Redmile Church of England Primary School Mathematics Policy

Introduction

This policy outlines the teaching, organisation and management of the mathematics taught and learnt at Redmile C.E. Primary School.

The school's policy for mathematics is based on the 'The National Curriculum 2014'. The policy has been drawn up as a result of staff discussion and has the full agreement of the Governing Body. The implementation of this policy is the responsibility of all the staff. We expect all adults within the school community, including governors, parents/carers and visitors, to be positive role models showing respect for our Christian ethos and promoting the enjoyment of maths to all our pupils.

Our Mission Statement

We **E**ncourage **L**earning and **C**aring because **O**ur school **M**atters to **E**veryone

Equal Opportunities

At Redmile Church of England Primary School we promote equal opportunities by considering every person to be of equal value, irrespective of age, race, faith, culture, ability, disability, capability, sexuality or gender. Please refer to our equal opportunities policy.

Our Maths Philosophy

At Redmile Church of England Primary School we endeavour to make mathematics interesting, accessible and relevant to our children's lives. Without an understanding of mathematics we are unable to solve problems and develop analytical skills. Our philosophy is threefold:

- ***Make maths interesting*** – this is achieved by maths lessons being practical, fun and by encouraging children to engage in active learning. Mathematics skills are not just used in mathematics lessons but are used throughout the school day e.g. during play times and through extra-curricular activities such as an after school maths club.
- ***Make maths accessible*** – we achieve this by the use of a wide range of resources including ICT and home-links. This ensures that children are able to understand mathematical concepts by moving from concrete, to pictorial and then abstract understanding.
- ***Make maths relevant*** – wherever possible links are made with other subjects so that mathematics can be used in practical ways. Through this children gain an understanding of the importance of maths in everyday life.

1 Aims and Objectives

1.1 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 children 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 and faiths to the development and application of mathematics.

1.2 The National Curriculum for mathematics (2014) 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 have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems.

- **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.

2 Teaching of Mathematics

2.1 Teaching & Learning

To provide adequate opportunity for developing mathematics each class teacher will aim to provide a daily mathematics lesson. This may vary in length but will usually last for about 45 minutes in Key Stage 1 and 50 to 60 minutes in Key Stage 2. All foundation children follow the EYFS curriculum for space, shape, measure and number. Where appropriate, links will also be made to mathematics within other subjects, so pupils can develop and apply their mathematical skills. Sometimes, time may be blocked for indepth projects or a key focus.

2.2 Lesson Organisation

Our principal aim is to develop children's knowledge, skills and understanding in mathematics. In order to achieve this, the school uses a variety of teaching and learning styles in mathematics lessons. There will be a balance between whole-class work, guided group work and independent work.
A typical 45 to 60 minute lesson in Year 1 to 6 will have the following components:

- Oral and mental work across the range of mathematics.

This will involve work to rehearse, sharpen and develop mental and oral skills.

- The main teaching activity

This will include both teaching input and pupil activities and a balance between whole class, guided group and independent work (groups, pairs and individual work).

- A plenary (which may not always be at the end of a lesson)

This may involve work with the whole class to, for example, sort out misconceptions, identify progress, to summarise key facts and ideas and what to remember, to make links to other work, peer and self- assess and to discuss next steps.

2.3 There will be opportunities to develop skills and understanding of mathematics through additional activities, some of which may take place at home. ICT will be used to extend learning and practise key skills at given opportunities within the day (not just within the maths lesson). Children will be encouraged to practise, explore and improve their own maths through weekly homework which can consolidate, extend or provide further challenge.

3 School / Class Organisation & Planning

3.1 Planning

To support planning and ensure progression of mathematics Abacus plans are used and adapted. Abacus is a toolkit which includes planning, resources and interactive models and images which aid teaching and learning of mathematics.
Long term plans provide an overview of the term and year to ensure overage, balance, consistency and progress. Our medium-term plans give details of the main teaching objectives for each term and define what we teach. They ensure an appropriate balance and distribution of work across each term to ensure curriculum coverage. It is the class teacher who creates the weekly plans for the teaching of mathematics. These weekly plans list specific learning objectives for each lesson and give details of how lessons are to be taught along with required learning outcomes. The class teacher keeps these individual plans, and the class teacher and subject leader may discuss them on an informal basis.

3.2 How we cater for pupils who are more able

More able pupils will be taught with their own class and stretched through group work and extra challenges including problems to deepen understanding and demonstrate reasoning. When working with the whole class, teachers will direct mastery questions towards the more able to maintain their involvement. Where appropriate, special arrangements will be made for an exceptionally gifted pupil to follow a programme of study with more challenging problems to tackle. Please refer to our gifted and talented policy.

3.3 How we cater for pupils with particular needs

In all classes there will be children of differing mathematical ability. We recognise this fact and provide suitable learning opportunities for all children by using a range of Quality First Teaching and learning strategies and matching the challenge of the task to the ability of the child. We use teaching and learning support assistants to support some children. Swift intervention or pre-teaching is used for identified groups of children, who would benefit from this, in order to achieve age-related expectations by the end of the year.

3.4 Pupils with special educational needs and individual support plans

Teachers aim to fully include all pupils in their daily mathematics lessons. All children benefit from the emphasis on oral and mental work and participating in watching and listening to other children demonstrating and explaining their methods. However, a pupil whose difficulties are severe or complex may need to be supported with an individualised programme or be supported to work towards one of their personalised targets in the main part of the lesson. Furthermore, we work closely with parents to ensure the needs of all children are met.

3.5 How we work in Foundation Stage

In the Foundation Stage the class will be organised to promote social skills and the development of the prime areas of learning including mathematical language and understanding. 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 (including the use of the outdoor learning environment and child initiated activities).

3.6 Information and Communication Technology

ICT will be used in various ways to support teaching and motivate children's learning. ICT will involve computers, iPads, calculators, and audio-visual aids. Children will do regular personalised work on the computer using programs such as Abacus, Mymaths and RM Maths. Children will use ICT in mathematics lessons when it will enhance, support and extend their learning. Teachers and support staff may use interactive white boards and a range of supporting software and online programs as it can be the most efficient and effective way of demonstrating visual representations and modelling ideas and methods.

3.7 Homework

- Mathematics homework is set for children in Years 1 - 6 each week.
- Homework provides opportunities for children to: practise and consolidate their skills and knowledge; develop and extend their techniques and strategies; and prepare for their future learning beyond primary school.
- Homework activities are varied, interesting and fun so that the children are motivated; the tasks often compliment the area of mathematics being taught that week and are set using a number of ways including Abacus, Mymaths and CGP Work books.
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4 Links between Mathematics and other subjects

Mathematics links with many subjects across the primary curriculum and opportunities are taken when appropriate to draw mathematical experience out of a range of activities. This will allow children to begin to use and apply mathematics in real-life contexts. Examples of subject links include:

4.1 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. Younger children enjoy stories and rhyme that rely on counting and sequencing. Older children encounter mathematical vocabulary, graphs and charts when using non-fiction texts.

4.2 Information and communication technology (ICT)

Children use and apply mathematics in a variety of ways when solving problems using ICT. Younger children use ICT to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables when explaining their results or when creating repeating patterns, such as tessellations. When working on control, children use standard and non-standard measures for distance and angle. They use simulations to identify patterns and relationships.

4.3 Personal, social and health education (PSHE) and 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 other's views. We present older children with real-life situations in their work, for example: on the spending of money.

4.4 Spiritual, moral, social and cultural development

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 work together, and we give them the chance to discuss their ideas and results. The study of famous mathematicians around the world contributes, for example, to the cultural development of our children.

4.5 RE

Mathematics links to RE as the skills of investigation, interpretation, analysis and application link to both subjects. We believe that personal learning and thinking skills are central to all learning and therefore readily apply to mathematics. These include being: independent enquirers; creative thinkers; team workers and reflective thinkers.

4.6 Science

Mathematics is an integral part of teaching science. Children have the opportunity to use and analyse a variety of data, such as statistics, graphs, pictures, and photographs. They use ICT in science lessons and engage in a wide variety of problem-solving activities where they have to explain their reasoning. Wherever possible, we involve the pupils in 'real' scientific activities, for example, researching a local environmental problem or carrying out a practical experiment and analysing the results.

5 Assessment and Monitoring

Assessment will take place at three connected levels: day to day, periodic and transitional. These assessments will be used to inform teaching in a continuous cycle of planning, teaching and assessment.

5.1 Day to day assessment will be an informal part of every lesson to check children's understanding and give information, which will help to adjust day-to-day lesson plans. Effective assessment for learning practice is integral to this. Teachers will endeavour to give feedback with regular focused marking and verbal feedback. Children will be given time within lessons to respond back to the feedback.

5.2 Periodic termly assessments will take place during the year using a combination of teacher judgements and formal tests. These tests will cover arithmetic and problem solving and reasoning. Target Tracker is the schools monitoring tool and this will be used to record attainment and progress made by pupils.

5.3 Transitional assessments will take place towards the end of the school year to assess and review pupils' progress and attainment. These are also used to assess progress against school and national age related expectations. In Years 2 and 6 national tests will be taken (SAT's). We can then set targets for the next school year and make a summary of each child's progress before discussing it with parents. Teachers will aim to inform parents of their child's attainment and progress and involve parents in how they can help them progress through the annual school report. We also pass this information on to the next teacher at the end of the year, so that s/he can plan for the new school year. When children move to new schools progress and attainment information is sent on.

5.4 Moderation e.g. book scrutinies will take place with staff and other schools. Here work samples are compared against national age related expectations. Some samples of children's work may be kept in the subject leader file, to show for example: progression through school, consistent marking, or support / extension.

5.5 Focused monitoring e.g. arithmetic or multiplication and division fact recall will take place through-out the year. The area of focus will initiated by the subject leader and will link to the objectives in the School Development Plan.

6 Resources

A wide range of mathematical equipment will be used across all age groups. It will include regular use of: *number lines/tracks, hundred / multiplication squares*, *unfix* cubes, *dienes* and *numicon* where applicable. Mathematical dictionaries are available in all classrooms. Teachers have a variety of equipment and displays in their classrooms for day to day tasks and children are increasing encouraged to be independent. Calculators and a range of audio visual aids are also available. The library contains a range of books to support children's individual research. A range of websites can be accessed through computers and IPads and are available to support work in school and at home.

Signed: Date: September 2016

To be reviewed: September 2019