Maths at Valley Road School

Intent.

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 for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject. (National Curriculum 2014).

The National Curriculum sets out year-by-year programmes of study for Key Stages 1 and 2. This ensures continuity and progression in the teaching of mathematics.

At Valley Road School we agree with the National Curriculum's definition and want our children to find maths interesting, stimulating and relevant. We want every child to leave us confident and competent in mathematics. To that end, our maths teaching follows the intentions of the National Curriculum. We teach fluency, reasoning and problem solving. We recognise that pupils need to learn basic number facts and acquire fluency in procedures, alongside developing conceptual understanding if they are to be able to solve increasingly complex problems in life and later in the workplace. We want all our pupils to:

- *Have positive attitudes towards mathematics, regardless of race, gender, ability or special needs, including those for whom English is a second language, and develop an enjoyment and confidence with mathematics.*
- become fluent in the fundamentals of mathematics through varied and frequent practice with complexity increasing over time
- develop conceptual understanding and ability to recall and apply knowledge rapidly and accurately
- reason mathematically; follow a line of enquiry, conjecture relationships and generalisations
- develop an argument, justification and proof by using mathematical language. problem solve by applying knowledge to a variety of routine and non-routine problems, breaking down problems into simpler steps and persevering in answering

The EYFS Statutory Framework 2021 sets standards for the learning, development and care of pupils from birth to five years old and supports an integrated approach to early learning.

The main aims of Mathematics in the EYFS:

- Children will develop a strong grounding in number
- Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers.
- Children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built.
- At Valley Road we will ensure the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures.

- Children will develop positive attitudes and interests in mathematics. They will do this by looking for patterns and relationships, spot connections and 'have a go' by talking to adults about what they notice and not be afraid to make mistakes.

Implementation.

At Valley Road, Maths is taught throughout the school from EYFS to Year 6, daily. It is generally taught as a discrete subject but is occasionally integrated within a topic.

We follow the Hamilton Trust Scheme of work, which offers a pathway of Blocks to cover the National Curriculum statutory requirements. These are organised into medium term plans for Autumn, Spring and Summer for each year groups. These plans contain the blocks which group subject matter together to allow children to focus their knowledge and skills by studying each topic in some depth, before revisiting it the following term. These schemes provide teachers with exemplification for mathematics objectives and are broken down into fluency, reasoning and problem solving, key aims of the National Curriculum. Embedded within this is the idea of always starting with CONCRETE (using physical objects and apparatus when introducing a new idea); Then having problems with a PICTORIAL representation; finally having ABSTRACT representations of the problem- using mathematical signs and symbols.

Hamilton supports a mastery approach to teaching and learning and have numbers at their heart. This ensures teachers stay in the required key stage and support the ideal of depth before breadth. The scheme support pupils working together as a whole group and provides plenty of time to build reasoning and problem-solving elements into the curriculum. When children struggle with particular concepts, Hamilton has EXTRA SUPPORT lessons which can help individuals to 'Keep Up' with their peers. Where individuals are working significantly behind their peer group, we use Sandwell Maths Assessment to identify specific number skills that require targeted teaching, and then plan an individual programme using this information.

Alongside Hamilton's Medium Term Plans, are our Calculation Strategies and Progression Documents (KS1, KS2 and Yr 6 Appendix) which set out the methods we will use to teach and record calculations. Calculation strategies set out methods of mental and written methods for addition, subtraction, multiplication and division from Year 1 through to Year 6. Articulated for each year group, these methods ensure consistency of teacher input and progression in pupil learning. They spell out the steps that children need to take to master these four operations. By ensuring that the language is pedagogically correct, the strategy helps teachers promote understanding in Key Stage 1, while laying the correct building blocks for understanding with greater sophistication in Key Stage 2. Although this is based on the Hamilton model, we have adjusted it for the needs of our school.

The addition/subtraction calculation strategy covers place value and its use in mental and written addition and subtraction from Year 1 through to Year 6. Counting on, counting up, number facts and compact and expanded column addition are progressively described and illustrated.

The multiplication/division calculation strategy covers mental and written multiplication and from Year 1 through to Year 6. Clever counting, grouping, doubling and halving, grid multiplication and short and long written division are progressively described and illustrated

By having a clear and consistent curriculum strategy throughout the school, teachers can ensure that children are hearing consistent language and using progressive methods that build from one year to the next, without requiring them to confront new pedagogy at every year or key stage transition. This

whole school approach will facilitate teacher communication about objectives, assessment and children's achievement.

In addition, we can help to ensure maximum progress by making sure we have consistency across the school.

- Images and Models, e.g. number lines, number grids, place value grids, bar model, *rather than each of us just using our favourites!*
- Layout… e.g. expanded and then compact addition, where we place 'carry' digits*, rather than us all using what we are used to ourselves!*
- … and 'Patter', e.g. how we characterise different strategies, such as Frog and Spider, or how we describe what is happening in a method with phrases like 'carry one' or 'move a ten to the ones column…'.

EYFS

We also use Hamilton Medium term plans for our reception children. The planning links the Early Learning goals and Development Matters Statements.

Hamilton's Reception Maths planning targets the key characteristics of effective early learning:

- Through Exploring and Playing, children independently engage with their peers and their environment.
- Active Learning group activities promote the motivation needed to be involved and to keep trying.
- Guided Creating and Thinking Critically supports development of problem-solving & reasoning skills.

Maths Out Loud: whole-class counting, repetitive chants, rhymes, songs and a linked story to enjoy together.

Although Hamilton provides the framework and consistency for our planning and teaching, we also use other good quality resources, such as White Rose Maths, Buzzard, Third Space Learning, Test Base, Times Tables Rockstars and Nrich. This ensures that there is plenty of variety and opportunities to enrich and support children's learning.

Impact

Our aim is to ensure that everyone makes progress and gains positively from lessons and, to plan inclusive lessons. Lessons involving lots of visual, aural and kinaesthetic elements will benefit all pupils including those for whom English is an Additional Language (EAL).

Differentiated questions are used in lessons to help pupils and planned support from teaching assistants and other adults. And where possible interventions and corrections are made as quickly as possible.

Assessment for Learning: With younger pupils, most of this will be through verbal feedback and will be immediate. As children begin to record work, marking of pupils' work is essential to ensure they make further progress. Work is marked against learning objectives, in line with the school marking policy, and includes next steps. Pupils are encouraged to self-assess their

work and given time to read teachers' comments and make corrections or improvements. Responses to marking are made as close to the work as possible, ideally at the start of the next lesson. Some pieces of work in mathematics can be marked by pupils themselves, exercises involving routine practice with support and guidance from the teacher.

Summative Assessment: From Year 2 onwards, we use Test-Base formal assessments, twice a year, to see how children are progressing. The data from these tests is then analysed so that as well as tracking progress for individual children, we can use this to inform our planning and put interventions in place quickly- for groups of children or even the whole year group.

We use Hamilton's Coverage Tracker, to record which units we have taught and any problems that have been encountered. This is an on-going document which can be updated and amended at any point during the year. On this we record the names of any children who have struggled significantly with the content, or those who cannot access it at all. This information is available for anyone to check, on TEAMS, and is a useful transition document for when classes move up to the next year group.

We want the overall impact and success of a well-planned and well taught maths curriculum, to lead to a lifelong enjoyment of learning maths and an understanding of its relevance. We aim to achieve outstanding progress over time, across the key stages and relative to each child's individual starting points. Our pupils will be able to show their enthusiasm and understanding through comments, in their written work, in Sharing Assemblies, through TEAMS and with conversations with adults in school and at home.