



## **Newbold School Maths Curriculum**

### **CURRICULUM (Intent)**

Newbold School aims to build happy, confident and resilient mathematicians by challenging children to develop a sense of curiosity and appreciation of mathematics. Through the positive 'I can' and 'I can't YET' statements, learners are taught to embrace concepts and problem solving with a growth mindset and belief that they can succeed.

Children are taught to engage in challenges with motivation, resilience and a critical, creative and enquiring mind. Through a rich and broad curriculum, learners are taught to:

- become fluent in the fundamentals of mathematics so that they can reflect on the knowledge and experience they have gained and master key concepts;
- build links and make rich connections across mathematical ideas so that they can reason mathematically, including being able to develop an argument, justification or proof using mathematical language.
- Solve increasingly sophisticated problems by applying their mathematics to a variety of problems, including breaking them down into a series of smaller steps, and persevering in seeking solutions.

### **TEACHING (Implementation)**

Newbold School's mathematics teaching provides a foundation for understanding the world and the ability to reason mathematically. Mathematics is taught as being integral to everyday life and is therefore taught with cross curricular links especially with science, geography and technology. Meaningful and purposeful lessons are taught to engage and inspire the children to see maths in action.

The teachers at Newbold school work with the Herts for Learning 'essential mathematics' scheme of work, and this is used throughout the school from Reception. Essentials Maths is a progressive framework which is built on a concrete - pictorial - abstract approach, ensuring secure foundations and deep understanding of mathematical concepts. Concepts are introduced in a highly scaffolded way, enabling all children to develop critical thinking skills, make mathematical connections and become confident mathematicians. Activities then incorporate 'rich' tasks in addition to worksheets. They often include open ended problems and therefore give children the opportunity to develop skills to a greater depth.

Since numbers are abstract ideas - all we can do is show representations of them.

- Concrete - Children are taught to see 'pictures of numbers'. Patterns of objects, Dienes, Cuisenaire rods, arrow cards and other manipulative equipment is used to give children a confident sense of 'number'. The experience and understanding of 'pattern' is essential for successful mental and written arithmetic, and for understanding algebra.
- Pictorial - Using patterns and equipment to represent each numeral can then develop into using imagery; representing the equipment through drawings and symbols. The patterns are structured so number relationships can be seen and experienced. This encourages an understanding of numbers and their relationships. Understanding numbers is reinforced through conversation and use in real-life contexts. This generalises learning and the meaning of mathematical concepts.
- Abstract – Children progress to develop fluency between representations of mathematical ideas, reasoning, problem solving and conceptual understanding for mastery. They are encouraged to develop enquiring minds and become more independent through being reflective and sharing ideas with their peers.

Our Herts for Learning scheme of work is supplemented by Times Tables Rockstars and Fluent in Five (Third Space Learning) to develop key mental maths skills, as well as NRICH and Hamilton Brookes to supplement problem solving and investigation challenges.

At Newbold School we actively encourage and demonstrate the correct use of mathematical vocabulary. 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. Talking assists in making their thinking clear to themselves as well as to others. Teachers ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

Newbold learners are able to develop their understanding and practice skills at a pace suited to their learning. They generally work through programmes of study at the same pace; however, those who grasp concepts rapidly are challenged through being offered rich and sophisticated problems and those who are not sufficiently fluent with earlier material are supported in consolidating their understanding through additional practice, before moving on. Planning is customised to the children in the class.

In Early Years, maths learning is part of continued provision both inside and outside to help build innate curiosity. Skills, knowledge and understanding of numbers, quantities, language and routine are developed by play-based learning, high quality interventions by staff, maths language and vocabulary, using manipulatives, routine, songs, stories and books, along with positive attitudes to help children have a go and talk about their ideas. Children focus on foundational skills like counting, sorting, problem-solving and spatial awareness to create a strong base for future maths mastery - teaching halves, pairs and patterns. In Reception, the children also have daily maths lessons to cover all the topics to help develop secure understanding of core concepts in order to achieve the Maths ELG and prepare them for maths teaching in KS1.

## **ACHIEVEMENT (Impact)**

Our children develop a wide range of efficient and accurate mathematical skills so that by the end of their studies at Newbold School most children will achieve end of year expectations for their year group and many achieve greater depth. Children will have gained a positive and engaged attitude towards maths and be confident in applying their maths skills in a range of familiar and unfamiliar contexts including seeing how maths relates to the real world.

The impact of the curriculum is monitored by regular informal assessment of children through their class work and carefully selected tasks to ensure they are ready to explore new concepts and develop skills further. These checkpoints, as well as teachers' marking of pupils' work, allow pupils' strengths and weaknesses to be quickly identified and decisions to be made about planning future mathematics teaching (Formative assessment).

Termly PUMA assessments (Progress in Understanding Mathematics Assessment) support us in assessing and tracking progress and learning under the national curriculum. These inform teaching and flag areas where children need further

support. They ensure that pupils are on track to meet the end-of-year and end-of Key-Stage expectations. (Summative assessment).

There is an end-of-Reception maths profile which assesses children against the ELGs for mathematics using formative observations and summative checks for a holistic view.

In this way, each individual feels personally ready to progress to the next stage of their maths learning.