Lingfield Primary School Maths 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).

Our Vision

Mathematics is not only an essential part of a balanced curriculum, but also a fundamental part of daily life. At Lingfield, we seek to promote a rich culture of Mathematics within our school which all children can access and thrive upon. We believe that all learners should become fluent in the fundamentals of mathematics, have the chance to build their understanding through reasoning mathematically, and learn to apply this understanding in problem solving situations. We encourage our children to develop a growth mindset, where mistakes are valued as an essential part of learning, so that our children develop enthusiastic and creative attitudes towards Mathematics that will stay with them throughout their lives.

Mastery Statement

Mastery is an ethos and an approach that leads to true understanding. It is therefore our belief that everyone can master Mathematics within their own working capacity, and the term is never used as a descriptor for those classed as 'more able' mathematicians. We are currently working towards a curriculum that is reflective of mastery in Mathematics and staff are undertaking CPD both within and outside of school to develop an understanding of this, with staff meeting time allocated to discuss and reflect on our developing mastery curriculum. We have made progress with our journey and are committed to giving each aspect of mastery sufficient time to embed, in order to ensure that what is implemented is maintained and has the desired impact.

Aims, Purpose and Breadth of Study

Mastery aims

The Mastery Approach is focused around teaching for depth rather than breadth; concepts are taught to the class until the majority have mastered them, whilst those children who are 'rapid graspers' will deepen understanding through looking for patterns, making connections through solving calculations in a variety of ways, and drawing upon number sense to make generalisations and solve problems.

It is recognised that staff are still undergoing training in Teaching for Mastery, so we have introduced a graduated approach. So far, we have developed our use of pictorial and concrete representatives within teaching to help children develop their conceptual understanding of mathematical ideas. The staff have received training on using structures and representations to support calculation and further work will take place to show how these can be used to support problem solving.

We have begun to develop mathematical fluency throughout the school and our use of small steps planning. We have identified that children are not sufficiently fluent with number facts, and underlying mathematical concepts, to apply them confidently in problem solving situations. Therefore, we will continue to focus on building fluency through explicit teaching, making connections, and using consistent structures to reveal the underlying mathematical relationships.

We have also developed a long-term plan that allows for small steps to be made on a journey throughout a strand of Maths. In the past year, we have trialled and now invested in Power Maths and will be using their planning and textbooks to help us sequence our learning journeys through the different mathematical strands.

This year, time will be allocated to support staff in understanding the different aspects of mastery interwoven into Power Maths and how this will enable our pupils to make good progress in mathematics.

The purpose of mathematics in our school is to develop:

- positive attitudes towards the subject and awareness of the relevance of mathematics in the real world;
- competence and confidence in using and applying mathematical knowledge, concepts and skills;
- an ability to solve problems, to reason, to think logically and to work systematically and accurately;
- initiative and motivation to work both independently and in cooperation with others;
- confident communication of maths where pupils ask and answer questions, openly share work and learn from mistakes;
- an ability to use and apply mathematics across the curriculum and in real life;
- an understanding of mathematics through a process of enquiry and investigation.

We aim to provide a stimulating and exciting learning environment that takes account of different learning styles and uses appropriate resources to maximise teaching and learning.

Breadth of study

Careful planning and preparation ensures that throughout the school children engage in:

- practical activities and games using a variety of resources;
- problem solving to challenge thinking;
- individual, paired, group and whole class learning and discussions;
- purposeful practise where time is given to apply their learning;
- open and closed tasks;
- a range of methods of calculating e.g. mental, pencil & paper and using a calculator;
- working with computers and iPads as mathematical tools.

Through our creative approach to teaching and learning, we also seek to explore and utilise further opportunities to use and apply mathematics across all subject areas.

The Curriculum

The aims of the 2014 National Curriculum are for our pupils to:

- 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.

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 James Cook Learning Trust has developed a curriculum from which teachers will plan from. This document uses the National Curriculum objectives and supplements them with prior learning, to allow teachers to identify starting points, which will be especially important in light of the Covid-19 situation. It also allows teachers to identify smaller steps, vocabulary, misconceptions and how to apply learning to problem solving. The document supports a mastery approach to teaching and learning. It ensures teachers work with the correct objectives for their year group and supports the idea of depth before breadth. It supports pupils working together as a whole group and provides opportunities to build reasoning and problem-solving elements into the curriculum.

The EYFS curriculum

The Statutory Framework for the Early Years Foundation Stage sets standards for the learning, development and care of children from birth to five years old. This is supported by 'Development matters.' We have used these documents to help us create our own Mathematics curriculum based on the needs of our children. Here at Lingfield we recognise that there are many factors which impact on Mathematical development. These include:

- Executive functions such as the ability to hold information in your mind and manipulate it, self-regulation and metacognition skills.
- Language skills - enabling effective communication of mathematical thinking and understanding mathematical language.
- Motor skills required for a variety of mathematical activities, for example, counting objects and writing numerals.

We have chosen the EYFS curriculum in order to:

- To develop a strong grounding in number so that our children develop the necessary building blocks to excel mathematically.
- To ensure our children can subitise and count confidently, developing a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers.
- To provide frequent and varied opportunities to build and apply this understanding using manipulatives and representations, as well as grids and frames for organising and creating patterns when count.
- To provide opportunities for children to develop knowledge and skills in shape, space and measures, developing thinking and reasoning skills and finding ways to record their finding.
- To provide opportunities for children to develop their spatial reasoning skills across all areas of mathematics.
- To understand and using a wide mathematical vocabulary from which mastery of mathematics is built.
- To develop positive attitudes and interests in mathematics, look for patterns and relationships, spotting connections, 'having a go', talking to adults and peers about what they notice and not being afraid to make mistakes.

Teachers' planning and organisation

Lessons

In all lessons, learning objectives are clearly shared. 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.
- Exploring – allowing children to formulate their own judgements and ideas prior to teaching.
- 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.

Long-term planning

At Lingfield, we use the Power Maths scheme of work for teaching, where mathematical strands are taught in blocks across three terms to deepen understanding. These blocks are mapped out on a document, with a note of which

mathematical facts can support learning within this block. ensure adequate time for this depth of coverage, the mathematical curriculum will be mapped out for each year group to demonstrate intent and determine impact.

Medium-term and short-term planning

Years 1-6 currently use a strand plan to allow them to clearly see a learning journey throughout a strand of mathematics. This planning is mostly supported via the Power Maths scheme, in order to help staff develop a small steps approach but other resources such as White Rose, NCETM, etc may be used in planning as well to incorporate additional lessons according to pupil need.

In nursery, the youngest children begin by focusing on these skills in the N1 Prime Areas Scheme of work. As our children progress through Nursery, they begin the N2 Maths Scheme, while our Reception children use a combination of the White Rose Maths Scheme and Power Maths Scheme. Plans are delivered with thought to where the children are now and what steps they need to take next. Time is allocated to consolidate learning, helping to build confidence in Maths. Teachers of the EYFS ensure that children learn through a mixture of adult-led and child-initiated activities both inside and outside, on a daily basis.
All classes have a daily mathematics lesson where possible. Lessons in KS1 and KS2 will vary according to pupil need but teachers generally use the framework of a 15-minute mental oral starter followed by a 60-minute lesson. Teachers of the EYFS ensure the children learn through a mixture of adult-led and child-initiated activities both inside and outside of the classroom.

In most years, classes have moved to mixed ability teaching and so the lesson pace has changed to identify and fill any gaps which may cause later difficulties and to ensure skills are built upon in smaller episodes of learning, moving towards a deep understanding over a period of time. The 'rapid graspers' in each year group will access challenges from resources such as the NCETM greater depth examples, more challenging White Rose problems, the iSee Reasoning series and other challenges from elsewhere.

Special educational needs & disabilities (SEND)

Daily mathematics lessons are inclusive to pupils with special educational needs and disabilities. Where required, children's SEN support plans incorporate suitable objectives from the National Curriculum for Mathematics or development Matters and teachers keep these in mind when planning work. These targets may be worked upon within the lesson as well as on a 1:1 basis outside the Mathematics lesson. Maths focused intervention in school helps children with gaps in their learning and mathematical understanding. These are delivered by trained support staff and overseen by the class teacher and the Maths Subject Leader. Within the daily mathematics lesson, teachers have a responsibility to not only provide differentiated activities to support children with SEND but also activities that provide sufficient challenge for children who are high achievers. It is the teachers' responsibility to ensure that all children are challenged at a level appropriate to their ability.

Equal Opportunities

Positive attitudes towards mathematics are encouraged, so that all children, regardless of race, gender, ability or special needs, including those for whom English is a second language, develop an enjoyment and confidence with mathematics. The aim is to ensure that everyone makes progress and gains positively from lessons and to plan inclusive lessons. Lessons involving visual, aural and kinaesthetic elements will benefit all children including those for whom English is an additional language (EAL). Differentiated questions are used in lessons to help children and planned support from Teaching Assistants and other adults.

Pupils' Records of work

Children are taught a variety of methods, in line with the school's calculation policy, for recording their work, and are encouraged to use the most appropriate and convenient. Children are encouraged to use mental strategies and their own jottings before resorting to more formal written methods. Children's own jottings to support their work is encouraged throughout all year groups.

In KS1, children record their work in the Power Maths workbooks whilst children in KS2 record their work in Maths books.

Marking

Our aims for maths marking and feedback are to:

- address misconceptions;
- develop a deeper understanding of what is being taught;
- to identify next steps in learning;
- to feed into our maths assessment system.

These will be achieved through the whole school marking system. Where appropriate, this will include high quality modelling which is informed by the school's calculations policy.

EYFS

'Marking' is carried out with the child/group and instant feedback is given with opportunity for the child to respond.

Key Stage 1 & 2

Correct work is marked with a pink tick and incorrect calculations are marked incorrect with a green dot or .ch. The .ch is a signal for the child to check and correct their work. Errors within calculations may be circled in green to alert pupils.

In Key Stage 2, it is routine practise for children to mark their own work. Whilst marking, they should try and correct their work or explain their mistakes. Following this, the class teacher should check over the books and tick the page to say they have seen it, adding comments if necessary (see next paragraph).

In Key Stage 2, during a lesson whilst live marking or when marking after a lesson, if the teacher identifies a misconception, the strategy will be modelled and annotated with green pen, or additional feedback will be given during the lesson. The child will be given an opportunity to try another example or to correct some of the work they have already done if appropriate. Children must be given time to correct their work whether this be at the end of a lesson when self-marking, at the beginning of the next lesson or at some other time in the school day. Feedback may also take place as part of a whole class consolidation lesson if needed. In Key Stage 1 this is done verbally.

To extend children and in order to develop and assess mastery, pupils will be given challenges in applying the strategy in different contexts. This can be done as a whole class on white boards and discussed or in the children's books.

This marking and feedback policy will be monitored and evaluated through book scrutinies and lesson observations.

Resources

In addition to the planning resources already mentioned, each class has a stock of concrete resources that are age appropriate. Additional mathematical equipment and resources are stored centrally in the music room and resource cupboard. The school also has access to several interactive, online platforms:

- MyMaths, a fully interactive online mathematics learning tool for children, is used by teachers to support mathematics learning both in class and at home. Children may be set homework on MyMaths in line with the homework policy and are encouraged by school to access it regularly at home to support areas of mathematical learning.
- Times Table Rockstars, an interactive program where children can practise rapid recall of multiplication facts, at home and in school. In Years 2-6, this platform is used at least weekly within lessons.
- Numbots, an interactive program where children can practise rapid recall of number facts, at home and in school.

Assessment

Assessment is an integral part of teaching and learning and is a continuous process. Teachers make assessments of children daily through:

- regular marking of work
- analysing errors and picking up on misconceptions
- asking questions and listening to answers
- facilitating and listening to discussions
- making observations

These ongoing assessments inform future planning and teaching. Lessons are adapted readily and short-term planning evaluated in light of these assessments. In addition to this, teachers make weekly and fortnightly assessments through the use of Weekly Skills and Rising Stars Arithmetic tests.

Medium-term and short-term assessment

Throughout the term, daily judgements are made by the class teacher to support them in making an assessment for each child in line with the assessment document. The statements from this document cover the mathematics objectives for the year group. This process of careful tracking adds to supports teachers when making a judgement for each child. Pupil Progress Meetings are timetabled each term for all classes. Progress of pupils is discussed, and interventions are considered and put in place where appropriate. Teachers also have the option to use the Half Termly Basic Skills test to support their judgements.

Long-term assessment

Y2 and Y6 complete the national tests (SATs) in May and previous SATs papers throughout the year. Years 1, 3, 4 and 5 complete the NFER tests in the Autumn Term, Spring Term and the Summer Term.

Assessments are used to inform future planning. However, it is recognised that depending on depth of coverage, sometimes the full content of an end of term test may not have been taught. Therefore, Autumn and Spring tests should be used as a means of informing planning and measuring progress against what has been taught. Tests should be used along with evidence in books and from lessons, to inform teacher's decisions and to pinpoint gaps in children's learning that needs consolidation or intervention, rather than to determine 'performance'. Only at the end of the year, when all the curriculum content has been covered, can the test be used to compare attainment against norms.

Data is analysed by class teachers to identify those who are not making the expected progress or those who have the potential to progress from one PAG to another, enabling the teacher to target any interventions that may be needed beyond quality first teaching. Whole class gaps are also identified and used to inform planning.

Moderation

Moderation by Maths Subject Lead and the SLT includes learning walks, book looks, enquiry walks and pupil perception surveys.

Throughout the school, any lesson that the Maths Lead observes will be done with the purpose of assessing the impact of the training delivered so far. Staff will be given immediate support in terms of moving forward after any observation. The level and areas of support required will help to inform future whole school and team CPD.

Role of the Maths Subject Leader

- To lead in the development of maths throughout the school.
- To monitor the planning, teaching and learning of mathematics throughout the school.
- To help raise standards in maths.
- To provide teachers with support in the teaching of mathematics.
- To provide staff with CPD opportunities in relation to maths within the confines of the budget and the School Improvement Plan.
- To monitor and maintain high quality resources.
- To keep up to date with new developments in the area of mathematics.

- To develop a mathematics mastery school.