organisation

In the Early Years Foundation Stage, Mathematics is taught in a broad range of contexts in which children can explore, enjoy, learn, practise and talk about their developing understanding. The children are provided with opportunities to develop their skills and knowledge through focussed activities which are adult led and also through continuous provision. The outdoor classroom is also an integral part of our provision in teaching numeracy. When children start in Reception the organisation remains flexible, however, it builds up to a daily 45-minute lesson in the summer term.

In K.S.1 mathematics lessons are held on a daily basis and last for between 45 minutes and one hour. The children are taught in mixed ability classes.

In K.S. 2 the daily maths lessons last for approximately one hour. The children are taught in mixed ability classes.

This approach is flexible as on rare occasions the proportion of pupils with complex special educational needs may require an additional change to groupings.

Children with particular learning needs, or those of higher ability, are also given additional support in focused target groups.

The school operates targeted intervention session based on the specific needs of groups of children. These groups use intervention schemes such as 'Rapid Maths' and 'Dynamo Maths'. Guided maths groups also take place during daily maths lessons, aimed at filling gaps in knowledge.

6. Resources

A Mathematics Jotter has been introduced, primarily as a reference resource for work covered. Children 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. The schools staff share contains numerous ICT resources that teachers and students can access to aid their mathematical understanding. In addition to this, the Busy Ants maths Scheme includes powerpoint resources and interactive games as an aid to teaching and learning.

Teaching focuses on the use of concrete resources and visuals for all abilities, in line with the school's calculation policy.

We use LSA's to support some children and to ensure that work is matched to the needs of individuals. LSA's work with teachers as part of a team to ensure effective delivery of lessons and target groups.

7. Parental Involvement

Maths Workshops are enabling parents to work on mathematical activities in school with their children. These are run either 'in-house' by a member of the Mathematics Team or by the Family Learning Organisation and encourage parents to work at home with their children and to work as additional support for mathematics in school. At the start of the autumn term, parents are provided with an overview of national expectations for pupils of their children's ages at year group parent meetings. Parents are kept fully informed of pupil progress through the Meet the Teacher meetings, Parents' Evenings and end of year Report. They are also informed of pupils' targets and the work being studied through mathematics coverage each half term through the School Website.

8. Learning environment

We recognise the importance of display in the teaching and learning of mathematics by having maths work displayed in the school. All classrooms have a mathematics `Working Wall` display area incorporating specific vocabulary and, where appropriate, interactive displays and other display materials that provide visual support for the children's mathematical learning. Targets for pupils' learning are also displayed in each classroom.

Pupils' work is celebrated on a whole school `Stars of the Week` display that incorporates a piece of mathematics work from each year group in school. This is changed weekly to allow work from each class to be displayed on rota.

Learning is also celebrated on the Head Teacher's `Best Work Board`, and during Friday assemblies, which include giving out certificates.

9. Cross-Curricular Links.

Mathematics is taught mainly as a separate subject but every effort is made to teach the objectives within a specific context.

English

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, we encourage children to read and interpret problems in order to identify the mathematics involved. The children explain and present their work to others during plenary sessions. Younger children enjoy stories and rhymes that rely on counting and sequencing. Older children encounter mathematical vocabulary graphs and charts when using non-fiction texts.

- **Science**

Almost every scientific investigation or experiment is likely to require one or more of the mathematical skills of classifying, counting, measuring, calculating, estimating and recording in tables and graphs. In Science, pupils will, for example, order numbers, calculate simple means and percentages, use negative numbers when taking temperatures, decide whether it is more appropriate to use a line graph or bar chart, and plot, interpret and predict from graphs.

- **Computer Science**

Children use and apply mathematics in a variety of ways when solving problems using Computer Science

The effective use of Computer Science can enhance the teaching and learning of mathematics when used appropriately. When considering its use, we take into account the following points:

- Computer Science should enhance good mathematics teaching. It should be used in lessons only if it supports good practice in teaching mathematics.
- Any decision about using Computer Science in a particular lesson or sequence of lessons must be directly related to the teaching and learning objectives for those lessons.
- Computer Science should be used if the teacher and/or the children can achieve something more effectively with it than without it.
- Using digital cameras to record evidence of problem solving and other activities
- Using appropriate computer programmes for data handling.
- The new Computer lab and introduction of IPADS enhances the mathematics taught across school.
- Additionally the new curriculum for computing involves many elements of mathematics.

- **Art, Design & Technology**

Measurements are often needed in Art and Design Technology. Many patterns and constructions are based on spatial ideas and properties of shapes, including symmetry. Children`s designs may need enlarging or reducing, introducing ideas of multiplication and ratio. When food is prepared a great deal of measurement occurs, including working out times and calculating cost; this may not be straightforward if only part of a packet of ingredients has been used.

- **History, Geography and Religious Education**

In History and Geography children will collect data by counting and measuring and make use of measurements of many kinds. The study of maps includes the use of co-ordinates and ideas of angle, direction, position, scale and ratio. The pattern of the days of the week, the calendar and recurring annual festivals all have a mathematical basis. For older children historical ideas require understanding of the passage of time, which can be illustrated on a time line, similar to the number line that they already know.

- **Physical Education and Music**

Athletic activities require measurement of height, distance and time, while ideas of counting time, symmetry, movement, position and direction are used extensively in music, dance, gymnastics and ball games. Raps and songs, including the use of `Number Fun` musical resources for mathematics, are used to help pupils learn multiplication tables and other mathematical concepts.

- **Personal Social & Health Education (P.H.S.E.) & Citizenship**

Mathematics contributes to the teaching of personal, social and health education 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 others views. We present older children with real-life situations in their work on the spending of money.

Childrens' attention to the links between subjects is encouraged by talking frequently about them, both in mathematics and in other lessons.

- **Spiritual, moral, social and cultural development and The Promotion of British Values**

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 may work together, and we give them the chance to discuss their ideas and results. This Policy should be read in conjunction with our promoting British Values Policy.

10. Inclusion.

As a staff we endeavour to maintain an awareness of, and to provide for equal opportunities for all our pupils in mathematics. We aim to take into account cultural background, gender and Special Needs, both in our teaching attitudes and in the published materials we use with our pupils.

It is part of the School Curriculum Policy to provide a broad and balanced education for all children. We provide learning opportunities that are matched to the needs of the children with learning difficulties. Work in mathematics takes into account the targets set for individual children in their Individual Education Plans (IEPS), additional support being given by LSAs.

When planning, teachers will try to address the child's needs through simplified or modified tasks or the use of support staff. Where appropriate a Group Educational Plan is developed with common objectives and learning targets for a group.

There is a wide range of resources available within the school to provide appropriate support for children with special needs in mathematics, encouraging a gradual accumulation of concepts, skills and knowledge and number language. This early work will form the basis for later tasks and can be reinforced and consolidated by it. This Policy should be read in conjunction with our Equality Policy.

Children identified as 'Very Below Average' have an individual laptop which they use daily to complete sessions of mathematics using RM Maths. As stated earlier, intervention schemes (such as Rapid Maths and Dynamo Maths) are used with targeted groups of pupils.

The Very Able Child

Very able children are stretched through differentiated group work, more challenging problems for homework and extra challenges. Enrichment activities encourage pupils to develop their skills in problem solving and reasoning. Teachers are encouraged to use resources such as Brain Academy, nrich.org.uk, and mindwareonline.com., as well as enriching materials from Collins and staff training.

Monitoring

Monitoring of the standards of children's work and of the quality of teaching in mathematics is the responsibility of the Headteacher, the mathematics subject leader and the mathematics team. This 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. Pupil Progress Meetings are held termly to enable staff to report to senior leaders on the progress and attainment that is being made within their teaching groups.

The head teacher allocates regular management time to the mathematics subject leader so that he/she can review half termly assessments, short term planning and samples of childrens' work as well as undertake lesson observations of mathematics teaching across the school, which are carried out in school monitoring plan each year. The results of this monitoring are reported to staff and school leaders as appropriate.

Standards of Progress and Attainment are discussed regularly by the Headteacher and Team Leader and by the SLT.

A named member of the school's governing body is briefed to oversee the teaching of maths.

Reviewed November 17

Adopted by the Governing Body

Date

