

Maths Policy

Introduction

Introduction This document is a statement of the aims, principles and strategies for the teaching and learning of Mathematics at Birkby Infant & Nursery School. Mathematics is a core subject and this policy has been written in accordance with its statutory requirements.

All pupils can achieve in mathematics! At Birkby Infant & Nursery School, it is our belief that pupils are not learning to be mathematicians but that they are mathematicians.

‘Mathematics is a creative and highly inter-connected discipline...a high-quality mathematics education should provide 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.’ (National Curriculum for Mathematics, 2014)

Intent

At Birkby Infant & Nursery and Infant School we aim for all children to develop a deep, conceptual understanding of mathematics. We want children to be confident, fluent mathematicians who are able to transfer their learning and skills to explore and demonstrate their mathematical understanding in a variety of ways to reason and solve problems.

We aim for all of our children to be strong mathematicians who;

- Can recall and apply mathematical knowledge rapidly and accurately, moving between a range of contexts, representations and making connections.
- Can solve problems through a variety of representations and contexts by understanding and applying mathematical concepts. They will build the skills to tackle new problems and apply these to real life situations.
- Develop their abilities to reason by talking and writing to explain their understanding of maths, reinforcing a deep understanding of mathematical vocabulary.
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Implementation

Curriculum Summary

We have adopted a curriculum which;

- covers the National Curriculum for Key Stage One and Early Years Statutory Framework for our Reception pupils but also details the skills, knowledge and understanding we wish pupils to develop in both the long term and medium term plan for each year group.
- is sequential and is designed to build on previous learning towards a clear end point.
- blocked into areas of learning which are revisited over time to help achieve ‘mastery’.
- for Key Stage One, blocked Place Value and Addition and Subtraction in the beginning of the Autumn term so pupils have a strong basis for later concepts such as multiplication and division.
- for Reception pupils start with early number skills. Mathematics is often separated into concepts and specific vocabulary as an approach to support all learner

Planning, Teaching and Learning

At Birkby Infant and Nursery School we follow the National Curriculum Programmes of study using the White Rose Medium Term Plan and Schemes of Learning to support our planning. Maths is taught through sequential blocks of learning enabling children to retrieve and build upon prior knowledge before developing new knowledge through small steps of learning. Blocks of learning are taught in a logical order provided by White Rose and they are adapted to suit individual class needs.

Teachers plan their lessons based on the 5 big ideas of mastery;

- Coherence – maths is taught in small, manageable steps enabling pupils to build on prior layers of knowledge and keep up with key learning.
- Representation and structure – Children are exposed to a variety of representations of maths and learn to represent their mathematical thinking in different ways to develop a deeper understanding.
- Mathematical thinking – children provided opportunities to transfer the skills they learn to problem solving and reasoning. Children can articulate their mathematical understanding through regularly stem sentence practice.
- Fluency – quick and efficient recall of facts.
- Variation – concepts are represented and understood in a variety of ways including noticing changes, connections and relationships between mathematics.

Pupils at Birkby Infant & Nursery School are mainly taught maths through whole-class teaching where most pupils work together on the same knowledge and content at the same time. The focus is on spending a significant amount of time on key skills to develop a depth of understanding. Teachers plan a sequence of lessons using a broadly concrete, pictorial, abstract (CPA) approach to teaching to ensure that pupils develop a depth of understanding and that all children's needs are met. Mathematical concepts are explored by using a wide range of concrete objects, then a variety of pictorial representations before moving on to abstract mathematics. Maths lessons aim to develop mathematical fluency and opportunities to develop problem solving and reasoning are provided. Activities and levels of support are differentiated to meet the needs of individual pupils. Teachers also provide opportunities to extend the learning of greater depth pupils through a range of higher level reasoning and problem solving tasks.

Early Years

In Early Years we make sure the EYFS curriculum meets the requirements set out in the EYFS statutory framework. It takes into consideration pupils' varied starting points upon joining our school. Maths is taught through two areas; Number and Numerical patterns. Here at BINS, we focus on developing children's understanding of the six key areas of early mathematics with a focus on developing number sense through; cardinality and counting, comparison and composition of number and developing understanding of pattern, shape and space and measures. In early years, we use a mastery approach to teach maths. Teachers use an integrated approach using the White Rose small-step planning, NCTEM Mastering Number and Numberblocks. Pupils are taught through direct instruction, play and exploration activities as well as adult led follow up activities to ensure the concept has been learned and applied. Throughout our mathematics provision pupils are encouraged to look for patterns and relationships and spot connections

What teaching looks like in Nursery

Maths in Nursery focuses on the development of perceptual and conceptual subitising, cardinality and counting skill as well as early composition of numbers. Children explore simple patterns with shapes, everyday objects, amounts and numbers, shapes and simple measures. Children are taught maths through daily group time where pupils engage with

practical activities, stories, songs and games and explore maths using a wide range of natural and man-made manipulatives. Activities may be indoors or use the outdoor environment enabling children to explore maths in the real world. We provide opportunities and support children to embed taught concepts and solve problems within the provision, through daily routines and through the environment. Adults seek out pupils who need additional support and provide this through play. The rich environment and provision provide pupils with a wide range of opportunities for mathematical development enabling children to revisit each key area of early maths.

What teaching looks like in reception

Maths in Reception is taught through a mixture of whole-class lessons and child-initiated activities. Maths in reception is taught using a concrete, pictorial and abstract approach to teaching with a focus on the development of key vocabulary and oracy. Children are taught to use stem sentences to describe representations, before moving onto more abstract maths. Lessons focus on the development of fluency in key concepts but children are also given opportunities to solve problems and reason. Maths lessons are differentiated to meet the needs of individuals. Teachers and support staff support children with misconceptions or who need additional support through engaging them in activities within the provision, environment and through daily routines. Additionally, children have access to maths manipulatives and activities which they can access in the provision independently

Key Stage 1

In Key Stage 1 Maths is taught daily in KS1 through a mixture of practical and non-practical lessons where work may be recorded through photographs or through written work in books. We follow the White Rose Maths topic overview and teach in blocks of learning, although this can be adapted. Within each block of learning, we follow small progressive steps.

What teaching and learning looks like in KS1;

- Whole-class teaching.
- Maths is taught through a concrete, pictorial, abstract approach.
- Many lessons are practical where children are able to use a variety of manipulatives to support their development of key concepts in maths.
- Children are familiar with and use a wide range of representations in maths, including pictorial representations and those that are abstract i.e. bar models, part-whole models.
- Children use taught stem-sentences to articulate mathematics taught and they use key vocabulary appropriately.
- There are opportunities to practise fluency in each lesson, moving between a range of different representations and contexts.
- Children have opportunities to solve problems in many lessons and reason about mathematics.
- Children often work in mixed ability pairs to support one another.
- Structures and connections in maths are emphasised so a deep learning can be sustained.

Resources

Children become fluent in maths when they have hands-on experiences. They draw on a range of practical resources to support them in developing their conceptual understanding of maths before moving onto pictorial and abstract representations. A range of practical equipment is used in all classes throughout school.

Assessment

Assessment is an integral part of teaching and learning and is a continuous process. Teachers make assessments of children daily through;

- regular marking of work
- analysing errors and picking up on misconceptions
- asking questions and listening to answers
- facilitating and listening to discussions
- making observations

These ongoing assessments inform future planning and teaching. Lessons are adapted readily and short term planning evaluated and edited in light of these assessments. Short term assessments are used to inform the Numeracy Assessment Booklets.

Early Years Foundation Stage: End of Year Assessment

At the end of Reception teachers will assess children against the Early Learning Goals of Number and Numerical Patterns respectively and will be either meeting the level of development expected at the end of the EYFS (expected), or not yet reaching this level (emerging).

Number ELG Children at the expected level of development will:

- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Numerical Patterns ELG Children at the expected level of development will:

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Medium term assessment

Termly assessments are carried out across the school. The results are put onto Integris and give teachers an overview of children's progress.

Pupil Progress meetings are timetabled each term for all classes and are conducted by Mrs Wilson with each class teacher and the appropriate year group leader. Progress of pupils is discussed and appropriate intervention considered and put in place where appropriate. Tracking is used in order to provide interventions.

Long term assessment

At the end of the year children's progress is assessed against the key objectives for the year group.

Inclusion and Equal opportunities

(Our approach to the curriculum and how we are complying with our duties in the Equality Act 2010 and the Special Educational Needs and Disability Regulations 2014 about making the curriculum accessible for those with disabilities or special educational needs.)

The following principles inform and guide our policy and practice:

- Meeting the diverse and complex needs of each and every individual is embedded in everything that we do as a school
- It is the responsibility of BINS to enable all children to access and make progress via the curriculum
- “Equal opportunities” is not the same as “Equal provision” and we adapt provision to ensure it meets the needs of our learners.
- We aim to provide a happy and secure environment where all members of our school community respect and value each other and themselves. We promote equality and the creation of an environment which champions respect for all.

As a school we aim 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 pupils to feel successful, valued and included, safe and secure. (see inclusion & equal opportunities policy)

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. 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.

Special educational needs & disabilities (SEND)

What is good provision for a child with SEND is good for all children, i.e. a wealth of activities that allow children to learn visually, through speaking and listening and kinaesthetically, using principles of Quality First Teaching. We respond to children’s diverse learning needs by being committed to removing barriers to learning and we do this by:

- Creating effective and interactive learning environments
- Using assistive technologies where appropriate
- Providing scaffolding to support children’s learning–
- Modelling activities / tasks
- Paired and collaborative work that is rich in discussion and reflection
- Use of encouragement and praise to motivate and develop self-image and esteem-
- Using multi-sensory approaches
- Using visual cues to aid understanding
- Providing visual timetables to help with establishing routines
- Pre-teaching key vocabulary to provide a ‘hook’ into teaching
- Looking at alternative methods for recording work
- Using metacognitive approaches so that children learn how they learn best and develop a range of tools to support them in approaching their work independently and confidently
- Developing motivation and concentration through a stimulating curriculum
- Using appropriate assessments to enable children to demonstrate what they can do, have learned-and secure next steps in learning
- Setting targets for learning
- Teaching more able children with their own class and extending their learning through differentiated group work, extra challenges and opportunities for independent learning-
- Working closely with parents/carers to gain a thorough understanding of every child’s 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 children’s mathematical development. Within the daily mathematics lessons teachers also 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 difficulty, challenging behaviour, social class, gender and sexuality. We aim to develop and celebrate inclusion in education and to break down barrier to learning and participation.

Marking

Marking of children's work is essential to ensure they make further progress. Work is marked in line with the school marking policy. Next steps are not necessary as the next lesson is normally the next step in learning. However, it is essential that all responses to work identify and address any misconceptions/mistakes and through questioning ensure children have clarified their thinking clearly.

Role of the 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 sim of improving their skills, knowledge and understanding of the teaching of mathematics.

Analysing data and tracking and monitoring children's progress in mathematics.

Regularly updating an action plan for subject development across school, in which strengths and developments points are evaluated and areas for further development and 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 schools governing body to provide briefing of the teaching of mathematics in school.

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 parents' workshop to [provide them with ways of how they might help their child at home

Sending out half termly topic leaflets outlining the numeracy topics being covered

Reviewed by Danielle Laramee and SLT December 2023

Next review date 2024