

This policy is intrinsically linked with and is informed by other school policies, including:

- Calculation policy – Including *Progression from Equipment to diagrams (KS1 follow the Power Maths Calculation Policy for KS1 and KS2 follow the White Rose Calculation Policy developed by the Surrey Plus Maths Hub)*
- Teaching and Learning policy
- Marking and Feedback policy
- Early Years policy – *Key Skills in the Early Years*
- Special Educational Needs policy

### **Background:**

At Cold Harbour, we are developing a mastery approach in the learning and teaching of mathematics. Since, September 2020, we have been working alongside the Enigma Maths Hub to support our journey. Last year (2020-21) we successfully took part in the *Mastery Readiness Programme* and this year we are ready to move into the *Developing stage*.

We are aware that gaps knowledge may have been compounded by the recent Coronavirus pandemic. We have therefore adjusted our approach to take this into account. Following the Spring 2021 lockdown, we recognised the need to *'take time'* to analyse gaps in children understanding. Using the Department for Education's *Ready to Progress* documents we took time over the summer term to analyse which end of year expectations our children had secured. This information was then passed onto new teachers in September to ensure that any gaps in understanding were understood. In September 2021, our INSET day focus looked at the Ofsted Research Review and what lessons could be learned.

### **Intent:**

At Cold Harbour, we are developing a mastery approach in the learning and teaching of mathematics. The main aim of such an approach is that it values *'going deeper'* to ensure that our children develop a secure knowledge of mathematical concepts, so that pupils are able to access age-appropriate ideas and we do not see gaps opening in their learning over time. Integral to this is the school's vision for mathematics where everyone believes *'I can do Maths'* and through a *'belief that by working hard at maths they can succeed.'* NCETM – [\*'The Essence of Maths Teaching for Mastery'\*](#) (2016)

Despite starting to develop a mastery approach in the learning and teaching of mathematics, we are aware that some children will have gaps in their pre-requisite knowledge. Consequently, **Maths Overviews** are developed each term to ensure gradual coverage of end of year expectations and where necessary opportunities to *'revisit skills'* are planned for. **Weekly planning** is developed to ensure the right length of time can be spent on each topic. Mastery is an integral part of this system, so that a broadening of knowledge and skills can take place as part of pupils' learning experiences. A weeks learning will have a familiar structure with children exploring new ideas with concrete apparatus at the start of the week, following teachers modelling of written methods and pictorial structures and finally applying skills (once secured) through reasoning and problem solving.

All lessons have a familiar structure with **Learning Intentions** clearly displayed for children to recognise ***'What they are learning'*** and in every lesson, learning is broken down into ***Steps for Success*** to ensure all learners can apply their learning successfully. Three **STEM sentences** will be familiar for the children to use to articulate their understanding:

*'I know that...'*, *'I know how...'* and *'I know when.'*

It is likely that those undertaking learning walks and/or monitoring lessons will see whole-class teaching following this structure. Since September 2021, our Foundation classes and KS1 have begun using the ***Power Maths curriculum mastery programme***.

In KS2, we continue to follow the **White Rose scheme of learning**. Pupils progress through curriculum content at broadly the same rate, although support/intervention and broader opportunities are provided to move groups of children on so they can:

- Grasp concepts and methods, e.g. through more varied use of practical equipment – particularly for lower attainers
- Be challenged through exposure to greater depth in their learning, e.g. through tackling more complex problems in different contexts - in the case of higher attainers/rapid graspers

Opportunities to challenge the children at the right level are found through differentiated tasks. Practise and consolidation play a central role in pupils' learning experiences. Although the 'pace' in lessons may appear to be slower, this allows for a deeper understanding of mathematical concepts through. Teacher support learners will **Toolkits** which break down learning into **small-steps children** can refer to and apply to their own work. Further challenge is provided to all children problem solving, which may or may not be linked with a real-life context.

### Implementation:

All the above decisions in terms of curriculum design and learning/teaching are inextricably linked to 'Continuing Professional Development' (CPD) for teaching staff. School leaders ensure teachers are given frequent opportunities to develop their pedagogical knowledge and all staff can observe best practice at school, at our partner school *Giles Brook* and in through the *Enigma Maths Hub*. All our work with partner organisations works to increase consistency in maths teaching across Years 1-6, whilst colleagues in Early Years are using Power Maths to adopt the mastery agenda in line with the new EYFS framework 2021.

In terms of assessment, and for the mastery approach to work, we understand the need for children to achieve key objectives for their current stage of learning. Such assessment take place weekly in **Show Me Books** giving children the opportunity to demonstrate consolidation of skills from the previous week. This informs teachers about the elements of learning pupils need to develop further. In lessons, teachers use precise questioning to check conceptual and procedural knowledge. They identify misconceptions before using these as **growth points** in learning, whilst also diagnosing who requires intervention, meaning that all children can gain additional support through our intervention programme. Assessment gathering is kept meaningful and is viewed as a diagnostic tool whereby collated information is used purposefully when planning pupils' next steps. **All staff** in Maths lessons work to identify misconceptions and support learners to further their understanding.

Through their lessons, teachers aim to promote connections within and across National Curriculum areas, so that children are taken deeper with their learning over time and recognise the interconnectedness of concepts. It is also intended that pupils revisit concepts, for example, multiplication within area when presented as an array model, which means that pupils absorb learning within their long-term memory. We have recently developed a 'Whole School approach to Teaching Times Tables.' We recognise that recall is not enough and have developed a clear progression for teaching times tables across the school to help children develop their 'automaticity' and ability to 'think' and 'apply' times table knowledge. This knowledge is further reinforced through home learning and the use of **Timetable Rock Stars**.

It should be noted that varied use of practical resources, structures and representations, plus questioning that requires deeper reasoning is used to ensure all children are supported/challenged appropriately. We believe that a progression in key representations and structures - *concrete equipment to diagrams* - is essential before moving learners onto abstract concepts. This is clearly laid out and exemplified in the school's calculation policy. This in turn supports the delivery of consistent approaches and equity of access for learners.

### Impact:

The attainment and progress of pupils' learning is tracked by class teachers and senior leaders, so that swift interventions can be put into place, including for children who have not always experienced a mastery approach in mathematics over time, and may include the use of pre-teaching.

In cases where children's learning is most effectively being deepened, the following descriptors can be seen in their learning:

Depth:

- describe it in his or her own words;
- represent it in a variety of ways (e.g. using concrete materials, pictures and symbols – the CPA approach)<sup>8</sup>
- explain it to someone else;
- make up his or her own examples (and non-examples) of it;
- see connections between it and other facts or ideas;
- recognise it in new situations and contexts;
- make use of it in various ways, including in new situations.<sup>9</sup>

Greater depth:

- solve problems of greater complexity (i.e. where the approach is not immediately obvious), demonstrating creativity and imagination;
- independently explore and investigate mathematical contexts and structures, communicate results clearly and systematically explain and generalise the mathematics.

NCETM – ['Teaching for Mastery: Questions, tasks and activities to support assessment'](#) (2015)

The school's Marking and Feedback policy allows children's levels of independence to be evident, as instances where pupils have the most secure knowledge and skills can most easily be recognised when they've applied learning independently and in a range of ways, including across different areas of the curriculum. On occasions when such extended depth has yet to be developed, an expected core impact of our curriculum is that pupils are at least ready to move on to the next key stage of learning.

Taking into account ACME's, ['Professional learning for all teachers of mathematics'](#) (2016) report, we aim to create , 'highly-effective teachers of mathematics have a positive disposition towards the subject and are comfortable in exploring mathematical ideas with their learners.'

Sarah Kotulecki  
Assistant Head Teacher & Maths Lead