



This policy complies with the requirements of GDPR 2018 and all rules surrounding Safeguarding.

**This policy is complemented by the school's agreed Calculation Policy.**

### **Mathematics Policy Rationale**

Children are encouraged to enjoy Mathematics and become enthusiastic and curious Mathematicians by developing their skills, knowledge and understanding through practical experiences which have relevance and purpose in everyday situations. It is important that children develop the skills of Mathematics to become lifelong learners. They should be able to apply these skills in different situations across the curriculum and in daily living outside school.

### **Aims and Objectives**

- To use the support of models and images to draw out and support conceptual understanding
- To become fluent in the fundamentals of Mathematics through varied and frequent practice of increasingly complex problems over time
- To develop the ability to recall and apply knowledge rapidly and accurately.
- To develop the ability to solve problems through decision making and reasoning in a range of contexts.
- To develop mathematical language through speaking and listening, practical activities and recording work.
- To develop a Growth Mind set in Mathematics across the school.

### **Teaching and Learning Styles**

Teachers at Beaver Road Primary School use a variety of learning and teaching styles in Mathematics along with a range of strategies that cater for different types of learners.

These include:

- Use of models and images
- Use of computer software including iPads
- Use of the outdoor environment

- Effective questioning
- Pupil demonstration and explanation

A range of suitable learning opportunities are planned and used to cater for different abilities with children working independently, in pairs, in groups and as a whole class. The use of open-ended investigations provides excellent opportunities for differentiated outcomes. We use teaching assistants to support and extend children's learning. Maths lessons feature opportunities for talk in order to promote more explicit reasoning and understanding of concepts.

## Structure of a Lesson

We are delivering a mastery curriculum in Mathematics. In order to embed this our approach is the use of CPA, variation, cooperative learning, problem solving and relational understanding in order to secure and deepen understanding.

This means:

Whole class teaching in mixed ability groups and pairs.  
Longer time spent on Number.

The three part lesson:

**In Focus task** which involves one problem for all children to explore with concrete materials if needed. The teacher then takes the children's ideas and structures their thinking to clarify the concept and procedures being taught. If necessary a new concept/procedure is introduced at this stage.

The children may record their methods and reflect on their understanding with the teacher in the **Let's Learn** section, especially if there is new learning

**Guided practice** – more examples of the concept being taught are explored by children. The use of variation is vital here and enables teachers to aid children in making connections and understanding what are the important variables of a concept. During this part of the lesson children discuss and explain their reasoning.

**Independent Practice** – children continue to solve similar problems independently. Those children who need continued scaffolding will work in a guided group with the teacher.

Depending on the age group and which point in the topic the teaching is taking place, the lesson may be spread over two days.

Those children who have difficulty in understanding the concept are supported in a number of ways: concrete and visual resources, peer support, teacher questioning and time. If they are still unable to grasp the concept then the teacher intervenes by working either one to one or in a small group if the basics of a concept are not secure and will impede their learning journey. They may have a same day intervention with a teaching assistant in the afternoon to consolidate their understanding before the next day. There is also opportunity to allow for core number knowledge practice within the timetable.

Those children who have grasped the concept are challenged in a number of ways: to find several methods and evaluate the efficiency of methods, to explain their reasoning, spot patterns, write other problems for the same concept, solve a problem with variation.

The teaching assistant's role is to support the teacher by assessing children, ensuring children are on task and understand what they are supposed to do, modelling language, questioning in order to clarify children's thinking and make appropriate suggestions.

## **Planning**

The National Curriculum (September 2014) is the basis for implementing the statutory requirements for Mathematics. The expectation is that the majority of pupils will move through the year group Learning Objectives. Decisions about when to progress should always be based on the security of children's understanding of the small steps in the unit being taught and their readiness to progress to the next stage. Teachers plan for the full development of a topic in blocks across the year, based on the White Rose Maths Hub materials, considering: key learning points, likely misconceptions, a range of representations and examples, associated language and stem sentences and opportunities for greater depth and problem-solving. Pupils who grasp concepts rapidly will be challenged through being offered Mastery problems before being taught any new content. Those who are not sufficiently confident will consolidate their understanding through additional practice before moving on.

## **Times Tables**

The teaching of multiplication facts is consolidated through 'Times Tables Rockstars': an interactive, engaging and challenging online resource that children can access daily. Children should understand the multiplication facts and related division facts. They should be able to explain methods used and patterns identified, using mathematical language. Daily Fluency sessions enable assessment for learning:

<b>Years 1 and 2</b>	<b>2, 5 and 10</b>
<b>Year 3</b>	<b>3, 4 and 8</b>
<b>Year 4</b>	<b>up to 12 x 12</b>
<b>Year 5</b>	<b>all key multiplication facts</b>
<b>Year 6</b>	<b>all key multiplication facts</b>

## **Early Years Foundation Stage**

Mastery of mathematics in the Early Years will mostly be evident when the pupils initiate their mathematics successfully. They will use their maths consistently and without overt adult support when they are secure with a concept. (Early Years Handbook, December 2015).

Direct teaching could be with whole class or smaller groups and will be adult led and successful learning should be observed and assessed independent of this. Many of these units link with each other and with other Early Learning Goals such as ELG01 – Listening and Attention, ELG 2- Understanding and ELG 3 – Speaking.

The mastery approach to mathematics embraces the 'Characteristics of Effective Learning' as stated in Development Matters document.

Children should apply their mathematics into a variety of contexts and play situations to make connections. Pupils should use an appropriate and relevant vocabulary and should be actively encouraged to discuss their Maths and reason mathematically. Children should use well-chosen concrete, pictorial and iconic representations. They should recognise and be encouraged to use abstract symbols alongside less formal jottings and recordings.

<b>Characteristics of Effective Learning (Development Matters)</b>	<b>Principles of Mastery (NCTEM 2015)</b>
Playing and Exploring – Engagement <ul style="list-style-type: none"> <li>• Finding out and exploring</li> <li>• Playing with what they know</li> <li>• Being willing to ‘have a go’</li> </ul>	The reasoning behind the mathematical processes is emphasised. Teacher/pupil dialogue explores in detail how answers were obtained, the method/strategy worked and what might be the most efficient method/strategy. Teaching is underpinned by a belief of the importance of Maths and that the vast majority of children can succeed in the learning of mathematics in line with national expectations for the end of Key Stage.
Active learning – Motivation <ul style="list-style-type: none"> <li>• Being involved and concentrating</li> <li>• Keeping trying</li> <li>• Enjoying achieving what they set out to do</li> </ul>	Lessons are short but intense. Teacher led discussion is interspersed with short tasks and/or pupil to pupil or pupil to teacher discussion.
Creating and Thinking Critically – Thinking <ul style="list-style-type: none"> <li>• Having their own ideas</li> <li>• Making links</li> <li>• Choosing ways to do things</li> </ul>	Learning is broken down into small, connected steps building on what the pupils already know. There is regular interchange between concrete/contextual ideas and their abstract or symbolic representation.

### **Cross-Curricular Links**

The teaching of Mathematics contributes significantly to children’s understanding of other curriculum areas. Links are planned and taught appropriately. Cross curricular learning challenges allow teachers to extend the geographical, scientific, historical and Design and Technology questions they ask the children to include mathematical reasoning and problem solving within a meaningful context, all linked to the National Curriculum.

### **Marking and Feedback of Mathematics**

Children’s work is marked and feedback given according to the school’s agreed Feedback Policy.

## **Resources**

A range of mathematical resources are kept within each classroom for children to access freely. Other mathematical resources are stored centrally in the Maths store area. When using resources from the Maths cupboard teachers must ensure that everything is returned after use. If there are any breakages or resources have run out then the Mathematics coordinator must be notified so that orders can be placed. If new or additional resources are required then these can be ordered by the Mathematics coordinator subject to budget.

## **Assessment**

Assessment takes place in line with the school's agreed assessment policy and principles. Both formative and summative assessment are regarded as an integral part of teaching and learning and it is a continuous process. Assessment for learning through a range of challenging activities inform teachers' judgements against year group objectives. Teachers use pre-learning opportunities and then record children's progress against small steps within National Curriculum objectives and their attainment is recorded half termly on our bespoke assessment system. Teachers produce their own end of unit tests to monitor and assess basic fluency, application and greater depth. Teachers also use standardised assessments such as White Rose, Test Base and Rising Stars to inform their teaching and planning. Daily whole class teaching with opportunities for teacher, self and peer assessment enable pathways for personalised learning and intervention to inform next steps for moving children forward.

Each term detailed Pupil Progress Meetings are held with the Senior Leadership Team and class teachers where attainment and progress of each class is scrutinised and additional needs are identified. As a result, tailored provision and interventions are planned.

## **Monitoring**

Teaching staff monitor their pupils through observation, discussion, teacher assessment, marking work and testing.

The teaching of Mathematics is monitored through:

- Lesson observations
- Scrutiny of work
- Scrutiny of planning
- In-school and Locality moderation
- Tracking children's progress on Pupil Asset

## **Inclusion**

All children have equal access to the Mathematics curriculum. Our school strives to meet the needs of pupils with special educational needs, with disabilities, those who are very able, gifted and talented and those learning English as an Additional Language.

Further guidance can be found in the school's SEND and Inclusion Policy.

## **Informing Parents**

A Mathematics glossary for parents is available on the school website along with ways to support Mathematics at home. Workshops inform the parents about calculation methods for each year groups as well as visual strategies to aid problem-solving such as the Bar Model and Part-part Whole.