

# Blackwell Primary School

## Mathematics Policy



(September 2019)

### Aims and Visions for Mathematics

Our aim at Blackwell Primary School, is to provide creative yet challenging lessons, that create a sense of excitement and curiosity around mathematics, whilst ensuring progress within the subject. Children are encouraged to make links between the curriculum and the world around them, as a high quality maths education provides a foundation for understanding of the world. Maths is essential to everyday life and necessary in almost all forms of employment. As children at Blackwell Primary School learn mathematics, they are acquiring fluency in practical, mental and written methods, as well as developing their questioning and reasoning skills through a diverse range of problem solving opportunities **and use of mathematical vocabulary.**

### **The National Curriculum for mathematics aims to ensure all pupils:**

- Become fluent in the fundamentals of mathematics, including the varied and regular practice of increasingly complex problems over time.
- Reason mathematically by following a line of enquiry, understanding relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- Can solve problems by applying their mathematics to a variety of problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

### **At Blackwell our objectives in the teaching of mathematics are:**

- To promote enjoyment of learning through practical activity, questioning and discussion.
- To develop confidence and competence with numbers and the number system through the use of practical resources and the recall of mathematical facts and knowledge.
- To develop conceptual understanding in order to solve problems through decision making and reasoning in a range of contexts.
- To develop a practical understanding of the ways in which information is recorded, presented and analysed.
- To help children understand the relevance and application of mathematics in everyday and professional life **through a range of using and applying opportunities that build on knowledge and use of mathematical vocabulary.**

### **Leadership and Management**

The subject leader's role is to empower colleagues to teach maths to a high standard and support staff in the following ways:

- By keeping up to date on curriculum issues, share relevant information and provide training for staff members.
- Having a knowledge of the quality of mathematics provision across the school by observing lessons, working environments and monitoring class books.
  - Evaluate the impact of interventions and monitor focus groups.**
- Identifying and acting on development needs of all staff members.
- Monitoring expectations, provision and attainment across the school and providing feedback to develop practice further in order to raise standards.
- Providing necessary equipment and maintaining it to a high standard.

### **NEW CURRICULUM OUTLINE FOR EACH KEY STAGE**

Foundation Stage Pupils are encouraged to develop their Problem Solving, Reasoning and Numeracy in a broad range of contexts in which they can explore,

learn, enjoy, practise, discuss and extend their skills. Pupils are encouraged to exploit their mathematical potential in both indoor and outdoor enabling environments. They are provided with a wide range of activities that promote regular active participation, exploration of real life problems, development of imaginative play and early experience of mathematical language, including an introduction to Mathematics Makes Sense (MMS) in the summer term. All pupils are supported positively and encouraged to gain confidence and competence in their skills.

By the end of the Foundation Stage pupils should be able to 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, add and subtract two single-digit numbers and count on or back to find the answer. Solve problems, including doubling, halving and sharing. The children should be able to use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. Recognise, create and describe patterns.

### **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 object ).

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.

### **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 develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning 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 12 multiplication table and show precision and fluency in their work. Children will be tested on their times tables in Year 6 using an online screening process. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling

### **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.

### **Implementation and Planning:**

At Blackwell, we carry out curriculum planning in three phases (long-term, medium-term and short-term). Our mathematics curriculum is delivered using the new Foundation stage guidelines and the new Mathematics Programmes of Study as a tool to ensure appropriate pace, progression and coverage of the subject. We also use the White Rose medium term plans across KS1 and KS2 to support this. Coverage is reviewed continually by class teachers and planning is adjusted accordingly to ensure appropriate coverage of all mathematical strands. Medium term planning focuses on year group requirements on a termly basis to ensure the correct progression within units and ensure that children have a deep understanding and mastery of concepts. These plans are adapted to meet the needs of specific groups of children and to address areas identified by the school as needing development. Opportunities for differentiation are also identified at this stage. Our planning is supported by a variety of written schemes, including White Rose and Busy Ants which incorporate elements of the Mastery approach through fluency, problem solving and reasoning opportunities.

## **Breadth of Study**

Through effective planning and resourcing, we aim to ensure that throughout the school children are given daily opportunities for:

- Practical activities and mathematical games that embed mathematical knowledge and number facts.
- A range of methods of calculating eg. mental, practical, pictorial or written.
- Problem solving, reasoning and mathematical investigations.
- Provide opportunities for using and applying through real life maths and Enterprise activities.**
- Challenging individual, group and whole class activities that are supported by discussions and effective questioning.
- Using a range of ICT devices as mathematical tools, as well as a range of other cross curricular links.
- A whole school focus on Learning to Learn Skills.
- A range of short term and medium term assessment activities.