

## Maths Policy

### **Section 1: Introduction**

Mathematics teaches us how to make sense of the world around us through developing a child's ability to calculate, reason and to solve problems. It enables children to understand and appreciate relationships and pattern both in number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by people to the development and application of mathematics.

A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, and a sense of enjoyment and curiosity about the subject. At Birkby infant and Nursery School, we seek to embed the enjoyment and challenge of mathematics in our children's learning.

### **Purpose:**

The purpose of this policy is to describe our practice in Mathematics and the principles upon which this is based.

### **Spiritual, moral, social and cultural development**

The teaching of mathematics supports the social development through collaborative learning. Children are often grouped so that they can work together and they are given a chance to discuss their ideas and results. Children can find shapes and pattern in nature. They can see the order, logic and pattern that numbers offer. Opportunities for moral development are also offered - children are encouraged to discover how logical reasoning can be used to consider the consequences of particular decisions and the value of mathematical truth.

### **Aim(s):**

The 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 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
- 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.
- To be set appropriate learning challenges

We aim to develop lively, enquiring minds encouraging pupils to become self-motivated, confident and capable in order to solve problems that will become an integral part of their future.

At Birkby Infant & Nursery School we aim to:

To develop lively enquiring minds and the ability to ask and answer questions by promoting enjoyment and enthusiasm for learning through practical activity, exploration and discussion.

To develop logical thinking and reasoning skills through a natural curiosity and investigative approaches. We create regular opportunities for children to use and apply their skills through problem solving and investigations.

To help pupils understand the world they live in, and their part in it by encouraging them to apply their mathematical skills to everyday situations.

To celebrate achievement through high quality feedback (as set out by the Feedback and Marking Policy). Peer and self-assessment are an integral part of this feedback and children are taught the skills needed to effectively do this throughout school.

To ensure AFL (Assessment for Learning) strategies are embedded in all aspects of learning and teaching. The teacher will challenge children through high expectations and will equip children with skills needed to rise to challenges. The teacher will ensure there is provision for support and extension of learning for every child.

To consistently emphasise and develop the use of mathematical vocabulary, children should be given many opportunities to talk about mathematics by working in small groups, mixed ability, whole class, teams and differentiated ability groups as well as working on their own.

To develop understanding, knowledge and skills relevant to life, they should have the opportunity to make many cross-curricular links between mathematics and other areas of the curriculum.

To use models and images in supporting understanding of calculations and other areas of mathematics. The use of Numicon is integral to learning throughout the school to support understanding for all ability levels not just the less able. In addition to this, every class teacher has access to Base Ten materials which children to understand place value.

## **School Curriculum - Programme of Study**

### **Foundation Stage**

#### **The EYFS Statutory Framework**

The EYFS Statutory Framework sets the standards that all early years providers must meet to ensure that children learn and develop well and are kept healthy and safe. It promotes teaching and learning to ensure children's 'school readiness' and gives children the broad range of knowledge and skills that provide the right foundation for good future progress through school and life.

Mathematics in the EYFS is initially developed through stories, songs, games and imaginative play. A positive approach to maths around the classroom helps the children to relate mathematics to their everyday lives.

The EYFS environment includes visual images, models and number resources to stimulate interest - both indoors and in the outside learning environment. Numicon plays a huge part in understanding the recognition of numbers and in developing an awareness of the relationship between numbers and amounts.

#### **Mathematics in the EYFS**

The programme of study for the Foundation stage is set out in the EYFS Framework. Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shape, spaces and measures.

## **Number**

Children count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.

## **Shape, space and measures**

Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them

## **Key Stage 1 and 2**

The Programmes of study for mathematics are set out year by year for Key Stages 1 and 2 in the new National Curriculum (2014). The programmes of study are organised in a distinct sequence and structured into separate domains. Pupils should make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

## **Key Stage 1**

The principal focus of mathematics teaching in Key Stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources (e.g. concrete objects and measuring tools).

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of Year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

## **Cross curricular**

Throughout the whole curriculum, opportunities to extend and promote Mathematics should be sought. We draw children's attention to the links between maths and the wider world so children see its relevance to everyday life. Nevertheless the prime focus should be on ensuring *mathematical progress* delivered discretely or otherwise.

## **Planning and Learning**

The curriculum is delivered by class teachers. Planning is based upon the new Primary Curriculum (2014). Programmes of Study should inform medium term plans and subsequently weekly planning. Teachers of the reception classes base their teaching on developmental matters from the EYFS this ensures they are working towards the Early Learning Goals for mathematical development.

**Long term-** yearly teaching blocks for years 1 and 2 are set out in accordance with National Curriculum (2014)

**Medium term Planning-** Plans are based on the Primary Curriculum (2014) but have been adapted to meet the particular needs of our children. Medium term plans are used as working documents.

**Short term** -Plans are produced on a weekly basis through discussion in year group meetings. Class teachers are responsible for the relevant provision of their own classes and individually develop weekly plans which give details of learning objectives and appropriate differentiated activities. Although planned in advance they are adjusted on a daily basis to better suit the arising needs of a class and individual pupils.

### **Teaching and Learning**

All pupils are entitled to a broad mathematics curriculum in which their learning needs are identified and met. Pupils should experience a range of practical and written activities on number, measurement, geometry and statistics. Classrooms should be rich in discussion between pupils and between teacher and pupils. Some facts will need to be memorised, others will need to be practised but underpinning all of this will be the development of mathematical reasoning and understanding through exploration, problem solving and investigation.

- In the Foundation Stage, children are given the opportunity to develop their understanding of number, measurement, pattern and shape and space through a combination of short, formal teaching as well as a range of planned structured play situations, where there is plenty of scope for exploration.
- Children will become very competent 'counters' so that their fluency with the number system provides a foundation for mathematical understanding. Counting forwards and backwards in many different sized steps as well as from different starting and ending points is essential.
- Maths learning builds from a concrete understanding of concepts where children are manipulating objects. When children are able to see concepts this way, they then need to understand the same concepts represented pictorially. Children are then ready for abstract representation before being able to apply their knowledge to different situations.
- Children should be encouraged at all times to communicate their understanding of maths so that it clarifies their thoughts.
- Children's mental maths is of great importance, with number bonds, times tables facts and various strategies for calculation taught and practiced at school with support sought from parents through homework activities.

## **Calculation Policy**

The calculation policy (see appendix 1) has been reviewed in light of the new National Curriculum.

## **Assessment**

AFL is regarded as an integral part of teaching and learning and is continuous process. We are continually assessing our pupils and recording process, which then inform future planning and target setting. On a daily basis children should self-assess against the learning objective and success criteria, giving them a sense of success.

Short term assessments are carried out on a daily basis through questioning. Observations, discussions with children/or the marking of the work. Their purpose is to check that children have grasped the main teaching points in a lesson or series of lessons and to identify misconceptions. Short term assessments are used to inform the Numeracy Assessment Booklet to show children's progress and inform future planning of particular units of work.

Medium term assessments are carried out each half term using the evidence collected and noted on each child's numeracy assessment booklet. The results are put onto integris and are intended to give teachers an overview of children's progress. Half termly progress review meetings are conducted by Mrs Wilson with each class teacher and the leader of each year group.

Long term assessments- At the end of the school year, children's progress is assessed against the key objectives for their year group. Children in the Foundation Stage are assessed in accordance with the EYFS curriculum.

Tracking is used in order that children who are not making good progress over time can be targeted for support in one form or another. What that support will be and how intensive, depends upon the child's needs and it may be a simple strategy within whole class teaching that is needed. Where further support is deemed necessary, children can access interventions.

## **Inclusion and equal opportunities**

Birkby Infant & Nursery School aims to provide access to a stimulating, broad and balanced curriculum, within a culture of high expectations, where every child matters and barriers are tackled to enable all children to feel successful, valued and included, safe and secure.

We will provide an inclusive curriculum which will meet the needs of all pupils, where the teaching and learning, achievements, attitudes and well-being of every learner matters. All children have equal access to the curriculum regardless of gender or background. This is monitored by analysing pupil performance throughout school to ensure that there is no disparity between groups.

We incorporate mathematics into a wide range of cross curricular subjects and seek to take advantage of multi- cultural aspects of mathematics. A variety of individual work, group/paired work, whole class teaching and demonstration are used to ensure the participation and inclusion of all children. Where ability groups are formed, care is taken to ensure decisions are made on grounds of mathematical ability and not fluency in the English Language. Equal status is given to boys and girls. Care is taken to ensure that discussions and use of resources are not dominated by either sex. (See inclusion & equal opportunities policy)

### **Special educational needs**

Class teachers with the support of the SENCO have responsibility for integrating mathematics into a child's individual SEND support plan and ensuring that arrangements are made to accommodate this during mathematics lessons. Classroom support assistants for children with statements/ EHCPs should be briefed by the class teacher before lessons and should be aware of their role in supporting a child's mathematical development.

Within the daily mathematics lesson teachers not only provide appropriate activities to support children who find mathematics difficult but also activities that provide appropriate challenges for children who are high achievers in mathematics. (See special educational needs and disability (SEND) policy)

### **Racial inclusion**

The school is accepting of each person's culture, disability and level of poverty, learning difficult, challenging behaviour, social class, gender and sexuality. We aim to develop and celebrate inclusion in education and to break down barriers to learning and participation.

### **Gifted and Talented**

Able children are challenged in mathematics through:

- Planning of particular activities to ensure progression within a lesson, including extension activities and with reference to the objectives of the next year group where applicable.
- Questions particularly directed at these children in whole class sessions.
- Assessments both formal and informal are reflected in planning.

### **Resources**

Resources which are not used or required regularly are stored centrally and accessed by teachers at the beginning of a topic.

### **Marking and presentation**

Teachers are expected to adhere to the schools marking policy when marking books and presentation policy when guiding children as to how to present their work.

### **Monitoring and Evaluation**

The Curriculum leaders, alongside SLT, are responsible for monitoring and evaluating curriculum progress. This is done through book scrutiny, planning scrutiny, lesson observations, pupil interviews, staff discussions and audit of resources.

Monitoring of children's progress begins with performance review meetings but continues with the subject leader evaluating further evidence to ensure children are making progress. This monitoring happens through examination of work in books, pupil interviews, analysis of assessment results and the assessments used, and through other means depending on what information needs to be gleaned.

Following monitoring activities feedback is given to staff about how they can strengthen their practice and CPD (professional development) opportunities built in where it would be deemed valuable. These might take the shape of inputs during staff meetings or by a variety of other means.

Where specific initiatives have been put in place through action planning for school development, these are monitored by the subject leader in order to evaluate their impact.

### **Co-coordinators Role**

The numeracy coordinator is responsible for:

- Co ordinating the planning, assessment and implementation of the numeracy strategy.
- Assisting colleagues in planning schemes of work with regard to areas of experience, issues of differentiation and assessment opportunities.
- Developing her own knowledge and skills by keeping abreast of current developments and attending appropriate training.
- Formulating and reviewing policy and guidelines
- Monitoring current practice in order to gain an overview of standards, continuity and progression.
- Analysing termly assessments and formulating target groups
- Liaising with key stage 2 and early years colleagues
- Liaising with parents regarding numeracy issues
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### **The Role of the Mathematics Subject Leader**

It is the responsibility of the Subject Leader to ensure that overall standards for mathematics are good or better.

This involves:

- Promoting up-to-date good practice by leading INSET and/or staff meetings.
- Monitoring standards (observations, team teaching, pupil interviews, work scrutiny, moderation, learning walks) with the support of the Headteacher, link governor and members of the SLT.
- Contributing to whole school planning activities and curriculum development.
- Providing support, guidance, coaching and mentoring of staff with the aim of improving their skills, knowledge and understanding of the teaching of mathematics.
- Deploying, directing, guiding and providing feedback about performance of Teaching Assistants/HLTAs and volunteers with the aim of maximising pupil progress.
- Analysing data and tracking and monitoring children's progress in mathematics.
- Regularly updating an action plan for subject development across school, giving the Headteacher an annual summary in which strengths and development points are evaluated and areas for further improvement are indicated.
- Ensuring that up-to-date knowledge of changes in the curriculum are cascaded to staff.
- Ensuring that resources in school match the needs of the children.
- Writing or updating policies in mathematics.
- Liaising with the named member of the school's governing body to provide briefing of the teaching of mathematics in school.

## **Homework**

Homework in mathematics is a valuable tool in promoting children's learning and allows the parents/ carers to be regularly involved in the child's mathematical development. It should not take the place of teaching a particular topic but should be used to consolidate work already covered at school e.g. the learning of a set of multiplication tables for homework should be preceded by coverage in class, where patterns and tips for remembering answers have been explored.

## **Home school links**

At Birkby Infant & Nursery School we encourage parents to be involved by:

- Inviting them into school three times a year to discuss the progress of their child.
- Inviting parents to weekly parent's workshop to provide them with ways of how they might help their child at home.
- Sending out termly topic leaflets outlining the numeracy topics being covered
- Sharing each child's individual progress tracker.

(see appendix 2 for example of Numeracy Assessment booklet and pupil progress tracker)