



WHITEHALL PRIMARY SCHOOL

Maths Policy

All pupils should become fluent in the fundamentals of mathematics, including through varied and frequent practice, so that pupils develop conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems. (National Curriculum, 2014)

Aims and Objectives

1.1 Mathematics helps us make sense of the world by building children's skills in calculation, reasoning, and problem-solving. It enables them to recognise and appreciate patterns and relationships in numbers and space, enriching their everyday experiences. As their understanding grows, children also come to value the contributions of various cultures to the development and practical applications of mathematics. Math combines concepts, facts, properties, rules, patterns, and processes to create a dynamic framework for learning. Our pupils are involved in a wide range of teaching for mastery activities which develops a sense of excitement and curiosity about the subject and overall, helps them to be fluent, confident mathematicians

1.2 At Whitehall Primary School we aim to:

- develop a positive attitude to maths as an interesting and attractive subject in which all children are able to gain confidence, success and pleasure;
- use correct mathematical language and vocabulary so they can express themselves fluently;
- develop mathematical fluency, skills, knowledge and rapid recall of basic number facts;
- To encourage logical reasoning, critical thinking, and the ability to communicate mathematical concepts clearly.
- develop a range of efficient and appropriate calculation strategies for all four operations;
- use maths in practical and real-life problems in order to effectively problem solve within school and, subsequently, adult life;
- embed the School's core values of curiosity, independence and aspiration through the teaching and learning of mathematics.

Mathematical Curriculum Planning

2.1 How we teach mathematics at Whitehall Primary School:

Pupils are taught mathematics in one or two lessons a day. A daily maths lesson of 20-60 minutes (as appropriate for age) which follows two of the following programmes (depending on the year group), Busy Ants Years 1-6 and NCETM Mastering Number Programme, Reception-Year 2.

2.3 Teaching for mastery

Through teaching for mastery, pupils deepen their understanding of mathematics, rather than memorising key procedures or resorting to rote learning. The three key principles of mastery are:

- conceptual understanding is key;
- children must be able to speak in full sentences applying correct mathematical vocabulary (stem sentences);

- can learn to think like mathematicians.

Our curriculum moves at a pace that provides pupils opportunities to ‘master’ skills and understanding before applying them in other contexts. Concrete – Pictorial – Abstract (CPA) One aspect of ‘Maths Mastery’ is the Concrete – Pictorial – Abstract (CPA) approach. This is implemented from Reception to Year 6. We use concrete and pictorial representations of numbers before moving on to the abstract. Building these steps across a lesson helps pupils better understand the value of digits and the relationship between numbers and the real world. The three stages of the CPA approach help secure pupils’ understanding of the mathematical concept they are learning to effectively develop strong, confident mental strategies.

NCETM Mastering Number Programme is a programme that aims to secure firm foundations in the development of good number sense for all children from Reception through to Year 1 and Year 2. Mastering Number sessions are short (10- 15 minutes) daily exercises to provide pupils daily opportunities to learn and develop their fluency in calculation and number.

2.2 We use the Collins Busy Ants scheme of work as the basis for implementing the statutory requirements of the programme of study for mathematics. Our daily plans list the specific learning objectives and success criteria for each lesson and give details of how the lessons are to be taught. We use a standard pro-forma for medium term planning. The mathematics plans are monitored regularly by the Senior Leadership Team and the Mathematics Curriculum Leader.

2.3 Lessons are delivered so that they build upon prior learning. We ensure that there are opportunities for children of all abilities to develop their reasoning skills and knowledge of each unit and we ensure that progression is evident, so that the children are increasingly challenged as they move through the school.

Pupils have access to TT Rockstars and in EYFS and KS1, pupils have access to NumBots to support them with their learning. Children can play in Story Mode, where emphasis is on mathematical concepts and is underpinned by a mastery approach to teaching. This mode features visual representations, procedural variation, and exposure to different calculation strategies and interleaved material in a carefully sequenced order; it is recommended pupils play in Story Mode for three minutes four to five times a week.

The Foundation Stage

3.1 Our Foundation Stage teachers use the Early Years Foundation Stage Curriculum to support their teaching of Mathematics in the Foundation Stage. National centre for Excellence in the teaching of Mathematics (NCETM) scheme is used to ensure that the children develop the essential knowledge and skills required as they complete their reception year and begin Key Stage One. The children have the opportunity to talk and communicate in a widening range of situations and to practise and extend their range of vocabulary and mathematical skills. The children explore, enjoy, learn about, and use Mathematics in a range of personalised situations. Mathematics is planned on a daily basis and assessed using the criteria from the Early Learning Goals. Mathematics is taught throughout each day and every day to give children opportunities to use their mathematical skills in real life situations. Patterns, shape, space and measures is also embedded within the Reception planning.

- 3.2** In Nursery, children's mathematical development is carefully planned-for, through adult-led focus activities and through opportunities for child initiated mathematical learning in all areas of provision. Planning from the Mastering Maths is in place to support children's mathematical development for the mathematics provision area.
- 3.3** Throughout the Foundation Stage, children are encouraged to use and develop mathematics through play in all areas of provision following the NCETM Mastering Number Programme. Mathematical resources such as number lines and Numicon are available throughout. Concepts of shape, space, direction, size, length, capacity and mass are developed through sand, water and tactile play, outdoor provision, small world play, storytelling and nursery rhymes, for example.

Teaching and Learning Styles

- 4.1** A variety of teaching and learning styles are used in our mathematics lessons. The principal aim is to develop children's knowledge, skills, understanding and confidence in mathematics. We do this by ensuring lessons have a flexible approach to ensure the pitch and pace suits the children. Teachers use their own judgement in how to approach teaching a concept and will incorporate group, paired or individual work as appropriate. Wherever possible, pupils are encouraged to use and apply their learning in everyday situations. During lessons children are encouraged to ask as well as answer mathematical questions. Careful planning of key questions, based on Bloom's Taxonomy, helps to promote higher order thinking skills. Key questions can also be identified in our daily lesson plans. Children have the opportunity to use a wide range of resources such as number lines, numicons, digit cards and small apparatus to support their daily work. Pupils use computing in mathematics lessons where it will enhance their learning, for example, through modelling ideas and methods or using the TTRS app. Each classroom has an interactive whiteboard to use during our daily mathematics lesson. The use of computing is identified in our medium and weekly plans. The Collins Busy Ants scheme of work is followed throughout the school. Additional resources and materials are also used, where appropriate, to support and extend learning.
- 4.2** At Whitehall Primary, the non-statutory guidance for the national curriculum in England document, Mathematics Guidance: Key Stage 1 and 2, is used to support long term, medium term and short-term planning and assessment. This document is used to inform Teachers on the progression of knowledge and skills and make concepts more accessible to all pupils.
- 4.3** In all classes there are children of differing mathematical ability. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies – in some lessons through adapted group work, and in other lessons by organising the children to work in pairs on open-ended problems or games. In Years 3-5, staff may choose to teach the cohort in ability groups/sets to allow more careful adapted work to take place. In Year 6 pupils are taught in four groups according to their mathematical ability. Support is given to the lower ability group with extension activities being provided for the high attaining ability group.
- 4.4** All pupils engage in:

- The development of mental strategies
- Written methods
- Practical work
- Investigational work
- Problem-solving
- Mathematical discussion using precise mathematical language.
- Consolidation of basic skills and routines

4.5 Specific methods of teaching calculations can be seen in our Calculation Policy.

4.6 At Whitehall Primary School we recognise the importance of establishing a secure foundation in mental calculation and recall of number facts before standard written methods are introduced. Following the introduction of KS1 and 2 Arithmetic SATs, we are continuing weekly mental maths tests which aims to increase fluency in all times tables and number bonds, through their recitation and application in a variety of formats.

4.7 We endeavour to set work that is challenging, motivating and encourages the pupils to talk about what they have been doing. We encourage pupils to work on the 'next steps' which teachers may set. In addition, teachers may provide additional questions, investigations and tasks that secures mastery and mastery with greater depth to challenge our more able and/or gifted mathematicians using the NCTEM Teaching for Mastery document.

Cross-Curricular Links

5.1 English

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, we encourage children to read and interpret problems in order to identify the mathematics involved. Key questioning gives children the opportunity to explain and present their work to others during the plenary session. Through assessment questions, children also have the opportunity to apply and justify their understanding of mathematical concepts through written responses. Younger children enjoy stories and rhymes that rely on counting and sequencing. Older children encounter mathematical vocabulary, graphs and charts when using non-fiction texts. Children use STEM sentence to explain reasoning and support explaining.

5.2 Computing and Science

Children use and apply mathematics in a variety of ways when solving problems using ICT and when hypothesising, experimenting and evaluating Scientific concepts. Younger children use Computing and Science to communicate results with appropriate mathematical symbols. Older children use Maths in Computing and Science to produce graphs and tables when explaining their results or when creating repeating patterns, such as tessellations. When working on control, children use standard and non-standard measures for distance and angle. They use simulations to identify patterns and relationships. In Year 6, children are taught algebra and learn how to solve and express algebraic equations which is the foundations of KS3 Science.

5.3 Foundation Subjects

The School's aim is for children to understand the importance of mathematics in everyday life. This is achieved through the teaching of Foundation subjects such as: Geography,

History, Art and Design, Design and Technology and Music where children can apply their mathematical knowledge and skills in workshops, activities, lessons and trips. The School's Maths Long Term Plans indicates where Mathematical links can be made to the cross-curricular areas.

5.4 Personal, Social and Health Education (PSHE)

Mathematics contributes to the teaching of PSHE as it helps children to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each other's views. We present older children with real-life situations, for example, the spending of money when out of school on educational visits/residential.

5.5 Spiritual, Moral, Social and Cultural development (SMSC)

The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We group children so that they learn to work collaboratively with one another, and we give them the chance to discuss their ideas and results.

Children with Special Educational Needs and Disabilities (SEND)

- 6.1** At Whitehall Primary School we aim to provide a broad and balanced education to all pupils. We provide learning opportunities that are matched to the needs of children with learning difficulties including children with dyslexic type difficulties. Work in mathematics takes into account the SEND targets set out for individual children in their Individual Education Plans. Effective pupil tracking enables identification of pupils who may benefit from early 'intervention' at an appropriate level. Children who are identified as being academically more able in mathematics, and who are on the school's More Able register, are also provided with extension activities and enrichment opportunities.

Children with English as an Additional Language (EAL)

- 7.1** Mathematics should be achievable and accessible to all. Our work in mathematics takes into account the needs of children who speak English as an Additional Language. We are aware that children may often need additional support with technical language, especially where no equivalent vocabulary exists for a particular concept. Wherever necessary, children are supported with mathematical language acquisition.

Display

- 8.1** We recognise the importance of displays in the teaching and learning of mathematics. Every class displays relevant mathematical information which is consistent throughout the school. This is appropriate to the age of the class. These may include number lines, number grids, vocabulary and other display materials that provide a visual support for the children's mental processes.

Assessment and recording

- 9.1** At Whitehall Primary School we recognise that assessment and moderation lies at the

heart of promoting learning and in raising standards of attainment. We further recognise that effective assessment for learning depends on using the information gained about our pupils.

The assessment procedures within our school include:

- Making ongoing assessments and responding appropriately to pupils during 'day-to-day' teaching. These 'immediate' responses are both verbal and are occasionally recorded within pupils' books. Written feedback in books is given in response to the success criteria of the lesson;
- Adjusting planning and teaching within units in response to pupils' performance;
- Using the 'assessment for learning' questions to check learning against objectives at the end of each unit of work;
- Children are encouraged to solve reasoning and problem-solving questions. The children's written responses is evidence of their understanding of the knowledge and skills learned during and at the end of a unit;
- The written response is marked against the English Marking Code. Punctuation, spellings and grammatical sentences are checked to ensure the children are articulating their understanding using the appropriate mathematical terminology and vocabulary;
- A coloured dot ('blue' – objective met, or 'red' working towards objective) on the children's work next to the learning objective, in line with the school's marking and feedback policy, and making comments on children's work where necessary;
- Moderating children's work across the school and across different schools during DG moderation and scrutinising children's books which takes place regularly by the Senior Leadership Team and the Mathematics Curriculum Leader;
- To ensure inclusion for those pupils working below the standard, pupils undertake a range of summative mini tests that allows Teachers to assess the progress children have made;
- For the Foundation Stage, continuous baseline assessments in mathematics, focusing very much on ongoing formative assessments using the Early Year Foundation Stage Profile;
- The National SATs for Key Stage 2, which inform the class teacher as to National Curriculum score and standard gained by each pupil;
- NTS Optional Maths Tests for Years 1,2, 3, 4 and 5 are administered at the end of each term to measure the progress children have made and identify gaps in knowledge and skills. Year 2 use the Optional SATs Maths Tests in the summer term to inform judgements made. The results are then discussed with pupils and targets are generated and reviewed every half term.

9.2.1 We recognise the importance of responding to children's work, whether orally or in writing. We seek to encourage children by highlighting positive achievements. This could include praise for use of a viable method even if the end result were incorrect. Children are given opportunities, and actively encouraged, to explain their work to others and to display their work when it seems appropriate. They are encouraged to value and respect the work of others.

Reporting

- 10.1** All parents receive an annual written report on which there is a summary of their child's effort and progress in mathematics over the year. At the end of KS2, each pupil's level of achievement against national standards is included as part of their annual written report.

Resources

- 11.1** We use a variety of published materials to facilitate the teaching of mathematics but recognises the need for the teaching of maths to be 'scheme assisted not scheme driven'. There are a range of resources available to support the teaching and learning of mathematics across the school. All classes use number lines, number squares and a wide variety of appropriate small apparatus to aid the teaching and learning in mathematics. Mathematical dictionaries are also available in all classrooms and a range of audio/visual aids. A wide range of software is available to support the teaching of mathematics including: Twinkl, NCETM, TTRS and Maths4fun. Materials are constantly updated, as new and relevant items become available. The Mathematics Curriculum Leader orders new resources after consultation with the staff.
- 11.2** General resources are kept in a clearly labelled central resource area. Some resources used in EYFS are kept in a separate resource area or within classrooms. The library contains a good supply of Mathematics books to support children's individual research. Whitehall Primary School uses the Collins Busy Ants scheme of work to support learning in both Key Stage 1 and Key Stage 2.

Monitoring and review

- 12.1** Monitoring of the standards of children's work and the quality of teaching in mathematics is the responsibility of the Senior Leadership Team and the Mathematics Curriculum Leader. The work of the Mathematics Curriculum Leader also involves supporting colleagues in the teaching of mathematics, being informed about the current developments in the subject, and providing a strategic lead and direction for the subject in the school. The mathematics Curriculum Leader gives the Headteacher and governors an annual Data Report in which the strengths and weaknesses within the subject are evaluated and indicates area for further improvement. The Mathematics Curriculum Leader has specially allocated time for fulfilling the vital task of reviewing samples of children's work and visiting classes to observe teaching in the subject.

The policy will be reviewed bi-annually with consultations made if amendments are necessary.

Links to other policies:

- Calculation Policy