



September 2024

Mathematics Policy

1 Aims and objectives

1.1 It is our intent that children will learn through a mastery approach, which is deep, sustainable and achievable for all. They will have fluent knowledge and understanding of the number system with the ability to rapidly recall number facts, in addition to performing written and mental calculations efficiently. They will develop factual, conceptual and procedural fluency through a concrete, pictorial and abstract approach. Through a broad range of skills in applying mathematics, they will solve real life problems and reason about mathematical concepts and make connections. When faced with challenges in new and unusual contexts, children will think independently and persevere, showing confidence in success.

1.2 Our objectives in the teaching of mathematics are:

- to ensure children become **fluent** in the fundamentals of mathematics so that they are efficient in using and selecting the appropriate written algorithms and mental methods, underpinned by mathematical concepts
- to develop a child's ability to **solve problems by** applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios
- to develop a child's ability to be able to **reason mathematically** by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.
- ensuring that pupils build secure foundations in their knowledge and use of mathematical language through discussion, developing both the quality and variety of language used to make their mathematical thinking clear.

These will be delivered through the 5 key areas of the mastery approach: **representation and structure, mathematical thinking, fluency, variation and coherence.**

1.3 Essential characteristics of the subject expected to be achieved by our pupils:

- An understanding of the important concepts and an ability to make connections within mathematics.
- A broad range of skills in using and applying mathematics.
- Fluent knowledge and recall of number facts and the number system.
- The ability to show initiative in solving problems in a wide range of contexts, including the new or unusual.
- The ability to think independently and to persevere when faced with challenges, showing a confidence of success.

- The ability to embrace the value of learning from mistakes and false starts.
- The ability to reason, generalise and make sense of solutions.
- Fluency in performing written and mental calculations and mathematical techniques.
- A wide range of mathematical vocabulary.
- A commitment to, and passion for, the subject.

1.4 Threshold concepts expected to be understood by our pupils:

Know and use numbers

- This concept involves understanding the number system and how they are used in a wide variety of mathematical ways.

Add and subtract

- This concept involves understanding both the concepts and processes of addition and subtraction.

Multiply and divide

- This concept involves understanding both the concepts and processes of multiplication and division.

Use fractions

- This concept involves understanding the concept of part and whole and ways of calculating using it.

Understand the properties of shapes

- This concept involves recognising the names and properties of geometric shapes and angles.

Describe position, direction and movement

- This concept involves recognising various types of mathematical movements.

Use measures

- This concept involves becoming familiar with a range of measures, devices used for measuring and calculations.

Use statistics

- This concept involves interpreting, manipulating and presenting data in various ways.

Use algebra

- This concept involves recognising mathematical properties and relationships using symbolic representations.

2. Teaching and learning style

2.1 The school uses an interactive, whole class teaching model through the use of the Power Maths scheme. This encourages thinking and the development of precise mathematical language and allows children to deepen their understanding as far as they can. Year 6 can be whole class or in ability sets depending upon the needs of the cohort. They will follow a mix of Power Maths units and pre-planned mathematic activities for fluency, problem solving and reasoning.

2.2 We have a child-centred learning approach which builds one step at a time in lessons, embraces a Concrete, Pictorial, Abstract (C-P-A) model, avoids cognitive overload, builds on prior learning and helps pupils see patterns and make connections. Same-day intervention ensures sustained progress.

2.3 *Power Maths* enables children to build number fluency, confidence and understanding, step by step so that every child can achieve.

2.4 Use of computing: As technology changes, we will assess what the latest innovations offer in teaching mathematics. At present we use Times table Rockstars to enhance times table learning and rehearse the Year 4 times table test on the Chrome books as well as the interactive content of Power maths in daily lessons. We also set homework using Google Classroom, Century and Numbots.

2.5 Presentation: Mathematics work will be set out in accordance to the school's presentation policy (see current Lutley Presentation Policy).

3 Mathematics curriculum planning

Mathematics planning for all year groups will be based solely upon the learning objectives from the 2014 National Curriculum as they are presented in the Power Maths scheme of work. Attainment and progress will be tracked and monitored in line with Lutley's assessment procedures (please see section 8).

Mathematics curriculum planning for all year groups from September 2015

3.1 Mathematics is a core subject in the National Curriculum 2014.

- Each Programme of Study is set out year-by-year in mathematics in the Power Maths on-line guide for pedagogy and unit by unit breakdowns of each stage of progression.
- We are required to set out our school curriculum for mathematics on a yearly basis and make this available online.

3.2 It is the class teacher who reads the daily plans for the teaching of mathematics based on the year group objectives and the notes and guidance issued for these in the Power Maths teachers' guides. These daily plans list the specific learning objectives and expected outcomes for each lesson, and give details of how the lessons are to be taught. The class teacher subject leader often discuss them on both a formal and informal basis. More formal monitoring of mathematical planning and outcomes of learning will take place through the year.

3.5 New learning is built on the children's prior knowledge and understanding. While we give children of all abilities the opportunity to develop their skills, knowledge and understanding, we also plan progression to deepen understanding with an increasing challenge for those who have achieved their learning objective. We plan in same day interventions or next day interventions to support those who need help to achieve their learning objective. Teachers are aware of the expectations of the year above and below their year group in order to adjust lessons to suit the ability of the children and to help transition. These expectations are set out in the Power maths scheme of work and in the 'Ready to Progress' documents.

3.6 Where there is a need, teachers will pre-teach units using learning objectives taken from the 'Ready-to-Progress' documents for each year group, which outlines the prerequisites needed in order to achieve those targets.

4 Early Years Foundation Stage

4.1 Lutley EYFS follows EYFS framework and Development Matters. We teach mathematics in all our reception classes. As the part of the Early Years Foundation Stage Curriculum, we relate the mathematical aspects of the children's work to the objectives set out in the Early Years framework, which underpin the curriculum planning for children aged three to five. EYFS follow the framework using the Power Maths scheme of work and syllabus. We give all the children ample opportunity to develop their understanding of number, measurement, pattern, shape and space, through varied activities that allow them to enjoy, explore, practise and talk confidently about mathematics, both through play and during more formalised group learning.

5 Contribution of Mathematics to teaching in other curriculum areas

5.1 English

The teaching of English is paramount to children's understanding of mathematics as the importance of spoken language in pupils' development – linguistically, cognitively and socially – across the whole curriculum underpins their ability to communicate and understand mathematical ideas. In English lessons, too, maths can contribute: younger children enjoy stories and rhyme that rely on counting and sequencing, while older children encounter mathematical vocabulary, graphs and charts when reading non-fiction texts. However it is important that the precision of language used in maths is recognised and that certain words can have less precise meanings in English (for example: origin, minus or sum). We actively teach oracy skills throughout the school and throughout mathematics lessons, reinforcing these on the working display walls and as part of stem sentences used to explain mathematical thinking. By actively promoting the skills of reading, writing, speaking and listening, mathematics also develops the children's English skills (for example, in mathematics, we expect children to read and interpret problems, in order to identify the calculations or methods needed for solutions). They are also improving their command of English when they explain and present their work to others during lessons and for plenary sessions.

5.2 SMSC (spiritual, moral, social and cultural), PHSE and citizenship

The SMSC strand makes an important contribution to the teaching of mathematics. The work that children do outside their normal lessons encourages independent study and helps them 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 children with real-life situations in their mathematics work such as the spending of money, where we have strong links to outside providers to enrich the cultural capital of the subject. The study of famous mathematicians around the world contributes to the cultural development of our children.

5.3 Science

The teaching of Maths is directly linked to science as set out in the science National Curriculum 2014. The children are taught skills of data handling such as analysing and creating graphs, tables and working out mean, median and mode. Children are taught how to find trends in results and make statements based on a graph including those created on spreadsheets and using other forms of computing. They are taught how to measure and read scales with increasing accuracy from a range of measuring equipment such as thermometers, data loggers and timers.

6 Mathematics and computing

- 6.1 In Key Stage 1 children will understand what algorithms are (and how they are implemented as programs on digital devices) and that programs execute by following a sequence of instructions. They will write and test simple program sequences and use logical reasoning to predict the behaviour of simple programs. Children will organise, store, manipulate and retrieve data in a range of digital formats.
- In Key Stage 2 children will design and write programs, use sequences and work with variables. They will use logical reasoning to explain how a simple algorithm works and to detect and correct errors in algorithms and programs. They will describe how internet search engines find and store data. The children will also select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting valid data and information.
- Children will use the 'Rockstars' and 'Century' program as part of their on-line learning to enhance skills. Pathways will be set by the class teacher. These pathways may be accessed at school or at home where there is internet access. Where there is no access to internet connections at home, access to Rockstars and Century will be provided at school. Where Rockstars is set for homework, quality, equivalent, non-computer based work will be set instead.
- Where the school is closed due to unforeseen circumstances, such as weather events, then work will be set using Google Classwork for that child and maths lessons will be provided on-line.

7 Mathematics and inclusion

Teachers will set high expectations for all pupils and be aware of the requirements of the equal opportunities legislation that covers gender, race and disability. A minority of pupils will have particular requirements due to Special Educational Needs, disability or learning English as an additional language. We will take account of these requirements and make provision, where necessary, to support this diverse group of pupils. During end of key stage assessments, the school will utilise any special arrangements available to support individual pupils where these are necessary as judged by class teachers in consultation with the school leadership team and parents.

- 7.1 At our school, we teach mathematics to all children, whatever their ability and individual needs. Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our Mathematics teaching, we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents and those learning English as an additional language, and we take all reasonable steps to achieve this. For further details, see separate policies: Special Educational Needs; Disability Discrimination; Gifted and Talented Children.
- 7.2 When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, and differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child’s attainment and progress against expected outcomes. This ensures that our teaching is matched to the child’s needs.
- 7.3 Intervention may lead to the creation of an EHCP (Education Health and Care Plan) for children with special educational needs. The EHCP and/or IBP may include, as appropriate, specific targets relating to mathematics.
- 7.4 We enable all pupils to have access to the full range of activities involved in learning mathematics. Where children are to participate in activities outside the classroom, we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.
- 7.5 Children not achieving their targets at an expected rate will be highlighted as part of the monitoring cycle from half termly progress data (at Lutley this is the INTEGRIS system) and discussed between the Key Stage Assistant Head and the set or class teacher and SEND leader. This will be reported back to the Head of School. Appropriate intervention strategies will then be put in place within the set or class and a cause for concern will be raised with the SEND leader. Parents will be consulted at each stage.
- 7.6 If progress does not improve after this point, then further intervention strategies (intervention groups, individualised homework programmes, access to computing programs or apps, group of individual class support for example) will be put into place and a cause for concern will be raised to determine the barriers to learning. Parents will be consulted and informed where this is the case. Assessment, interventions and strategies will be discussed and implemented with the support of the SLT and the maths leader.
- 7.7 Some children who are not achieving their learning targets at the expected rate may become part of the ‘Assess- Plan – Do -Review’ programme where parents or carers will be asked to work in partnership with the school to address any barriers to learning which the child may have. Targets will be set to aid children overcome such barriers. These targets may be specifically for maths or have a significant impact on the child’s mathematical attainment (such as behaviour or comprehension skills). These targets will then be reviewed with the parents, the SEND leader and the child’s class or set teacher to judge their impact and inform any further intervention strategies (see Inclusion policy)
- 7.8 Children requiring specific support may be entered onto the schools Special Educational Needs register in consultation with SEND, SLT members and class and set teachers. Parents will be fully consulted during this process (see Inclusion policy).

- 7.9 TAs will take a full and active role in ensuring that all children are able to access the lesson and all activities within it. They will perform an assessment, monitoring and teaching role within the lesson and help where noted on an EHCP or IBP plan.
- 7.10 All class teachers and TAs will be aware of any child's EHCP or IBP or medical condition where this may have an impact upon the child's learning or well being.

8 Assessment

- 8.1 Using assessment for learning (AFL) teachers will assess children's work in Mathematics from three aspects (long-term, medium-term and short-term). We use short-term assessments to help us adjust our daily plans. These short-term assessments are closely matched to the teaching objectives. They also inform teachers of children's additional needs to be targeted outside of the maths lesson (i.e intervention in groups).
- 8.2 We make medium-term assessments to measure progress against the key objectives, and to help us plan the next unit of work. The year group attainment requirement from the National Curriculum 2014 will be used as the basis for these judgements. These in depth judgements are used to assess the remaining children in our sets or classes in years 1 and EYFS. We can then set targets for the next school year and make a summary of each child's progress before discussing it with parents and carers. We pass this information on to the next teacher at the end of the year, so that they can plan for the new school year. We make the long-term assessments with the help of end-of-year term and teacher assessments. We use the national tests for children in Year 2,4 and Year 6 and an end of year times tables test for Year 4 (the MTC). We use a range of assessment tools in all year groups including: end of unit tests, observational activities, book work activities, termly school-based assessment tests, pupil interviews and use of formal tests (half termly Power Maths assessments and termly Maths.Co.UK on-line assessments).
- 8.3 The mathematics leader and the SLT reviews books and assessment data at regular intervals and matches these to the attainment targets in the National Curriculum 2014 and to the programme of study for each year group. This demonstrates the expected level of achievement in mathematics in each year of the school and / or expected outcomes achieved. Teachers meet during the year to review individual examples of work against any national exemplification material produced by the DfE during moderation meetings within teams.
- 8.4 Use of Power Maths tests in all year groups at the end of every half term will help to inform the class teacher of the targets achieved by the child. These will be analysed by the class teacher, maths leader and SLT and progress reported to the SLT. Year 6 can use QCA test past papers, school produced termly assessments and end of unit assessments. All classes do an end of unit Power Maths test. Question level analysis is completed for all tests to inform planning and target setting. Children also sit the computer based Maths.Co.uk assessment, alongside all cohorts within the Hales Valley Trust.
- 8.7 Times table Rockstars is used to assess the children's fluency in times tables. A half termly times tables test is taken by all KS2 children and the results analysed by the maths team and SLT.
- 8.8 Where progress has become difficult for the child, or where a child has progressed above the rate of his / her set, then other provision will be put in place. In Year 6, if the cohort are in sets, then a change of set could be considered. Concerns for children not achieving in line with their set will be raised with the maths leader and assistant head prior to any set changes (which will take place after interventions have been pursued and communicated to parents). Where interventions have had little impact on progress a meeting with parents will take place leading to a change of set. Where children are judged to need to move up a set, this will also be discussed with the maths leader, Key Stage 2 Assistant Head and the parents prior to any set change. The Head of School and Assistant Head of School will also be consulted about any set changes and the reasons for these and the Executive Head of School will be consulted. The office staff will be informed so that the Integris system can be updated and the maths leader will amend Times Table Rock Star settings if needed.
- 8.9 Children in Year4 and Year 6 will take part in formal statutory SATs tests during the summer term if they are able to access the tests (judgements on this will be on-going through assessment procedures and in accordance with the SEND and Inclusion policies). Year 2 will take part in a voluntary end of KS1 SAT. These results will be submitted to, and shared with, the maths leader for analysis. This will be used to inform future school

improvement plans, to raise standards, address issues, inform staff CPD and develop the teaching and learning of maths. Children needing specialised access arrangements for the SATs, due to physical or learning needs, will be identified and the correct access arrangements will be submitted in line with statutory requirements. These access arrangements will be the responsibility of the maths leader and Key Stage Assistant Head in conjunction with the Head of School and the Assistant Head of School. Parents will be consulted about any decisions affecting their child and contacted by their child's class or set teacher in the first instance.

8.10 In Key Stage 1, children will be supported with their learning of, and assessed in, their knowledge of number bonds appropriate to their year group from the school's programme of study.

9 Resources

9.1 Working walls will be used to help the children develop their understanding of different concepts. Teachers will model methods, develop appropriate language, place into context and show next steps for the learning objective being taught.

9.2 Power Maths mandatory apparatus will be used in each lesson.

10 Monitoring and review

10.1 The coordination and planning of the mathematics curriculum are the responsibility of the subject leader, who also:

- supports colleagues in their teaching, by keeping informed about current developments in mathematics, and by providing a strategic lead and direction for this subject;
- gives the Executive Head of School and Head of School an annual summary report in which s/he evaluates the strengths and weaknesses in mathematics, and indicates areas for further improvement;
- uses specially allocated regular management time to review evidence of the children's work, conduct pupil interviews and to observe mathematics lessons across the school;
- Moderation of maths will take across the Key Stages during the year.
- Pupil voice interviews for maths and surveys about the curriculum including maths will be used to develop a pupil voice within the subject.

10.2 The quality of teaching and learning in mathematics is monitored and evaluated by the SLT and maths leader as part of the school's agreed cycle of self-evaluation.

10.3 The maths leader will analyse the SAT results from Year 6, the Year 4 MTC results, the Year 2 non-statutory SAT results and the assessment results from Years EYFS, 1, 3, 4, 5. They will report findings and action plan changes based on those findings of strengths and weaknesses.

11. Progress and intervention:

11.1 Intervention will take place based upon assessment procedures where the children are struggling to meet their targets and / or where progress is slow (no progress for 3 half terms) and will be shared with parents.

11.2 Progress is monitored every term and data is placed upon the Integris computer system by the class teacher termly. Senior leaders will monitor the progress for every child and this information will be shared with the class teacher at a pupil progress meeting. Children who are not making the expected progress will be highlighted and intervention strategies will be put in place for that child. These will then be reviewed at the next data input point.

11.3 Interventions will take the form of group work with TAs and teachers, small group work in class settings, deepening and strengthening activities, one to one sessions, withdrawal groups, computing sessions and homework (within the set homework policy).

12 Parental Involvement

- 12.2 Parents are provided with leaflets explaining the MTC in Year 4. These are available to all parents and are sent out during parent workshops and in classes for parents unable to attend workshops.
- 12.3 Individual child heat maps are given to parents at parents' evenings in order for them to help their child with times table learning at home by showing the gaps in their child's times table knowledge. They can then support at home through Times Table Rock Stars, Century or with games and intervention set tasks which are paper based if this is more appropriate for their home setting. In addition to this, government publications that are relevant are also shared with parents.
- 12.4 The school will report to parents about their child's progress in maths during each of two parents' evenings. We will deal with any concerns raised by parents as part of the school's on-going partnership with them and will share with them any concerns which we may have about their child's progress.
- 12.5 Communication with parents is carried out through the planner which is signed weekly. Times Tables and other maths facts are available to help parents in the planner.
- 12.6 Homework will be set as according to the school's homework policy and will be based upon the child's needs (see homework policy). Where mathematics homework is set for Rockstars, Century or any other form of computer-based task, then quality non-computer based homework will be set as an alternative for those without access to appropriate equipment.
- 12.7 Set changes in Year 6 will be communicated to parents after concerns have been raised about progress and understanding based on assessment procedures. The parents will have been informed about such concerns and interventions as they arise and a change of set will be discussed at a meeting with parents where it is in the best interests of the child's future progress.
- 12.8 SATs results for Year 6, 4 and non-statutory Year 2 and end of year teacher assessment will be reported to parents as will the end of year targets and KPI achievements for children in the other year groups. These will be part of the formal end of year reporting to parents.

13 Celebration of children's achievements

- 13.1 Worker of the week is chosen every week by each class teacher and can be for maths achievements. This is shared with the children during assembly and on the newsletter.
- 13.2 The Rockstar achievement board for times tables will be updated once every two weeks to celebrate children.
- 13.3 Our maths inter-schools competition teams will compete in inter-school maths championships and these will be celebrated on the board and in the newsletter.

14. More able children

- 14.1 The maths leader and SLT will monitor their progress through the year to ensure that high ability children based on their prior attainment group rating have sufficient challenge within their maths classes (or sets) to progress.
- 14.2 Where there are children who are exceptional mathematicians beyond the scope of deepening challenges provided as part of their year group, then, in consultation with parents and SLT, an individual programme of study will be provided by the school for the child. This will be monitored regularly by the maths teacher, maths leader and assistant head of phase for SLT.
- 14.3 Only a child with exceptional mathematical ability in Year 6 beyond that of KS2 deepening, will enter the Key Stage 3 programme of study. They will be guided through the higher bands of achievement and their SATs during their class lessons and through intervention groups again in consultation with their parents or carers.

15 Review and dissemination

- The policy will be shared with staff at the beginning of each school year

Policy on Mathematics

- The policy will be shared with the school's directors after each review or change
- The policy will be available to parents in hard copy from the school's office on request and will be published on line each year as part of the school's statutory requirements
- This policy will be reviewed at least every two years

Signed: L Hanley

Date: 23/09/24