Confidence. Persistence. Getting Along. Organisation. Resilience.

# Mathematics Policy

## Curriculum Intent

### School Vision/Intent

*Our Maths curriculum is taken from the Red Rose Lancashire Scheme. It is based on the concept of mastery, where the founding principle is that all are capable of attaining in Maths. They build from the concrete, through to the pictorial and finally the abstract.*

*There are five key principles:*

1. *Coherence*
2. *Variation*
3. *Mathematical Thinking*
4. *Fluency*
5. *Representation and Structure*

From Spring 2024, this scheme forms the basis of our maths teaching in school, providing us with a structure which we adapt and personalise for our children.

We believe that children should have five key characteristics: resilience, persistence, getting along, organisation and confidence. The Red Rose Maths Scheme fits well into these five key characteristics, building on them and allowing children to blossom in their mathematical learning.

### Intent for Mathematics

*Edisford Primary School seeks to broaden children's experiences, ensuring that they build personal characteristics alongside strong academic progress. We do this through a first-hand learning approach wherever possible, so that children learn key characteristics for success, as well as teaching core skills and knowledge associated with each subject. In Maths, this means that we teach new concepts and address misconceptions through use of concrete representations, by using manipulatives.*

*Our Maths lessons at Edisford aim to teach children a fascination and curiosity about the mathematical world. Maths is vital within our lives and we believe that all children should be*

taught sound mathematical thinking with automaticity of key knowledge. We consider maths skills to lead to a strong foundation for the next stage of children's lives, giving them solid foundations in maths.

Our maths curriculum builds new knowledge in a spiral curriculum. This allows them to make links with prior knowledge and delve deeper as they progress through the units to build a holistic and deep understanding of the mathematical world.

## Aims of the Curriculum

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.

At Edisford, these aims are developed in tandem with each other. However, a key focus in every lesson is deep conceptual understanding, and it is from this that children will build their fluency, their ability to reason and apply this understanding when solving problems.

## Curriculum Organisation

At Edisford School we use the Red Rose Mastery Maths Scheme and have selected this because it is sequenced coherently across and within year groups. Children revisit topics on a termly basis building on their prior learning and moving towards clear end of year expectations. The key components of place value and calculation are explicitly taught and learned in each term. These topics are interspersed with other areas of the mathematics curriculum such as measurement including time and money, statistics and geometry. This allows children to apply their number knowledge in different contexts to build strong connections within mathematics and appreciate the subject's relevance to real life. It also supports children in transferring their learning to long term memory in order to unconsciously recall and apply it in different situations, including in different curriculum subjects.

In Early Years, the curriculum is based on the Lancashire Key Learning for Reception. This provides end of year expectations for the whole mathematics curriculum to ensure children are ready to access the National Curriculum in Year 1. This learning is organised into progressive steps that build a coherent sequence of learning across the year. It begins in the autumn term with children being immersed in the numbers 1-10 through the Numberland approach in which children develop a deep understanding of each number, including composition and how these numbers relate to each other.

The expectation is that all children will move through the content of our curriculum (in all Key Stages) at broadly the same pace. We maintain high expectations of all children and provide support and challenge as appropriate throughout all lessons and sequences of learning.
In some circumstances, children may follow a separate curriculum based on individual needs that would be detailed in their Individual Education Plans or EHCPs. However, this curriculum would still mirror the coherent and progressive sequences of learning for the other children in a different year group.

The mathematics curriculum is enriched at Edisford through cross-curricular experiences (e.g. Science with use of graphs and handling data), Endeavours and Flairs (cooking, weighing and measuring, Enterprise Endeavour (buying resources to make products, selling etc.), EYFS outdoor provision (balancing scales with sand, hopscotch, 3-D construction, patterns, counting, songs). As well as the discrete maths lesson, there are opportunities for children to rehearse mathematical knowledge and understanding at other times of the day (during registration or at the end of the day/start of the day).

**Year 6 Rockface**

Year 6 is taught in a different way to other year groups. In Year 6, teachers use the Rockface scheme of learning. Teachers focus on consolidating prior learning, whilst simultaneously introducing new objectives, so that children understand and retain as much as possible. Prior learning is continually revisited using flashcards and arithmetic 'dashes' to practise and hone their mathematical knowledge and skills. We believe that revising prior learning in this way helps to encourage automaticity, enabling children to become confident mathematicians.

Arithmetic

This is taught both discretely and as part of reasoning. Arithmetic dashes encourage children to develop procedural fluency, as they are practising a variety of questions in one sitting.

The ongoing revision of prior learning also allows teachers to pinpoint concepts that pupils find difficult or misconceptions. These can then be addressed before moving forward.

### Y6 Modelling and Scaffolding

Learning is modelled and scaffolded before children practise them independently. This is particularly important for reasoning and problem-solving, where learning is modelled and then repeated independently. The use of clone questions is a very important method which allows children to rehearse a particular reasoning question and then transfer this knowledge to the same type of question with different values and numbers.

### Y6 Assessment

Teachers simultaneously assess learning whilst modelling techniques and strategies. Discussions between pupil and teacher and pupil to pupil is encouraged to deepen understanding and identify and address misconceptions or gaps in learning. This cyclical feedback allows teachers to adapt lesson in real time, rather than after the fact. For example, discussion around measurement may uncover a need to address conversions. Therefore, targeted and specific revision can be done on the spot, as necessary.

### Y6 Structure and Sequencing

Whilst there is an overall framework to work from in Year 6, continual formative assessment appropriately feeds into planning and it is the adaptation of this sequencing that allows teaching to be dynamic and appropriate for learners. The focus is not moving through a sequence of lessons, but a sequence of understanding. Introducing, recapping, revising so that learning is embedded and children are confident when working independently.

## Curriculum Implementation

Mathematics is learned discretely through daily lessons in all year groups and is then applied across the curriculum and in continuous provision in EYFS.

A typical lesson in Years 1 to 6 following the Red Rose Mastery Maths Scheme would involve:

- a Starter activity to allow children to revisit, practise and refine previously learned content to support long term memory retention as well as developing children's mathematical fluency
- an Initial Problem in which children are introduced to the learning through a context. The children discuss how their existing knowledge can be applied to the context. Ideas and approaches are shared where misconceptions are identified and addressed, and effective approaches are shared and learned by the whole class

- Guided Learning that is interactive through the use of effective questioning that leads children to identify for themselves how to be successful with the learning. This is supported through the use of both conceptual and procedural variation and short tasks for the children to complete before moving on to the next step in learning
- an Independent Learning Task for the children to apply the learning from the guided parts. This task includes questions that build children's understanding and fluency and will also involve different elements of reasoning and solving problems.
- a Deeper Learning Task is included to allow some children to take their understanding to even greater depth than what would be expected. These tasks are often in the form of more complex reasoning or non-routine problem solving questions.
- throughout the lesson, children's thinking is supported and extended through the deliberate use of questioning by the adults.

A variety of approaches are used within our lessons including practical exploration, group discussion, paired work and individual work.

In Early Years, mathematics lessons consist of a short taught element to the whole class. This will be very practical, playful and involve a considerable amount of discussion including questions such as What can you see? What do you notice? Why do you think that happens? What would happen if...?
Children will then be given opportunities in continuous provision to apply this learning in different ways. Mathematics is also experienced through many daily routines and the adults take advantage of all the opportunities for mathematical learning in such activities as registration, snack time and tidying up.

**Planning**

The planning of the curriculum is organised in three phases:
- **long term planning** is demonstrated through the yearly overviews which show the organisation of the mathematics topics across the year for each year group, and the coverage and progression of knowledge, skills and understanding;
- **medium term planning** is demonstrated through the half termly overviews which reveal the progression of knowledge, skills and understanding within each topic, including where learning is revisited in Starters for year groups using the Red Rose Mastery Maths Scheme;
- **short term planning** is demonstrated through the teachers' lesson plans which explain how children will build on their existing understanding with the new learning specified as focused learning objectives for each given lesson. Teachers using the Red Rose Mastery Maths Scheme are expected to annotate the Lesson Plans and/or Teaching Tool notes to personalise the lesson for the children in their class.

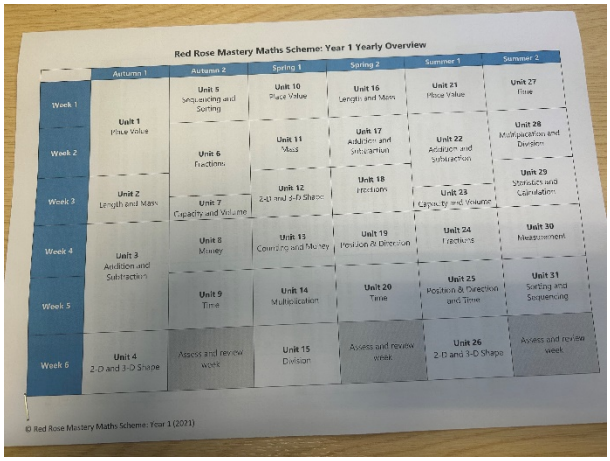
In EYFS the medium term plans take the form of sequences of learning that are organised into 'Big Ideas' which are then broken down into learning steps which also reference additional learning opportunities.

## Professional Development of Staff and Use of Resources

All staff using the Red Rose Mastery Maths Scheme have had training on the scheme and understand the principles of teaching for mastery and how to apply the scheme appropriately with their class. In all classes the mathematics learning is reliant on practical and visual approaches, and the links between these and the abstract representations. At Edisford, we are committed to ensuring all our staff are equipped and supported to deliver consistent high quality learning experiences for our children.

## Long Term Planning and Overviews

Each class has an overview so that they cover a good mix of mathematical topics. This means that learning is broken up into sizeable segments so that children can build on knowledge and understanding over time. For example, in Year 1, they start with Place Value, then Length and Mass, Addition and Subtraction and 2-D and 3-D Shape. They will then revisit Place Value in Spring 1. The idea is that they learn in the order of a priority of knowledge and understanding (teaching place value is necessary before reading length and mass measurements).




## Use of Intervention

Where children are at risk of falling behind, they are identified quickly. They work in either small groups or one-to-one both within class and in afternoon interventions.

## Use of Further Challenge (deeper learning)

As part of the mastery curriculum, all children have access to the deeper learning where needed. This is key so that all children can progress as far as possible through each maths lesson.

# Impact

## Monitoring of the Implementation

The subject leaders continuously monitor by observing teaching, work scrutiny, pupil interviews and walk-throughs. Both subject leaders work together to ensure continuity of approach through each key stage.

1. **Half Termly Learning Checks**

Every half term, teachers use a learning check assesses children's attainment and progress, checking how much of the new learning has been retained. This is used to inform the next steps and identify children who are at risk of falling behind.

2. **Twice Yearly Summative Assessments**

Children's learning is assessed summatively at two main points in the year:

**Mid-point (February)**

**End-point (June)**

We track pupils using a pupil tracker, recording whether they are:

- Not working at the Expected Standard
- At the Expected Standard
- Above the Expected Standard

## Formative Assessment

Teachers use their professional judgement to decide what children need to learn and when to move on to the next step of learning. Formative assessment (or responsive teaching) is a key feature of the mathematics lessons. Teachers use effective questioning to determine the extent of children's understanding before deciding on what the children need next (support, extension, next step).

## Summative Assessment

Children are assessed at the end of each term using teacher assessment supported by an arithmetic and a reasoning test. This allows teachers to check children's progress towards meeting the end of year expectations and organise further support where this is necessary. At the end of each half term, there are 'Learning Checks' that consist of a range of questions based on what the children have learned in that half term. These allow teachers to assess the children's understanding away from the point of teaching and to see how well the learning has been stored in the long term memory.