



Subject : Maths

Person Responsible: Nicola Randall

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Reviewed Autumn 2019 unless significant changes are made to the curriculum

Curriculum Aims

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.

The National Curriculum for mathematics aims to ensure that all pupils:

become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language

can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Curriculum content and planning

Mathematics is a core subject in the National Curriculum and we use the statutory and non-statutory guidance to develop our planning. The National Curriculum for Mathematics gives a detailed outline of what we teach in the long term.

Our immersion model of medium term mathematics plans, are developed using the National Curriculum for Mathematics by Herts for Learning. They give details of the main teaching objectives for each term and define what we teach. They ensure an appropriate balance and distribution of work across each term. We follow a Herts for Learning produced calculation policy to ensure consistency of approach, enabling children to progress stage by stage through models and representations they recognise from previous teaching, This allows for deeper conceptual understanding and fluency. As children move at the pace appropriate to them, teachers will present strategies and equipment appropriate to children's level of understanding.

Early Years Foundation Stage

- In the Early Years Foundation Stage we relate mathematical aspects of the children's learning to the statements set out in the Early Years Outcomes document. The Mathematics area of learning underpins the curriculum planning for children aged three to five. We give all children ample opportunity to develop their understanding of number, calculation, measurement, pattern, shape and space, through varied play based activities that allow them to enjoy, explore, practise and talk confidently about mathematics.

Key stage 1 – years 1 and 2

- 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 [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.
- 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 and 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.
- 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 and 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

Contribution of mathematics to teaching in other curriculum areas

The teaching of Mathematics contributes to teaching in a number of other curriculum areas. For example, mathematical skills may be used in a science lesson to measure or collect data. The teaching of mathematics also supports the social development of our children through the way we expect them to work with each other in lessons discussing their ideas.

The role of the subject leader

- **To develop a common purpose and a shared culture**
Promoting and creating a shared vision for why mathematics is important, what we want for our pupils at Lodge Farm and what we all want to through the mathematics curriculum.
- **To improve outcomes for all learners**
Making an honest appraisal of what we are good at, what needs to be worked on and planning actions and developments accordingly. Monitoring will take place in the form of pupil and teacher voice, book and planning scrutiny and learning walks and lesson observations. Individual feedback is given to individual teachers and if necessary areas for development that would ensure that all teaching standards are being met. A date for a follow-up scrutiny is set to make certain all agreements are put into place.
- **To work and develop together as a team**
Developing and sustaining a culture of sharing teaching ideas, encouraging professional development and working together to develop practice.
- **To have efficient and well organised systems**
Setting up and maintaining good, efficient systems for the management and organisation of resources and data together with the documentation of agreed policy and practice. This will include reporting to SLT and governing bodies on current data.

Assessment and recording

Assessment in maths is ongoing and informs future teaching and learning. Children are assessed at the end of each academic year against age related criteria.

Short term assessment

At the end of every lesson children's work is checked.

If the child has misunderstood the task this is indicated with an M and during the feedback and marking session the following day the objective is **MODELLED** to the child or group of children again. This must result in a piece of work being seen in the child's book.

If a child is almost there, but you want more evidence that they fully understand, then it is marked with an R and give a task that **REINFORCES** the objective. This shouldn't be a repeat of the previous work but an opportunity to practise the skill in a slightly different way

If the child is secure in their understanding, it is marked with E and an **ENRICHMENT** activity that deepens their understanding is provided to the child.

Pupils must be given time to respond to this feedback at the beginning of every maths lesson. See marking and feedback policy for documents to support this.

All improvements made by children are acknowledged and initialed and dated by the teacher. Success criteria or 'Steps to Success' are also used when children are introduced to or are revisiting a new process driven skill. Time may also be given during lessons for self and peer assessment of work. Any peer assessed work is shown in purple pen.

Medium term assessment

In Nursery and Reception assessments against the statements from Early Years Outcomes are made throughout the year. Children's progress in Years 1 to 6 is monitored using HfL assessment grids. Once a term teachers are asked to assess, using the HfL steps tracking system and enter the details onto a SIMs mark-sheet. Half-termly pupil progress meetings are held with the Senior Leadership Team to monitor progress.

Special needs and equal opportunities

Teachers will identify barriers that are preventing pupils from moving on in their learning. They may be below their expected progress or age related expectation. An intervention programme is planned with the teaching assistant who will deliver a tailored support plan where the gap in children's learning is addressed. More specific provision is offered on a 1:1 basis for those children in need of an Individual Learning Plan. Advice from outside agencies is acted upon and adjustments made to the curriculum in order for a child to reach their full potential. Parents will be notified by the class teacher if their child is taking part in any additional support programme.

Lessons are planned to ensure that there is a low entry but high ceiling in order for all children (including the most able) to be stretched and challenged.

SMSC and British Values

Within Maths we try to develop the spiritual, moral, social and cultural well-being of the students through the teaching and learning within the lessons as well as instilling British Values. Our Maths teaching actively encourages risk taking which enables students to explore and try new ideas without the fear of failure.

Group Work encourages pupils to work as part of a team and helps them understand how different people solve problems in various ways. This promotes the British Values of **mutual respect** and support for one another. All pupils have the right to a safe and secure learning environment and teachers and pupils have the right to be treated with **respect**. Whilst Investigating and applying Maths to a range of situations, **tolerance** and resilience are promoted as pupils are encouraged to persevere, take risks and try different methods

Spiritual Development in Mathematics

Developing deep thinking and questioning the way in which the world works, promotes the spiritual growth of pupils. In Maths lessons pupils are always encouraged to delve deeper into their understanding of Mathematics and how it relates to the world around them.

Moral Development in Mathematics

In lessons, teachers encourage the pupils to accept responsibility for their own behaviour and respect for others within the lessons, and teach the pupils to understand the consequences of their actions on themselves and others around them. We encourage the pupils to develop self-confidence within mathematics, and to build their self-esteem within the subject.

Social Development in Mathematics

Problem solving skills and teamwork are fundamental to Mathematics, through creative thinking, discussion, explaining and presenting ideas. Pupils are always encouraged to develop their Mathematical reasoning skills, communicating with others and explaining concepts to each other. Self and peer reviewing are very important to enable pupils to have an accurate grasp of where they are and how they need to improve.

Cultural Development in Mathematics

Mathematics is a universal language with a myriad of cultural inputs throughout the ages. We also explore the Mathematics applied in different cultures such as Rangoli patterns, symmetry, tessellations and Islamic geometric patterns. The ability to use exchange rates for foreign travel are also important life skills students will learn. The skills of analysing data are to enable students to make sense of vast amounts of data available in the modern world around them.

Resources

All classrooms have a wide range of appropriate small apparatus and manipulatives. General maths equipment is stored in the resources room. The maths subject leader will monitor the use of resources used within the classroom and purchase any additional items from the maths curriculum budget.

Health and Safety

Appropriate risk assessments are written and reviewed where necessary. This includes activities that occur off site.

Review procedures

Monitoring of the standards of children's work and the quality of teaching in mathematics is the responsibility of the subject leader and the Senior Leadership Team. The work of the subject leader also involves supporting colleagues in their teaching, being informed about current developments in the subject, and providing a strategic lead and direction for mathematics in the school.