

# Lucas Vale Primary School

## Mathematics Policy

Policy Updated: March 2020

Date for Next Update: March 2022

At Lucas Vale, we aim to inspire children to realise and reach their academic potential. This policy outlines the ways in which this is achieved through teaching and learning and management of mathematics. This policy aims to ensure continuity and progression in the learning and teaching of mathematics

### **The National Curriculum**

The national curriculum identifies three key strands in Mathematics.

**Fluency** – the ability to recall fundamental mathematical concepts and skills rapidly and accurately.

**Reasoning** – being able to explain an answer, prove something correct or incorrect, use enquiry skills to ask key questions, and make predictions and spot patterns within mathematics.

**Problem Solving** - applying mathematics to a variety of problems, including breaking down problems into a series of simpler steps and persevering in seeking different solutions.

### **The importance of Mathematics**

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 in most forms of employment. A high-quality mathematics education, therefore, provides a foundation for understanding the world, the ability to reason mathematically and a sense of enjoyment and curiosity about the subject. Mathematics is a proficiency which involves confidence and competence with numbers and measures. It requires an understanding of the number system, a repertoire of computational skills and an ability to solve number problems in a variety of ways in which information is gathered by counting and measuring and is presented in graphs, diagrams, charts and tables. Mathematics gives children a way of coming to terms with their environment. Practical tasks and real-life problems can be approached from a mathematical point of view.

Mathematics provides children with imaginative areas of exploration and study and gives them the materials upon which to exercise their mathematical skills. These skills are a necessary tool of everyday life. Mathematics should help children to develop an appreciation of, and enjoyment in, the subject itself; as well as a realisation of its role in other curriculum areas.

It is our belief that all pupils, regardless of ability, race or gender, should be encouraged and helped to realise their full potential in Mathematics. We want the children to see Mathematics as being relevant to their world and applicable to everyday life as well as being something that they will need as they move on through their school life and ultimately to the world of employment. To that end, a high-quality, inter-related and creative Mathematics experience should be one that develops the children's ability to think mathematically and one which allows them to apply the skills and knowledge to which they have been exposed in a variety of ways. We place a strong emphasis on teaching Mathematical skills and concepts in concrete and practical contexts. Teachers should use models and practical activities which enable the children to use and apply skills, knowledge and understanding in order for them to;

- Become **FLUENT and INQUISITIVE** learners
- **INDEPENDENT THINKER** in order to **REASON** and **EXPLAIN** mathematically
- **RESILIENT** problem solvers

This means that children need to be regularly exposed to opportunities involving increasingly complex problem solving which allows them to apply their Mathematics knowledge. In doing so, they should be encouraged to develop an argument and line of enquiry which they can prove and justify using mathematical vocabulary. This includes the ability to break down problems, into a series of steps.

## **Aims/Objectives**

Using the Programmes of Study from the National Curriculum the aims of mathematics are:

- To promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion
- To create a lively, exciting and stimulating environment in which all children can learn Mathematics
- Ensure the delivery of Mathematics is filled with cross curricular opportunities
- To promote confidence and competence with numbers and the number system and to use mathematical vocabulary to reason and explain
- To develop the ability to solve problems through decision making and reasoning in a range of contexts
- To develop a practical understanding of the ways in which information is gathered and presented.
- To explore features of shape and space and develop measuring skills in a range of contexts.
- For children to challenge and stretch themselves and take risks in their learning, solving 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.
- To promote the concept that acquiring mathematical knowledge and skills provides the foundation for understanding Mathematics in everyday life.

## **EYFS**

At the start of the year Mathematics is taught as a whole class daily lesson and guided Mathematics sessions take place each day. Children will then have the opportunity to explore mathematical concepts through a series of provisions, in and out of the early years learning environment. By the end of the year Mathematics will progress to being taught as a whole class 45minute lesson.

## **Expectations in a Maths lesson Years1-6**

Mathematics is taught daily, in and out of the classroom environment. We place a strong emphasis on the teaching of basic Mathematics skills, knowledge and understanding (times tables, calculation methods etc.) We are dedicated to addressing misconceptions emphasising “**why?**” to deepen children’s understanding of mathematical concepts.

- In the classrooms, working walls must be in place and easily accessible to children, appropriate resources, particularly concrete and pictorial apparatus to support children to grasp concepts.
- Mathematical vocabulary should be displayed so that children use this in the communication of their understanding.
- to encourage a positive attitude and enthusiasm towards mathematics for all groups of children.

Clear learning question and success criteria must shared in the lesson and evident in books.

- Children should self-assess against the learning objective and success criteria, giving them a sense of success. Children should know when they are meeting their targets and be self-assessing against those too.
- assessment for learning should occur throughout each Mathematics lesson, enabling teaching to be adapted where required.
- Children are reflective and are able to identify their own next steps and targets, as well as reflecting on lessons where they have enjoyed success.

## **Differentiation and support (Including provision for SEN, More Able, PP, EAL etc)**

- Setting challenging age-related reasoning and problem-solving tasks based on accurate assessment of pupils’ prior skills, knowledge and understanding.
- Where appropriate, using small, differentiated target steps for all children to move through the curriculum at a pace that suits their needs.

- Adult support and intervention, effectively assessing and checking pupils' understanding throughout lessons and offering feedback through different forms
- Ensuring that marking and constructive feedback is personal, frequent and of a consistently high quality. Feedback also includes a 'next step' for teachers to encourage children to think about their learning.
- Teachers use a range of practical-real life resources used to support all stages of learning within the class. - Intervention programmes/extra teacher support delivered where needed both in class and through extra sessions.

## Planning

- Teachers must have long, medium and short term plans in place.
- Planning should show clear evidence of progression. Teachers must ensure that lessons build upon children's prior knowledge and attainment. Learning in the classroom should directly inform the teacher of future lessons. Teachers must be prepared to adapt lessons accordingly.

At Lucas Vale, we recognise that there are different approaches to teaching different mathematical concepts. With this in mind, we use a range of strategies and techniques which will support children's understanding. We aim for children to understand **why** specific methods work better than others hence why we do not follow a specific calculations policy.

- At Lucas Vale, we follow the national curriculum but use White Rose as a guide.
- Teachers need to ensure that activities set provide children with the opportunities to achieve the success criteria for the lesson. **(Does the activity allow the children to achieve the learning intention that the teacher wants them to meet?)**
- Opportunities for problem-solving should be richly embedded across each week of Mathematics lessons. Children should have opportunities to hone their problem solving and enquiry skills throughout these lessons.
- Lessons should be designed to stretch children's thinking through questioning, with opportunities for children to prove their understanding.

- Children should not be rushed through different content (i.e. working from the year group above), instead, they should be offered a rich range of problems in varying contexts to show an increasingly secure and in-depth understanding.
- Different groups and individuals will be catered for by careful planning; this can take many different shapes including adult support, differentiated tasks and use of resources.
- Planning lessons to include challenge for every child. These challenges can take a range of different forms including practical activities, problem solving, explanations and providing opportunities where knowledge can be applied in different contexts.

The children are shown how to take care of equipment and resources and progressively encouraged to select materials suitable for the task in which they are engaged.

### **Marking and presentation**

- Teachers are expected to adhere to the school's marking policy. Teachers should be using green pen to highlight what the child has achieved well to and blue pen to indicate areas for improvements.
- Children **must** be given opportunity to respond to teachers' marking and feedback in purple pen or pencil (eg drawing diagrams) depending on what is expected

### **Leadership**

The subject leader is responsible for:

- updating the mathematics policy, and making sure it reflects current mathematic schemes and initiatives both nationally, and within Lucas Vale School
- Identifying key focuses from the SIP and ensuring that teaching and learning in Mathematics is helping Lucas Vale to meet these targets.
- to provide a strategic lead and direction for the subject- monitoring and checking that lessons include suitable challenge, and that problem solving, and reasoning skills are being built into lessons rather than taught in one off sessions. This can take the form of book scrutiny, lesson observation, learning walk and pupil interview.
- to support and offer advice to colleagues on issues related to the subject
- to monitor pupil progress in that subject area and discuss mathematics achievement within each class.

- to provide efficient resource management for the subject. It is the role of the Mathematics subject leader to keep up to date with developments in Mathematics at both national and local level. They review the way the subject is taught in the school and plan for improvement. This development planning links to whole-school objectives.

### **Parental Support and Homework**

We recognise that parents make a significant difference to the pupils' progress in Mathematics and encourage this essential partnership.

- We encourage parents to support their children with homework
- Check school website for updates.
- Attend workshops
- Liaise with class teachers regarding progress.
- Raise any concerns using a formal route

### **Outcomes Intended:**

- Develop the appropriate mathematical language associated with number, shape and position;
- Use and apply mathematics in practical tasks, in real life problems and in acquiring further knowledge, skills and understanding in the subject itself;
- Understand and use the four operations of number in relevant contexts;
- Understand relationships between numbers, learn basic number facts and develop a range of computational methods;
- Understand place value in our counting system and understand how it can be extended into numbers below zero.
- Use their mathematical skills in simple problem solving;
- Collect, interpret and represent data in tabular, graphical and diagrammatic form;
- Developmental methods of calculation;
- Recognise, describe and represent shapes and patterns in terms of their properties, location and movement;
- Measure quantities including length, area, volume/capacity, angle, temperature, time and mass;
- By the time children reach Year 6 they will be introduced to ratio/ proportion and language of algebra as a means for solving a variety of problems.

- Pupil to be at the Age-Related Expectations (ARE) at the end of their appropriate school year.