The Bellbird Primary School

Maths Policy

September 2022

(To be reviewed September 2024)

Introduction

This document is a statement of the aims, principles, strategies and procedures for maths throughout the school. The document describes the strategy agreed by The Bellbird Primary School Governing Body for the delivery of maths.

The aim of the Bellbird Primary School is to support all children's access to excellent teaching, leading to exciting and successful learning in maths.

Aims

The National Curriculum for mathematics aims to ensure that all pupils:

- become fluent in the fundamentals of mathematics, 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.

Through:

- Modelling problems with concrete apparatus and images like the bar model.
- Developing mathematical language which children can use appropriately.
- Using IT as a tool to enhance learning, where appropriate.
- Helping children to become independent learners.
- Giving a real life context to learning in maths.

Organisation

There will be a daily mathematics lesson.
The programmes of study for mathematics are set out year-by-year for Key Stages 1 and 2. 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 with practical resources (e.g. concrete objects and measuring tools). Children are encouraged, through the mastery approach, to develop conceptual understanding using visual representations, including bar models (part-whole models). They are taught all three areas of maths (fluency, reasoning and problem solving) through the 'build it, draw it, say it, write it' approach.

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.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1.

KS1 POS

Number and Place Value
Addition and Subtraction
Multiplication and Division
Fractions
Measures
Geometry-properties of shapes
Geometry- position, direction and motion
Data

Lower Key Stage 2 – Years 3-4

The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should continue to develop their ability to solve a range of problems, explaining their reasoning. Teaching should also ensure that pupils draw with increasing accuracy so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12x table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling

Lower KS2 POS

Number, Place Value and Rounding
Addition and Subtraction
Multiplication and Division
Fractions (Year 4 Decimals)
Measures
Geometry-properties of shapes
Geometry- position, direction and motion
Data

Upper Key Stage 2 – Years 5-6

The principal focus of mathematics teaching in upper Key Stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number.

Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils should read, spell and pronounce mathematical vocabulary correctly.

Upper KS2 POS

Number, Place Value and Rounding
Addition and Subtraction
Multiplication and Division
Fractions and Decimals (Percentages Year 6)
Ratio and Proportion (Year 6)
Algebra (Year 6)
Measures
Geometry-properties of shapes
Geometry- position, direction and motion
Data

Early Years Foundation Stage (EYFS)

Mathematics development involves providing children with opportunities to practise and improve their skills in counting numbers, calculating simple addition and subtraction problems, and to describe shapes, spaces, and measures.

The EYFS Statutory Framework states:

"Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes."

Early Learning Goal: Number

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.

Early Learning Goal: Numerical Patterns

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.

Children use their knowledge and skills in these areas to solve problems, generate new questions and make connections across other areas of learning and development. Mathematical understanding will be developed through stories, songs, games and imaginative play.

Planning
All teachers use White Rose Maths Hub materials as a basis for their planning. White Rose is recommended by the National Centre for Excellence in the Teaching of Mathematics. The hub has developed a wide range of training, support and free resources, all of which support a teaching for mastery approach. The mastery-based schemes of work and assessments are being used by thousands of schools across the UK.

Assessment and Record Keeping
Before teaching a unit of work, the Cambs Maths Team's diagnostic toolkit will be used to identify what the children already know and any common misconceptions, thereby informing future teacher planning. The children will be assessed on a continuous basis using assessment Materials from White Rose. In addition, formal assessments will take place (see Assessment Policy):

- The Early Years Foundation Stage Profile (EYFSP)
- End of Key Stage SATs for Year 2 and 6
- End-of-term White Rose Assessments in Years 3, 4 & 5

Progress will be tracked using Pupil Progress meetings.

IT
Opportunities to use IT to support teaching and learning in Maths will be planned for and used appropriately, ensuring that is actually adds value and does not inadvertently become a barrier to learning.

Home/School Link
The link between home and School is forged in a number of ways. In Key Stage 1 and 2, homework is assigned on a regular basis (see Homework Policy). Maths homework is provided via the on-line learning platform, Mathletics, which can be monitored within school. The platforms "TT Rock Stars" and "Numbots" have also be introduced to aid fluency in the recall of number facts. To give more detailed outlines of the child's progress, biannual reports and formal meetings are arranged, but informal meetings are encouraged when needed.

Special Needs
The provision for children with special needs is detailed in the Inclusion-SEN Policy. Central to this is the early identification, intervention and careful

planning for variation within the mastery schemes of learning. We are able to administer the Sandwell test at both Key Stages to identify children with specific learning difficulties in Maths and then make provision for these children through intervention programmes such as 1stClass@Number 1 and 2 and Success@Arithmetic.

Monitoring and Evaluation

Monitoring and evaluation of mathematics teaching in the school is carried out by the subject leaders and the senior leadership team. When possible, pupil interviews will take place along with scrutiny of work. Planning is monitored across both key stages by the subject leaders and the senior leadership team.

Role of subject leader

The subject leader will be responsible for improving standards of teaching and learning in Mathematics through:

- Pupil progress.
- Provision of maths (including intervention and support programmes).
- The quality of the learning environment.
- Taking the lead in policy development.
- Auditing and supporting colleagues in their CPD.
- Purchasing and organising resources.
- Keeping up to date with Maths development.