



Spring Grove Primary School

POLICY FOR MATHEMATICS

March 2017

Introduction

This policy outlines the purpose, nature and management of mathematics within Spring Grove Primary School.

This policy reflects the consensus of opinion of the whole teaching staff and has the support and agreement of the governing body. This document has been approved at the Spring 2017 meeting of the governing body.

The implementation of this policy is the responsibility of all members of staff.

Philosophy

We are fully committed to raising standards of achievement of all areas of mathematics. We believe that it is important that our children develop a positive attitude towards mathematics and for them to see themselves as competent mathematicians.

We therefore aim to develop their mathematical skills and knowledge so that they are able to apply them to a variety of curricular contexts and in the world around them.

This policy reflects the values and philosophy of Spring Grove Primary School in relation to the teaching and learning of Mathematics. It sets out a framework within which all staff (both teaching and non-teaching) work. It gives guidance on planning, teaching and assessment.

The Nature of Mathematics

Mathematics is essential in everything we construct, everything we calculate and a multitude of problems that we have to solve in our daily lives. Mathematics provides a means for organising, communicating and manipulating information. The ability to communicate mathematically is fundamental and children need to learn how to communicate to others using the language/medium of mathematics.

Children's knowledge, skills and understanding in mathematics develop as they use it in practical activities, to solve relevant and meaningful problems, and to explore the patterns and relationships on which mathematical concepts depend. A broad mathematical education is essential for all children.

The ability to apply mathematical knowledge to unfamiliar problems has to be learned by all children. The relationship between mathematical skills and techniques and their practical use is not always self-evident to children. Problem solving and investigational work will help to develop this ability. Qualities of perseverance, imagination and flexibility, self-management and team working skills can also be developed through these skills.

The whole spectrum of mathematical activity can contribute to the development of general skills and qualities:

- Communication
- Reasoning

- Problem Solving
- Creativity

These are all qualities, which are needed to equip children to meet the responsibilities of adult life.

There are many opportunities to develop a sense of wonder in mathematics, e.g. in structure and patterns of shape and number, in concepts such as probability and infinity. Teaching should also emphasise that the mathematics we know and use today is the result of human activity over a very long period of time and in many diverse cultures across the world.

Subject Aims

Mathematics is a core subject within the National Curriculum. The aims for Mathematics are:

- to be consistent with our school philosophy and aims
- to fulfill the requirements of National Curriculum Programmes of Study and Attainment Targets for Mathematics and Early Learning Goals for the Foundation Stage
- to have a positive attitude towards mathematics as an interesting and creative subject and an essential tool
- become fluent in the fundamentals of mathematics so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems and to talk about the subject with assurance
- to reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- to develop an awareness of mathematics in the world beyond the classroom and its usefulness in solving problems in everyday life, developing perseverance
- to use mathematics to analyse and communicate information
- to develop mathematical understanding through practical tasks, enquiry and experiment
- to provide breadth and balance of mathematical activities for all children
- to use and apply these skills with confidence, accuracy and understanding in real life problems and within mathematics itself
- to develop the ability of children to reason mathematically in their heads and through jottings
- to present their written work neatly and logically according to the conventions of mathematics
- to have an appreciation of the structure, patterns and relationships of mathematics
- to develop an ability to think clearly and logically with independence of thought, flexibility of mind and perseverance
- to develop an understanding of appropriate mathematical vocabulary and use this language confidently
- to create an awareness of the relevance of mathematics to the whole curriculum

- to provide a differentiated mathematics curriculum to meet the needs of all the children through the continuity of experiences
- to ensure a progressive development of mathematical concepts, knowledge, skills and attitudes.

Implementation

Mathematics lessons will normally include:

- Oral and mental work
- A main activity
- A plenary

Mental arithmetic is a key feature, with children being taught a range of strategies to work out answers and being expected to quickly recall simple mathematical facts. The teacher gives demonstrations and explanations with an emphasis on the use of appropriate mathematical language and engages in whole class interactive teaching involving:

- whole class and group discussion
- practice to consolidate specific skills
- problem solving and investigational activities in order to learn how to break down a problem
- practical activities
- mathematical games and puzzles

The use and application of mathematical principles underpins the whole of mathematical teaching and learning. Opportunities are given so that pupils can apply their knowledge to a wide range of real life situations.

They need to be able to choose appropriate equipment and methods for the task and to communicate and justify their findings in a manner appropriate to their age and ability, showing increasing concern for clarity and accuracy of meaning.

Children will be actively encouraged to use mathematical vocabulary, accurately and confidently. They are encouraged to ask as well as answer questions related to their mathematical learning. Their skills will be developed through staff and peer modeling. Children will be given a range of opportunities to practise these skills.

Feedback is given to the children as soon as possible to encourage and give guidance for future work. The display of children's mathematical work gives them pride in their achievements.

The children will:

- experience a balanced range of mathematical activities
- have opportunities to develop basic mathematical skills, concepts, attitudes and knowledge appropriate to the development of the child
- have opportunities to acquire, practise and develop mathematical skills
- have opportunities to work in a variety of ways: class, group, individually (depending on the task)

- have access to practical tasks which will enable them to develop mathematical language
- be able to perform basic operations and apply them in a variety of situations
- have regular opportunities to practise mental maths, developing a range of strategies such as those outlined in The National Curriculum
- have opportunities to discuss their mathematical ideas and strategies, explain their reasoning to their peers and adults and suggest ideas for investigation.

Curriculum and School Organisation

The Foundation Stage

We teach mathematics in our nursery and reception classes. As these classes are part of the Foundation Stage of the National Curriculum, we relate the mathematical aspects of the children's work to the objectives set out in the Early Learning Goals, which underpin the curriculum planning for children aged three 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.

KS1 and 2

The school will follow the requirements of the current National Curriculum as set out in The National Curriculum (2014). Teachers will use the planning guidance from the Abacus scheme of work, adapting plans and resources to suit the needs of individual cohorts.

Mathematics is linked to work in other curriculum areas where appropriate. These include science in particular, design and technology, computing, geography, art and history.

We will deliver the Programmes of Study using methods and organisation which promote the teaching and learning at Spring Grove School.

Mathematics is a National Curriculum core subject, categorised into different strands:

- Number – number and place value
- Number – addition and subtraction
- Number – multiplication and division
- Number – fractions (including decimals from year 4 and percentages from year 5)
- Ratio and proportion (year 6)
- Algebra (year 6)
- Geometry – properties of shape
- Geometry – position and direction (except year 3)
- Measurement
- Statistics (years 2 – 6)

The Mathematics curriculum is organised as a discrete subject, yet there are many potential cross-curricular activities. It is taught in year groups, although there are some opportunities for both able pupils and those with specific difficulties to work in separate groups.

The children will become familiar with a range of processes, through which they will learn mathematics.

Processes will include:

Playing	Investigating	Analysing problems
Sorting and Matching	Proving	Using symbols
Calculating	Being systematic	Convincing others
Reflecting	Making conjectures	Ordering
Making patterns	Asking questions	Generalising

Resources

Teachers use a range of materials such as textbooks, photocopiable resources, ICT materials (including IWB flipcharts), their own teacher-prepared materials, practical/interactive resources and other resources as appropriate. Resources are easily accessible in each classroom and there is a central store for additional resources in the Key Stage 2 area of school. Some resources for both Key Stages are kept centrally in the maths cupboards.

Homework

Children are set weekly homework to support and extend their mathematical learning in school. The content may include work set on Mathematics, Abacus or may include worksheets or extended problem solving tasks.

Planning and evaluation for Mathematics takes place on a termly and weekly basis by the class teacher, supported and monitored by the mathematics co-ordinator.

The time allocated to the teaching of mathematics is based on national recommendations.

Throughout all aspects of class organisation and teaching style, every effort is made to differentiate work so that it is matched to the individual or group.

Assessment

Mathematics can be assessed in a variety of ways:

- observations of child or group on task
- discussion with children about their task
- work in books
- children's own evaluation of their work
- pupil conferencing
- formal tests

These assessments:

- inform future planning
- provide information about individuals or groups
- provide summative information
- provide information for parents

- contribute to each child's assessment portfolio
- provide information for whole school, class and individual target setting.

These assessments are carried out throughout both Key Stages and in the Foundation Stage and are the responsibility of the class teacher with support from the Assessment Coordinator.

See Whole School Assessment Policy for further details.

Assessment for learning

Teachers assess children's work in mathematics from three aspects (long-term, medium-term and short-term). Short-term assessments are used to help adjust daily plans. These short-term assessments are closely matched to the teaching objectives.

Medium-term assessments are made to measure progress against the key objectives, and to help plan the next unit of work. The class record of the key objectives is used as the recording format for this.

Long-term assessments are made towards the end of the school year, and are used to assess progress against school and national targets. These are then used to set targets for the next school year and make a summary of each child's progress before discussing it with parents and carers. This information is passed on to the next teacher at the end of the year, in order to inform planning for the new school year. We use the national tests for children in Year 2 and Year 6 as the long-term assessments, plus the optional national tests for children at the end of Years 3, 4 and 5. Teachers then use this information and their own judgment to make annual assessments of children's progress measured against the level descriptions of the National Curriculum. We also use other tests half way through the year in Year 1 – Year 6 to help make a judgment and to inform the next steps for planning.

The mathematics subject leader keeps samples of children's work in a portfolio. This demonstrates the expected level of achievement in mathematics in each year of the school.

Children are encouraged to make judgments about how they can improve their own and each others' work.

Target Setting

All children will have a quantitative target for the level they are expected to achieve by the end of the school year (using Pupil Asset). This will be based on their level at the start of the year. Children will also have a target of the level they are expected to attain by the end of the Key Stage. The Head teacher, Assessment Coordinator and class teachers will be engaged in agreeing these targets, making use of the national curriculum assessment, teacher assessments and other available data and progress expectations for the individual child. Teachers should also set qualitative targets for what they expect children to learn in the short term.

Children in years 5 and 6 will have a pupil progress meeting with their class teacher in order to set and agree appropriate targets.

Record Keeping

Records are kept of each child's progress in Mathematics. Teachers keep formative notes on children's progress to inform short term planning.

Monitoring And Evaluation

The purpose of monitoring and evaluation activities is to raise the overall quality of teaching and levels of pupil attainment. The Mathematics coordinator and Senior Management Team with the Headteacher will monitor the quality of teaching and learning as part of the school's self-evaluation policy.

Monitoring will include:

- Scrutiny of planning
- Sampling of work throughout the school
- Quality of teaching through lesson observation and feed back
- Moderation of standards in children's work (ref. *Planning and Assessment Policy*)
- Evaluation of children's attainment against targets.
- Governing Body – in particular through liaison between the Maths linked Governor and the Maths Coordinator.
- As part of external monitoring the LEA inspector and numeracy consultant may carry out similar evaluations from time to time. The quality of Mathematics in the school will also be inspected as part of any Ofsted inspection of the school as a whole.

Co-ordinators Role

The role of the Co-ordinator is to ensure continuity and progression in the teaching and learning of Mathematics.

- developing good practice in their own classroom
- co-ordinating and ordering resources and managing the budget
- monitoring and evaluating resources
- monitoring planning and delivery of the curriculum
- working together with colleagues to raise standards
- providing stimulus and inspiration
- preparing a draft policy and long term plan for staff discussion
- ensuring that the policy documents remain useful and current
- organising and supporting inservice training in line with the SIP
- organising and facilitating parent workshops
- advice and support in professional development
- yearly Maths audit and action plan.

Resources

A variety of Mathematics resources are available in school.

These include:

- A range of textbooks – e.g. Abacus
- Teacher reference books
- Photocopiable resources
- Practical Mathematics equipment for investigative and practical work
- Computer-based materials
- Interactive whiteboard flipcharts and class activities.

Resources are shared and all staff have access.

Equal Opportunities

All teaching and non-teaching staff at Spring Grove Primary School are responsible for ensuring that all children, irrespective of gender, ability, ethnic origin and social circumstances, have access to the whole curriculum and make the greatest possible progress.

All children have equal access to the Mathematics Curriculum, its teaching and learning. Day-to-day monitoring of the Mathematics policy, and the provision of equal opportunities in Mathematics is the responsibility of the class teacher. General monitoring is the responsibility of the Senior Management Team and Equal Opportunities Co-ordinator.

See Whole School Policies on Equal Opportunities.

Special Educational Needs

All children should have access to a broad, balanced curriculum which includes Mathematics and should make the greatest progress possible. Provision for children with SEN in relation to Mathematics is the responsibility of the class teacher, support staff and SEN coordinator as appropriate.

See SEN Policy for further details.

Gifted and Talented Pupils

Opportunities to develop and enhance the skills of gifted and talented pupils are provided both within the classroom and through the provision of specific projects and activities, for example, C8 workshops.

See Gifted and Talented Policy.

Review

The headteacher, Maths Co-ordinator, teaching staff and governors will review this policy in March 2019 Any suggested amendments will be presented to the governors for discussion at their first meeting thereafter.