

Littledean Church of England Primary School

Mathematics Policy

Mathematics is vital to everyday life and has provided the solution to many intriguing problems over the centuries. Most forms of employment benefit from knowledge of mathematics and therefore an education in it provides a very important understanding of the world.

At Littledean C of E Primary School all children are encouraged to enjoy mathematics and become enthusiastic mathematicians by developing their skills, knowledge and understanding through practical experiences which have relevance and purpose in everyday situations. It is important that all children develop the skills of numeracy to become lifelong learners. They should be able to apply these skills in different situations across the curriculum and in daily living outside school.

Through the implementation of this policy, we **aim** to develop:

- A positive attitude towards maths and an awareness of the relevance of maths in the real world.
- Competence and confidence in pupils' mathematical knowledge, concepts and skills.
- A process of enquiry and experiment.
- An ability to solve problems and think logically in order to work systematically and accurately.
- An ability to work both independently and in cooperation with others.

Legal Framework

This policy has due regard to statutory guidance including, but not limited to, the following:

- DfE (2013) 'National curriculum in England: Mathematics programme of study'
- DfE (2017) 'Statutory framework for the early years foundation stage'

Early Years Provision

We follow the Statutory Framework for the EYFS (2021) and Development Matters (2021), focusing on the Mathematics ELGs (Early Learning Goals):

1. **Number** – Children will:
 - Have a deep understanding of numbers to 10.
 - Subitise (recognise quantities without counting) up to 5.
 - Automatically recall number bonds to 5 (and some to 10).
2. **Numerical Patterns** – Children will:
 - Verbally count beyond 20.
 - Compare quantities and use appropriate language.
 - Explore and represent patterns within numbers up to 10.

The National Curriculum (2014)

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

The National Curriculum sets out the year-by-year programmes of study for Key Stages 1 and 2. This ensures continuity and progression in the teaching of mathematics. Appendix A maps the progression of objectives across the year groups including pre-school and reception where the objectives are from the 'Statutory Framework for the early years foundation stage'

Key Stage 1

The principal focus of mathematics teaching in KS1 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 (e.g. 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, all pupils should know the number bonds to 20 and be precise in using and understanding place value. Pupils should also be able to read and spell mathematical vocabulary appropriate to their age.

Lower Key Stage 2 (years 3 and 4)

The principal focus of mathematics teaching in lower KS2 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 know their multiplication tables up to and including the 12 multiplication table. They should show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently.

Upper Key Stage 2 (years 5 and 6)

The principal focus of mathematics teaching in upper KS2 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.

Times Tables

At Littledean CE Primary School we strongly believe in the regular teaching and practice of multiplication tables. In both key stages 1 and 2 children learn multiplication facts and are regularly tested so that by the end of year 4 they are fluent in all multiplication tables to 12x12. This is to also include corresponding division facts, doubles and halves and in upper KS2 square and cube numbers.

Cross-Curricular Links

Mathematics contributes to many subjects and it is important the pupils are given opportunities to apply and use mathematics in real contexts across the curriculum. 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 DT, for the consideration of properties of shape and geometric patterns in DT and art, and for the collection and presentation of data in science, history and geography.

Teaching and Learning

Pupils will be taught to describe key characteristics and associated processes in common language, as well as understand and use technical terminology and specialist vocabulary. Pupils will undertake independent work and have the opportunity to work in groups and discuss ideas with fellow classmates.

A maths mastery approach is taken to the curriculum in which fluency comes from deep knowledge and practice. Structured questioning is used to ensure that pupils develop fluent technical proficiency and think deeply about the underpinning mathematical concepts. Through the CPA (concrete, pictorial, abstract) approach pupils in all year groups will develop a deep conceptual understanding as well as procedural understanding of new topics enabling pupils to make connections with the aim of ensuring that what is learnt is sustained over time. At Littledean CE Primary School, we do not prioritise between technical/procedural proficiency and conceptual understanding, we aim to develop these in parallel.

Planning

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp a deep conceptual understanding rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on. By the end of each key stage, pupils should

know, be able to apply and understand the subject matter, skills and processes specified in the curriculum.

Throughout Littledean CE Primary School, mathematics is taught as a discrete lesson and as part of cross-curricular themes, when appropriate. Teachers will ensure there is a daily focus on mental calculation, this may be within the main maths lesson or carried out at a different point in the day (e.g. during afternoon registration).

The National Curriculum for Mathematics 2014, Development Matters and the Early Learning Goals provide the long-term planning for mathematics taught in school.

Class teachers use an agreed school format when developing unit plans. Pre-learning tasks are used to assess where pupils currently are in their learning. From this, class teachers are able to plan which pupils need to spend more time on conceptual understanding and procedural fluency (fluency) and which are ready to move onto deepening their understanding through the mastery activities of reasoning and problem-solving. Key vocabulary is noted on planning and is introduced and revisited regularly to develop language acquisition.

Progression of calculation methods

We have a policy for progression in calculation methods to ensure continuity and consistency throughout the school.

Assessment and Reporting

Assessment is regarded as an integral part of teaching and learning and is a continuous process. It is the responsibility of the class teacher to assess all pupils in their class. This is achieved through formative and summative assessment.

Formative assessment is used daily through mini-plenaries, questioning, marking, TA feedback and pupil self-assessment. Teachers use this to inform future planning. We also use pre-learning tasks in order to plan children's individual starting points for units of work.

We have three summative assessment windows per year. During this time children are assessed against the expectations for the year they are in, unless they are working significantly below ARE in which case they will be assessed against the year group objectives they are working within. After each assessment window, pupil progress reviews are held with the head teacher and assessment, standards and progress leader. We use the Rising Stars National Test-Style Standardised Assessments (NTS) materials.

An EYFS profile will be completed for each pupil in the final term of the year in which they reach age five. The progress and development of pupils with the EYFS is assessed against the early learning goals outlined in the 'Statutory framework for the early years foundation stage'.

Pupils in year 6 complete national tests (SATs) in May.

The Multiplication Tables Check (MTC) will be taken by pupils at the end of year 4 in June.

Verbal reports will be provided at parent-teacher interviews during the autumn and spring terms. Parents will be provided with a written report about their child's progress during the summer term. These will include information on the pupil's attitude towards maths and their current mathematical attainment.

Marking

Pupils' work is marked according to the school's agreed marking policy.

Resources

Regularly used day-to-day maths resources (e.g. rulers, dice, number squares) will be stored in each classroom. Resources which are not required regularly (e.g. clocks, fractions manipulatives, measuring tools) are stored in labelled, plastic (red) boxes in the long corridor. Maths equipment and resources will be easily accessible to pupils during lessons.

The subject leader will undertake an audit of maths equipment and resources on an annual basis.

Display walls will be utilised and updated regularly in accordance with the area of maths being taught at the time.

Information and Computer Technology (ICT)

Calculators should only be introduced towards the end of Key Stage 2 to support pupils' conceptual understanding and exploration of more complex number problems, if written and mental arithmetic are secure. Teachers should use their judgement about when ICT tools should be used.

Roles and Responsibilities

The Governing Body monitor the impact of Mathematics in the curriculum through visits to the school, information contained in the Head Teacher's report and also through curriculum presentations which are held at the start of each Governing Body Meeting.

The subject leader is responsible for:

- preparing policy documents and progression maps for mathematics
- monitoring the teaching and learning of mathematics, providing support for staff where necessary
- ensuring the continuity and progression from year group to year group
- organising the deployment of resources and carrying out an annual audit of all maths-related resources
- communicating developments in the subject to all teaching staff
- leading staff meetings and providing staff members with appropriate training
- organising, providing and monitoring CPD opportunities in the subject
- collating assessment data and setting new priorities for the development of maths in subsequent years
- meeting with the maths link Governor to brief them standards in the subject and review progress towards SDP

The class teacher is responsible for:

- acting in accordance with this policy
- ensuring progression of pupils' mathematical skills, with due regard to the national curriculum
- planning lessons effectively, ensuring a range of teaching methods are used to cover the content of the national curriculum
- liaising with the subject leader about key topics, resources and support for individual pupils

- monitoring the progress of pupils in their class and reporting this three times per year to the subject leader and head teacher, and during parent-teacher interviews in the autumn and spring terms and written reports in the summer term
- reporting any concerns regarding the teaching of the subject to the subject leader or a member of the senior leadership team
- undertaking any training that is necessary in order to effectively teach the subject
- ensuring shared resources from the long corridor are well looked after and returned complete to the central base once the topic is complete.

Equal Opportunities

All pupils have equal access to the mathematics curriculum. Gender, learning ability, physical ability, ethnicity, linguistic ability and/or cultural circumstances will not impede pupils from accessing all maths lessons. Where it is inappropriate for a pupil to participate in a lesson because of reasons related to any of the factors previously mentioned, the lessons will be adapted to meet the pupil's needs. All efforts will be made to ensure that cultural and gender differences will be positively reflected in all lessons and teaching materials used.

Littledean CE Primary School aims to provide more academically-able pupils with the opportunity to extend their mathematical thinking through extension activities such as problem solving, investigative work and research of a mathematical nature.

Spoken Language

The national curriculum for mathematics reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument, or proof. They must be assisted in making their thinking clear to themselves as well as others and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

Homework

It is expected some form of mathematics is practiced daily (approximately 5-10mins) and recorded in the children's reading record – this could be through TTRockStars.

Monitoring and Review

This policy will be reviewed on an annual basis by the subject leader.

The subject leader will monitor the teaching and learning of mathematics throughout each academic year. The teaching of mathematics is monitored through:

- Scrutiny of books
- Lesson observations
- Scrutiny of planning
- Learning walks
- Pupil conferencing
- Discussion during staff meetings and INSET
- Tracking pupils' attainment and progress
- GAP analysis
- Regular meetings between the subject leader and Maths Link Governor

To be read in conjunction with the:

- ✓ Calculation method policy
- ✓ Teaching and learning policy
- ✓ Marking policy
- ✓ Assessment policy
- ✓ SEND policy

2024

