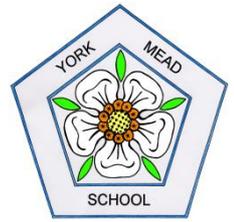




## **Mathematics Policy 2017-2019**



### **Introduction – General Aims**

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.

The 2014 national curriculum for mathematics 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 develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- can **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **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.

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.

### **Rationale**

All school policies form a corporate, public and accountable statement of intent. As a primary school it is very important to create an agreed whole school approach of which staff, children, parents, governors and other agencies have a clear understanding. This policy is the formal statement of intent for mathematics. It reflects the essential part that mathematics plays in the education of our pupils. It is important that a positive attitude towards mathematics is encouraged amongst all our pupils in order to foster self-confidence and a sense of achievement. The policy also facilitates how we, as a school, meet the legal requirements of recent Education Acts and National Curriculum requirements.

### **Scope**

This statement of policy relates to all pupils, staff, parents and governors of Yorkmead School.

### **Specific Aims**

Yorkmead children should:

- Have a sense of the size of a number and where it fits into the number system;
- Know by heart relevant number facts, such as number bonds and multiplication tables, and use them to solve more complex calculations;
- Calculate accurately and efficiently, both mentally and in writing, drawing on a range of calculation strategies as outlined in the calculation policy;
- Make sense of number problems, through models or concrete apparatus where appropriate, to recognise the operations needed to solve them;
- Explain their methods and reasoning using correct mathematical terms;
- Judge whether their answers are reasonable and have strategies for checking them;

- Suggest suitable units for measuring and make sensible estimates of measurements;
- Explain and interpret data presented in both familiar and unfamiliar ways;
- Develop spatial awareness and an understanding of geometry;
- Understand the connectedness of mathematics to use knowledge from previous learning to support new learning;

## **Provision**

During the Foundation stage children take part in two adult led focus activities each week. For the remainder of their time at Yorkmead School, children take part in a mathematics lesson daily.

Learning objectives are taken either from the school's medium term planning or from the 'Maths No Problem' scheme of work, which in turn map coverage of the National Curriculum for the appropriate year group, as well as revising key concepts regularly.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems rather than experiencing acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, through additional practice, before moving on.

Short term planning includes a sequence of four lessons, which focus on a specific learning objective, to support children's achievement of National Curriculum learning outcomes. These lessons should include problem solving activities where appropriate. Additionally, further, regular opportunities are planned to provide the children the opportunity to develop their mathematical reasoning through:

- Extended problem solving activities;
- Mathematical investigations;

Short term planning includes clear success criteria for each learning objective taught – demonstrating the key skills needed to reach the objective. This will enable the class teacher to follow a clear and systematic teaching sequence, where input and activities are differentiated, where necessary, by considering which parts of the success criteria individual children are ready for.

Differentiation and support, including support for SEN and G&T, is incorporated into all mathematics lessons and is achieved in a number of ways:

- Pre-tutoring where assessment for learning has identified children who are less secure in the foundation knowledge required to successfully achieve learning outcomes;
- Setting appropriately challenging tasks based on systematic, accurate assessment of pupils' prior skills, knowledge and understanding;
- Timely support and intervention - systematically and effectively checking pupils' understanding throughout lessons;
- Same day intervention for pupils who have experienced difficulty within a mathematics lesson;
- Appropriate practical apparatus;
- Ensuring that marking and constructive feedback is frequent and of a consistently high quality enabling pupils to understand how to improve their work;
- Open ended activities/investigations where differentiation is by outcome;
- Support from teacher or TA in class, shown in planning;
- Setting appropriate and regular homework;
- Mathematical IEP targets are set for those children who need them and are reviewed termly.

The fifth weekly mathematics lesson, currently on Mondays, takes the form of a whole school Assessment for Learning activity known as 'Massive Maths'. Children from Years One through Six work together in mixed age, ability set groups to review and address gaps in understanding within each child's assessed mathematics stage. This is facilitated by the completion of a 'Weekly Skills

Check' by all pupils in the week prior to the lesson– teachers use the children's attainment on these assessments to inform teaching content during 'Massive Maths'.

Additionally, intervention programmes are delivered outside of the daily mathematics lesson, such as 'First Class @ Number', by members of staff, who have received specialist training and through one to one tutoring – either in school or through an online tutor supplied by Third Space Learning.

Outside of the daily mathematics lesson, children experience additional 'Quick Maths' sessions, which allow children to practise and develop their individual mathematics number facts knowledge.

## Resources

There are a range of resources to support the teaching of mathematics across the school. All classrooms have a wide range of appropriate small apparatus with additional specific age appropriate resources available:

Reception	Teaching in the EYFS is supported through Numicon, which includes a range of practical resources and suggested lesson plans that have been mapped to the school's medium term planning for mathematics.
Key Stage 1	Numicon is then available for pupils in Key Stage One to use, should they make a decision to do so. Years One and Two have access to text books from the 'Maths No Problem' scheme.
Key Stage 2	Diennes equipment, place value cards (including decimals) are available to support calculation (see separate calculation policy) in all KS2 classrooms. Years Three and Four have access to text books from 'Maths No Problem. It is planned that Year Five will move onto the 'Maths No Problem' scheme in the 2018/19 academic year.

A range of software is available to support mathematical learning, for example MyMaths and Mathletics, which children can also access from home.

## Assessment

Assessment is an integral part of teaching and a continuous process which is carried out by each teacher on a daily basis.

Formative assessment is gathered through discussion, marking and observation throughout the lesson. Teachers use this information to:

- Adapt their teaching;
- Give immediate feedback;
- Identify children for wave one interventions (every day interventions which take place within the mathematics lesson);
- Identify children for same day intervention;
- Inform planning for future lessons.

Pupil's work should be marked in line with the Marking Policy and should identify where children have made mistakes (differentiating between conceptual misunderstanding and careless mistakes). Teachers model how corrections should be made where appropriate, give children a chance to learn from their misconceptions and/or incorrect methods through 'Closing the Gap' activities and provide children with opportunities to make corrections and explain errors. For further guidance see the 'Marking and Feedback' Policy.

Each half-term, teachers make summative judgements for each child against the National Curriculum learning outcomes using evidence of children's achievements away from the point of teaching, for

example: in extended problem solving activities, independently completed 'Weekly Skills Checks' and half-termly tests. The data from these assessments is used to both identify next steps for learning (individually and as a cohort) and to monitor children's progress over time. A standardised assessment is completed by all children, with the exception of the foundation stage and Year One, annually to quality assure teacher's judgements.

### **Performance Indicators**

Performance indicators, which are the criteria for the success of Yorkmead school's mathematics policy are:

- S.A.T. performance at the end of each key stage;
- Attainment in non-output years versus National Curriculum learning outcomes;
- Pupil's year on year progress;
- Children's enjoyment of mathematics;
- Children's ability to talk confidently about what they are learning in mathematics.

### **Environment, Display and Resources**

Playground markings encourage the younger children to get involved with number games, shape, space and measuring activities.

All classrooms have a mathematics 'Working Wall', which is easily accessible to children. The working wall is a dynamic display that should include:

- Visual exemplars that show what the children are currently working towards;
- Modelled examples of methods for calculation and problem solving already taught;
- Models that support the understanding of key concepts from the National Curriculum as they are being taught;
- Age appropriate mathematical vocabulary/symbols;

The 'Working Wall' should be used by class teachers to help pupils to work more independently by acting as a first point of call for pupils requiring assistance.

Age appropriate resources, particularly concrete apparatus to support children's grasp of key concepts, are available in all classrooms.

### **Subject Leader**

The subject leader is responsible for

- Ensuring continuity and progression within school;
- Monitoring standards of mathematics provision throughout the school;
- Identifying mathematical enrichment activities outside of school;
- Identifying and delivering C.P.D. needs through I.N.S.E.T. or one to one support;
- Advising and supporting colleagues in the delivery of the mathematics curriculum;
- Managing the mathematics budget to support resourcing;
- Keeping staff and governors up to date with local and national issues relevant to the delivery of mathematics teaching;
- Moderation of assessment;
- Evaluation of the effectiveness of intervention programmes;
- Analysis of assessment data to monitor progress and the effectiveness of teaching.

### **Class teacher**

The class teacher is responsible for raising levels of achievement in Mathematics for all children by:

- Developing and updating skills, knowledge and understanding of mathematics;
- Identifying I.N.S.E.T. needs in mathematics and taking advantage of training opportunities;
- Following the school's mathematics, calculation and problem solving policies;
- Planning for and effectively delivering the school's medium term plans with year group partners, T.A.'s and Learning Support Assistants;
- Providing children with opportunities to use their mathematical skills and knowledge in the wider curriculum;
- Implementing the 'Quick Maths' scheme on a regular basis (at least three opportunities per week);
- Maintaining records of performance and achievement, and using these to inform planning and intervention;
- Informing parents of pupils' achievements and next steps through discussion at Parents' Evenings, end of year pupil reports and where specific need is identified, for example inclusion within intervention groups.

### **Teaching Assistant (T.A.)**

The purpose of support staff is to assist in the delivery of the learning objective by working in direct contact with pupils. The role involves working with groups and individual pupils under the direction of the class teacher. All mathematics lessons should require support staff to work with either a group of children or to deliver 'Wave One' interventions to support specific children identified through assessment for learning following previous lessons.

At the end of the lesson, or at an agreed appropriate time, support staff should feedback to the class teacher to highlight individual pupil's achievements.

Additionally, where the class teacher has identified a need for same day intervention (recorded in the class's A.F.L. book), it is the responsibility of the Teaching Assistant to deliver this intervention prior to the next mathematics lesson.

### **Engaging Parents and Homework**

We recognise that parents can make a significant difference to children's progress in mathematics and encourage this partnership. Consequently, it is our school policy to provide parents and carers with opportunities to work with their children at home. Mathematics homework begins in Reception, where children have the opportunity to take Numicon based games home to play with their family. This practice continues in Year One. To enable parents to support their children with Numicon activities, they are invited regularly into Reception classes to observe and take part in focussed teaching activities.

In all other year groups children receive weekly homework, which either relates to their current learning or a specific, age appropriate, method of calculation.

### **Reporting to Parents**

Parents are kept informed of the progress of their children and how to support their education.

Parents are informed of their child's attainment and progress in mathematics twice a year at parents' evenings and annually through a written report. At the end of each key stage, the results of statutory assessments are communicated to parents.

### **Governors**

The governing body of Yorkmead School discharge their statutory responsibility with regard to mathematics. In order to achieve this, the governors of the school are kept fully informed on changes and progress in mathematics through written and verbal reports.

Governors are welcomed into school to observe lessons observe lessons and discuss issues with the subject leader.

### **Equal Opportunities**

We have carefully considered the impact of this policy on equality and the possible implications for pupils with protected characteristics, as part of our commitment to meet the Public Sector Equality Duty (PSED) requirement to have due regard to the need to eliminate discrimination, advance equality of opportunity and foster good relations.

Reviewed by S.Sutton 1st October 2017.

Next review to be carried out by XXXXXXXXXXXX.

Ratified by governors on XXXXXXXXXXXX