A Policy for Mathematics

This policy will describe the school's approach to achieving the vision for Mathematics (herein referred to as Maths.)

This policy is a curriculum organisation policy.

Introduction

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides 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 about the subject. (National Curriculum 2014)

Hawthorn's Aims

We aim to provide the pupils with a Maths curriculum coupled with high quality teaching to develop individuals who are numerate, creative, independent, inquisitive, enquiring and confident. (Linked to the Hawthorns Aspirational Qualities) We also aim to provide a stimulating environment and adequate resources so that pupils can develop their mathematical skills to their full potential and use these effectively across the curriculum.

What a maths learning environment looks like at The Hawthorns Primary Schooll

At The Hawthorns Primary School, we teach mathematics using the mastery approach which focuses on three forms of knowledge: factual, procedural and conceptual. .All teachers have an expectation that all pupils can and will achieve. The large majority of pupils progress through the curriculum content at the same pace allowing for the development of deep mathematical understanding. Differentiation emphasises deep knowledge and individual support / intervention. Lessons and resources are crafted carefully to foster deep conceptual and procedural knowledge through the use of pictorial, concrete and abstract activities. Practise and consolidation play a central role. Well-designed variation builds fluency and understanding of underlying mathematical concepts in tandem. Teachers use precise questioning to check conceptual and procedural knowledge. They assess each lesson to identify who requires intervention so that all pupils keep up.

In all lessons, learning objectives and success criteria are clearly displayed and discussed. The emphasis in lessons is to make teaching interactive and lively, to engage all children encouraging them to talk about mathematics. Lessons involve elements of:

- Instruction – giving information and structuring it well;
- Demonstrating – showing, describing and modelling mathematics using appropriate resources and visual displays;
- Explaining and illustrating – giving accurate and well-paced explanations;
- Questioning and discussing;
- Consolidating;
- Reflecting and evaluating responses – identifying mistakes and using them as positive teaching points;
- Summarising – reviewing mathematics that has been taught enabling children to focus on next steps

Refer to the appendix attached for Progression in Calculations.

<u>The aims of the 2014 National Curriculum are for our pupils to:</u>

- Become fluent in the fundamentals of mathematics through varied and frequent practice with complexity increasing over time.
- Develop conceptual understanding and ability to recall and apply knowledge rapidly and accurately.
- Reason mathematically; follow a line of enquiry, conjecture relationships and generalisations.
- Develop an argument, justification and proof by using mathematical language.
- Problem solve by applying knowledge to a variety of routine and non-routine problems. Breaking down problems into simpler steps and persevering in answering.

<u>Curriculum Organisation</u>

The National Curriculum sets out year-by-year programmes of study for key stages 1 and 2. This ensures continuity and progression in the teaching of mathematics.

The EYFS Statutory Framework 2014 sets standards for the learning, development and care of children from birth to five years old and supports an integrated approach to early learning. This is supported by the 'Development matters' non statutory guidance. The EYFS Framework in relation to mathematics aims for our pupils to:

- develop and improve their skills in counting
- understand and use numbers
- calculate simple addition and subtraction problems
- describe shapes, spaces, and measures

Using the National Curriculum document, each year group has created an overview showing the learning objectives and when they will be taught. This is a working document which adapts to the needs of the cohort. Coverage of the objectives is tracked over time to ensure the whole curriculum is covered.

Foundation Stage

- Numbers
- Shape, Space and Measure

Key Stage 1 (Years 1 and 2)

The principal focus of Maths 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 [for example, 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.

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 (Year 3 and 4)

The principal focus of Maths 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.
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 (Year 5 and 6)

The principal focus of Maths 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.

Curriculum management-Roles and Responsibilities

'The subject leader will facilitate the use of Maths in the following ways;

- By updating the policy and schemes of work
- By ordering/updating resources
- By providing CPD so that all staff are confident in how to teach the subject and have sufficient knowledge
- By keeping staff abreast of new developments
- By taking an overview of whole school planning to ensure that opportunities occur for pupils to develop language capability and that progression is taking place
- By supporting staff in developing pupils capability
- By attending appropriate courses to update knowledge of current developments and by keeping links with the advisory team
- By contributing to the School Improvement and Development plan on an annual basis
- By monitoring the curriculum

Links across the curriculum and exploiting opportunities

At Hawthorns, we believe Maths also contributes to many subjects and it is important that the children are given opportunities to apply and use Maths in real contexts. It is important that time is found in other subjects for pupils to develop their Maths skills further, e.g. there should be regular, carefully planned opportunities for Maths learning in Science and Technology, Design Technology and Art, and 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, Maths investigations and games.

Computing

ICT is used in various ways to support teaching and motivate children's learning. Each classroom has a laptop connected to an interactive whiteboard 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 Maths where appropriate. The school is equipped Chromebooks. All teachers and pupils have access to the Hawthorns Learning Platform. The school subscribes to Education City, Timestables Rockstars and Purple Mash to facilitate further practice of key skills online and at home.

Recording, assessment and reporting

Work will be assessed in line with the school's 'Teaching for Learning' Policy, using National Curriculum statements (2014). Step judgements are made throughout each term and entered into the assessment system at specific termly assessment points onto 'Target Tracker' to facilitate analysis of progress and achievement. Progress of individual children is reported to parents at the parent consultation evenings and in End of Year reports.

Inclusion

Children who have special needs in the area of Maths may receive support from the SENCo. Maths support is underpinned by specific intervention programmes such as SNAP On and Precision Teaching. Work will be differentiated within classes to take account of the range of abilities within each group. Differentiation may take the form of adult support, questions, textbooks, worksheets and tasks at different levels or by outcome.

Please refer to the SEND policy for further information.

More able children are provided with the opportunity to extend their mathematical skills through:

- Investigations involving **non-routine problems** (i.e. where the approach is not immediately obvious) **demonstrating creativity and imagination**.
- Opportunities to **explore and investigate mathematical contexts and structures**, to **communicate results clearly and systematically** and to **explain, generalise and prove**

Resources

A variety of resources are available in school. These include teachers' resources, books, web- based resources and audio/visual materials.

A range of practical equipment to support the children's learning is allocated to each year groups and these are kept in or near the classrooms.

Further resources relating to key whole school topics are stored in the Maths cupboard in the Year 6 area.

The Maths subject leader is responsible for maintaining resources, monitoring their use and organising storage, resource purchasing is in accordance with normal school procedures. The amount of budget reflects the degree of priority given to Maths in the School Improvement and Development plan.

Homework.

Homework is set in all year groups. Refer to the school Homework Policy.

Monitoring and review

Monitoring is carried out by the headteacher and the subject leader in the following ways:

- Informal discussion with staff and pupils
- Monitoring of planning
- Book scrutiny
- Classroom observation e.g. learning walks, drop ins and formal observations

Health and Safety

Refer to the schools Health and Safety Policy.

This policy was agreed on:

Review Date: