



## Mathematics Policy

### Aims

Mathematics teaches children how to make sense of the world around them through developing their ability to calculate, reason and solve problems. It enables children to understand relationships and patterns 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.

### How do we want our children to learn maths at Meadowbank?

As a staff we felt the following statements were the most important when considering how we wanted our children to develop as mathematical learners.

- Be motivated and excited by mathematical activities
- Be imaginative and creative, tackling new experiences and learning from them
- Be confident through successful problem solving but also by getting things wrong and overcoming setbacks.
- Be able to communicate by: asking and answering questions, discussion, explaining their work
- Be able to reason and think logically
- Be able to investigate and solve practical problems
- Be able to develop their own mathematical ideas
- Work both independently whilst using initiative but also collaboratively with others
- Be able to use the appropriate vocabulary when discussing Mathematics
- Be able to choose and use appropriate calculations confidently throughout their problem solving

### How will we reflect the objectives of the 2014 National Curriculum?

The teaching of mathematics at Meadowbank will also reflect the main aims of the New 2014 Maths Curriculum.

It should be evident that there is a focus on:

- Mental recall of number facts
- Fluency and efficiency of calculation methods
- Solving a wide variety of problems
- Reasoning and communicating understanding

It should be clear that the **depth of understanding** is more important than coverage of objectives from a higher age group. This will be our focus rather than using the objectives from the next Year group. In particular when using calculations, rather than giving them bigger numbers, the children will focus on deepening their understanding and achieving mastery of their own Year group objectives. They will be encouraged to:

- Recall number facts accurately and quickly

- Apply their knowledge of number facts
- Make decisions about the most efficient methods to use (including whether to use a mental or written method)
- Explain their reasoning
- Articulate how they have completed a calculation
- Check their calculations using estimates and inverses.
- Be confident in using their mathematical skills to solve a wide range of problems in maths lessons and in other subject areas.

### **Teaching and learning style**

Creativity, enquiry and problem solving is at the heart of how Mathematics is taught at Meadowbank. The children are encouraged to develop their mathematical knowledge and skills alongside their communication and reasoning skills. Whilst developing a range of strategies for both mental and written calculations is vital, this is taught as much as possible through investigative and problem solving work to enrich the curriculum.

As the children develop their mathematical skills, they are encouraged to apply them whilst solving problems. This enables our curriculum to be about developing their breadth of experiences and opportunities rather than moving on too quickly through a skill set. There is no published scheme of work for the children to work through as this limits their opportunities. Instead teachers use a wide range of resources to plan exciting and enriching activities for the children which cover the National Curriculum objectives and are linked to their class topic and problem solving as much as possible. ICT is used both by the teachers and the children to explore and develop mathematical skills, ideas and knowledge.

Maths opportunities are linked to cross curricular planning and the children have opportunities to develop mathematical skills during their topic work. As much as possible the children are encouraged to solve problems and apply this learning to everyday situations.

Whole school Themed weeks inspired by books or topics are planned so that teachers can work together to plan engaging activities with a focused progression of skills throughout the school. These weeks raise the profile of maths in school and enable the children to share their work with the whole school.

In all classes children have a wide range of mathematical abilities. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies – in some lessons through differentiated group work, and in other lessons by organising the children to work in pairs on open-ended problems or games. We use classroom assistants to support some children, and to ensure that work is matched to the needs of individuals.

We recognise that fluency in number is influenced greatly by the instant recall of bonds to 20 at key stage one and times tables and division facts from Year 2 to Year 6 so this is a vital part of the children's learning. To encourage the children to practise these number bonds at home and in school, to affect their progress, they do a timed test each week. This is called STAR MATHS in key stage one and SPACE TABLES in key stage two. In addition to this, to help the children from year 2 to year 6 to be accurate, fluent and quick when solving arithmetic questions, they practise using our 'PICK AND MIX' style of questions, either weekly (Y5 and 6) or fortnightly (Y2-Y4). This is a short set of 8-20 questions to be completed in a set time. Each question is aimed at improving their arithmetic skills and developing confidence and fluency. The children have to decide, which operation is needed, whether they can answer the question mentally or whether they need to use the appropriate written method for each question. Finally, they then need to be accurate and quick when solving it.

### **Mathematics curriculum planning**

Mathematics is a core subject in the National Curriculum, and we use the National Curriculum as the basis for implementing the statutory requirements of the programme of study for mathematics.

We carry out the curriculum planning in mathematics in three phases (long-term, medium-term and short-term). The National Curriculum gives a detailed outline of what objectives we need to teach in the long term for each Year group, while our assessment document identifies the key objectives the children need to achieve in each year.

Our medium-term mathematics plans, give details of the main teaching objectives for each term, and more detail about what we teach with examples of some visual representations we can use. They ensure an appropriate balance and distribution of work across each term. These plans are kept and reviewed by the subject leader.

It is the class teacher who completes the weekly plans for the teaching of mathematics. These weekly plans list the specific learning objectives and expected outcomes for each lesson, and give details of how the lessons are to be taught. The class teacher keeps these individual plans, and shares them with the teaching assistants.

A Themed week is planned each year where the staff plan an exciting range of activities based around a book or a topic.

### **The Foundation Stage**

Mathematical understanding is developed through stories, songs, games and imaginative play. Children are given the experience to solve number problems and apply their mathematical skills and understanding in both the indoor and outdoor learning environment. The children are encouraged to access these skills throughout their day alongside a daily, teacher led group activity focused on a specific learning objective. This objective is then further explored through opportunities in continuous provision. As the class is 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.

### **Contribution of mathematics to teaching in other curriculum areas**

#### **English**

The teaching of Mathematics contributes significantly to children's understanding of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, in mathematics lessons we expect children to read and interpret problems, in order to identify the mathematics involved. They are also improving their command of English when they explain and present their work to others during plenary sessions. In English lessons, too, maths can contribute: younger children enjoy stories and rhyme that rely on counting and sequencing, while older children encounter mathematical vocabulary, graphs and charts when reading non-fiction texts.

#### **Personal, social and health education (PSHE) and citizenship**

Mathematics contributes to the teaching of PSHE 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 mathematics work on the spending of money and balancing a budget.

#### **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 to the cultural development of our children.

### **Mathematics and ICT**

Information and communication technology enhances the teaching of mathematics significantly, because ICT is particularly useful for mathematical tasks. It also offers ways of impacting on learning which are not possible with conventional methods. Teachers can use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. 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 can use both standard and non-standard measures for distance and angle. They can also use simulations to identify patterns and relationships and use coding programs to create a set of instructions which include numbers and directions.

### **Science**

Mathematics and Science have strong links in our curriculum. The children use data handling skills when collecting information and recording it on graphs and charts. The children have opportunities to use branching diagrams, a variety of tables, charts and graphs throughout Science lessons. In addition their measuring skills are developed through scientific investigations when length, weight, capacity and time are needed to solve problems.

### **Mathematics and inclusion**

At our school we teach mathematics to all children, whatever their ability and individual needs. Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our mathematics teaching we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents and those learning English as an additional language, and we take all reasonable steps to achieve this. For further details see separate policies: Special Educational Needs; Disability Non-Discrimination and Gifted and Talented.

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected attainment. This ensures that our teaching is matched to the child's needs.

Intervention through an EHCP (Education and Health Care Plan) will lead to the creation of an Individual Plan for children with special educational needs. The plan may include, as appropriate, specific targets relating to mathematics. We also group children together and use First Class Number as a short set of booster lessons to help them bridge any gaps they have in their learning or motivational maths on a longer term basis. Teachers also group children with identified gaps in their learning and plan additional support outside of the maths lesson to pre teach or revisit objectives the children are struggling with.

We enable all pupils to have access to the full range of activities involved in learning mathematics. Where children are to participate in activities outside the classroom (a 'maths trail', for example) we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

### **Assessment for learning**

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

We make medium-term assessments to measure progress against the National Curriculum Key objectives, and to help us plan the next unit of work. The targets set for the children each half term are identified by using the National Curriculum Key objectives and their achievement of them is measured by a variety of ways such as, notes on targeted group sheets, books, tests and verbal comments. As they achieve the objectives, they are highlighted on a personal assessment grid for that child. These are filled

in over the course of the year and are used as part of the hand over discussions with the next teacher. In addition we use an assessment test each term to further assess the children’s ability to work independently and retain knowledge of topics taught over the course of the term. This test is split into two parts, an arithmetic test and a reasoning test. The teachers analyse the tests to identify any areas where the children have struggled or appear to have misconceptions. This information is then used to inform planning for the next term.

We make long-term assessments towards the end of the school year, and we use these to assess progress against school and national targets. We will report whether a child is **Developing** into their Year group objectives, has **Met** their year group expectations or in some cases has **Exceeded** their Year group objectives (these children will have been taught from the exceeding objectives for their year group and not objectives from the next year group). We can then set targets for the next school year and make a summary of each child’s progress before discussing it with parents. We 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. We make the long-term assessments with the help of completed Assessment grids based on National Curriculum Key objectives, the three completed tests over the year and teacher assessments. These have been filled in over the course of the year and are completed in the final half term of the year. We use the national tests for children in Year 2 and Year 6.

The mathematics subject leader monitors samples of children’s work regularly as part of the schools ongoing monitoring timetable. This demonstrates the expected level of achievement in mathematics in each year of the school. The staff moderate children’s work together during staff meetings three times a year.

**Resources**

All classrooms have a number line and a wide range of appropriate small apparatus are available. Numicon is used as a practical resource in our foundation stage and Year one. A variety of visual aids, measuring equipment and shapes are available from the central storage area. The library contains a number of books to support children’s individual research. A range of software is available to support work with the computers.

**Continuous Professional Development**

Maximising adult potential to increase capacity, authority and responsibility is the key to maximizing pupil progress. Therefore, at Meadowbank Primary School CPD is an investment in our valued staff as leaders of learning, in the enrichment of our children and in the very fabric of our school. This investment will no doubt reap rewards and bring about raised standards in all that we do. CPD is supported in a variety of ways in school, internal and external training, coaching, modelling and independent learning.

**Monitoring and review**

Monitoring of the standards of children’s work and of the quality of teaching in mathematics is the responsibility of the subject leader. The work of the subject leader also involves supporting colleagues in their teaching, being informed about current developments in the subject, and providing a strategic lead and direction for mathematics in the school. The subject leader gives the Headteacher an annual summary in which s/he evaluates strengths and weaknesses in the subject, and indicates areas for further improvement. The Headteacher allocates regular management time to the subject leader so that s/he can review samples of children’s work and undertake lesson observations of mathematics teaching across the school. A named member for Learning and Achievement oversees the teaching of numeracy. This governor meets with the subject leader to review progress.

The governing board reviews this policy annually. The governors may, however, review the policy earlier than this if the government introduces new regulations, or if the governing board receives recommendations on how the policy might be improved.

Policy History			
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