

# Mathematics Policy

## Introduction

Mathematics equips pupils with the uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem solving skills and the ability to think in abstract ways.

Mathematics is important in everyday life. It is integral to all aspects of life and with this in mind we endeavour to ensure that children develop a positive and enthusiastic attitude towards mathematics that will stay with them.

The National Curriculum for mathematics describes in detail what pupils must learn in each year group. Combined with our Calculation Policy, this ensures continuity and progression and high expectations for attainment in mathematics.

It is vital that a positive attitude towards mathematics is encouraged amongst all of our pupils in order to foster confidence and achievement in a skill that is essential in our society. At New Ash Green Primary School we use the new National Curriculum for Mathematics (2014) as the basis of our mathematics programme. We are committed to ensuring that all pupils achieve mastery in the key concepts of mathematics, appropriate for their age group. This will enable them to make genuine progress and avoid gaps in their understanding that provide barriers to learning as they move through education. Assessment for Learning, an emphasis on investigation, problem solving and the development of mathematical thinking and a rigorous approach to the development of teacher subject knowledge are therefore essential components of the New Ash Green Primary School approach to this subject.

## Aims

We aim to provide the pupils with a mathematics curriculum and high quality teaching to produce individuals who are numerate, creative, independent, inquisitive, enquiring and confident. We also aim to provide a stimulating environment and manipulatives so that pupils can develop their mathematical skills to the full.

Our pupils should

- have a well-developed sense of the size of a number and where it fits into the number system
- know by heart number facts such as number bonds, multiplication tables, doubles and halves
- use what they know by heart to figure out numbers mentally
- calculate accurately and efficiently, both mentally and in writing and paper,
- draw on a range of calculation strategies
- make sense of number problems, including 'real' problems and identify 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 where necessary
- suggest suitable units for measuring and make sensible estimates of measurements
- explain and make predictions from the numbers in graphs, diagrams, charts and tables
- develop spatial awareness and an understanding of the properties of 2D and 3D shapes

## Provision

Pupils are provided with a variety of opportunities to develop and extend their Mathematical skills, including:

- Group work
- Paired work particularly with their learning partner
- Whole class teaching
- Individual work

Pupils engage in:

- the development of mental strategies
- written methods
- practical work
- investigational work
- problem solving
- mathematical discussion
- consolidation of basic skills and number facts
- maths games

We recognise the importance of establishing a secure foundation in mental calculation and recall of number facts before standard written methods are introduced. We use accurate mathematical vocabulary in our teaching and children are expected to use it in their verbal and written explanations. Mathematics contributes to many subjects and it is important the children are given opportunities to apply and use Mathematics in real contexts. It is important that time is found in other subjects for pupils to develop their Numeracy Skills, e.g. there should be regular, carefully planned opportunities for measuring in science and technology, for the consideration of properties of shape and geometric patterns in technology and art, and for the collection and presentation of data in history and geography.

We endeavour at all times to set work that is challenging, motivating and encourages the pupils to think about how they learn and to talk about what they have been learning. Additional enrichment opportunities are provided for pupils to further develop mathematical thinking e.g. through cooking, music, and maths investigations and games. Teachers plan problem solving and investigational activities every week to ensure that pupils develop the skills of mathematical thinking and enquiry. At the end of each term the maths subject leader sets an investigation which all children in Year 1 to Year 6 will carry out. Examples are given to the maths subject leader and then levelled and moderated in a staff meeting.

To provide adequate time for developing mathematics, maths is taught daily and discretely. Maths lessons may vary in length but will usually last for at least 50 minutes in Key Stage 1 and 60 minutes in Key Stage 2.

Maths Key Skills also take place daily in a dedicated 15 minute session. This is in addition to the daily maths lesson. The focus of this session is to further develop, practice and consolidate basic skills and number facts.

### **A Typical Lesson**

A typical lesson in Year 1 to 6 will often have the following components:

◆ **oral and mental work across the range of mathematics.**

This will involve work to rehearse, sharpen and develop mental and oral skills.

◆ **main teaching session**

This will include both teaching input and pupil activities and a balance between whole class, guided group and independent work, (groups, pairs and individual work) effectively differentiated and offering appropriate challenge. Sometimes the focus for this session is new learning, at other times pupils may be practising, to master the application of a concept they have learned earlier. The focus of this session may vary for different children depending on their learning needs.

◆ **plenary**

This will involve work with the whole class to sort out misconceptions, identify progress, to summarise key facts and ideas and what to remember, to make links to other work and to discuss next steps.

Teachers plan learning that is differentiated to meet the needs of all pupils, whether they have a specific learning difficulty in maths or whether they are particularly able. When scrutinising work in maths books, the subject leader for Mathematics expects to see work from any one lesson on a similar theme, differentiated for high attaining, middle attaining and low attaining pupils – possibly with individual work for an SEN pupil at one end of the achievement spectrum, to individual work for a gifted pupil at the other.

## **Assessment**

Assessment will take place at three connected levels: short term, medium term and long term. These assessments will be used to inform teaching in a continuous cycle of planning, teaching and assessment.

Short term assessments will be an informal part of every lesson to check the children's understanding and give the teacher information which will inform their day to day planning.

Teachers will evaluate their plans daily and record next steps.

Medium term assessments will take place in an assess session at the end of each week. There will also be a review lesson at the end of each term which will assess some of the key ideas linked to the key objectives that have been covered during the term. Each child will carry out the weekly mental agility assessment. Assessments to monitor progress will take place according to the annual assessment overview. A pupil progress/on track meeting will take place at the end of each term to discuss each child's progress and next steps.

Long term assessments will take place towards the end of the school year to assess and review pupils' progress and attainment. These will be made through compulsory National Curriculum Mathematics tests for pupils in Years 2 and 6 and supplemented by the optional QCA tests.

Accurate information will then be reported to parents and the child's next teacher.

The school's Assessment and Marking Policies inform high quality feedback and pupils' response to it in mathematics.

## **Early Years Foundation Stage (EYFS)**

We follow EYFS curriculum guidance for Mathematics. We are committed to ensuring the confident development of number sense and put emphasis on mastery of key early concepts. Pupils explore the 'story' of numbers to ten and the development of models and images for numbers as a solid foundation for further progress. Teachers use the concrete – pictorial – abstract approach to conceptual development.

## **Manipulatives**

The effective use of manipulatives is vital in developing each child's conceptual understanding.

Teachers are expected to use manipulatives daily and these are noted on the weekly planning grid.

A bank of essential manipulatives are kept in each classroom. Further manipulatives are kept in the two maths cupboards.

## **Information and Communication Technology**

ICT is used in various ways to support teaching and motivate children's learning. Each classroom has an interactive whiteboard (Active Inspire software) and a 'visualiser'. All teachers are provided with a laptop to support their planning and provision and are encouraged to use ICT to enhance teaching and learning in mathematics where appropriate. The school subscribes to 'Education City' to facilitate further practice of key skills online both at school and at home.

## **Role of the Subject Leader**

- Ensures teachers understand the requirements of the National Curriculum and helps them to plan lessons.
- Leads by example by setting high standards in their own teaching.
- Prepares, organises and leads CPD and joint professional development, with the support of the Headteacher.
- Supports teachers through team teaching.
- Observes colleagues with a view to identifying the support they need.
- Works co-operatively with the SENCO.
- Attends CPD and keeps up to date with new initiatives.
- Keeps parents informed about mathematics issues.

- Discusses regularly with the Headteacher and the mathematics governor the progress of implementing National Curriculum for Mathematics in school.
- Monitors and evaluates mathematics provision in the school by conducting regular work scrutiny, learning walks and assessment data analysis.