

# Highfield Middle School

## Maths

### Intent, Implementation and Impact

### 2022

**‘Mathematics is a creative and highly interconnected 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.’ From *DfE mathematics programme of study: KS3 September 2013***

#### Intent

At Highfield the maths curriculum aims to be an ambitious, connected curriculum. Students are given the opportunities and support to develop their skills and confidence to become fluent mathematicians and are challenged to apply their knowledge to solve a variety of problems using concrete, abstract and pictorial representations. This approach ensures they develop fluency in mathematical concepts. They gain an understanding transferable to a variety of contexts, relating to real life and promoting links to other subjects such as Geography, Science, ICT. We aim for pupils to adopt a curious and questioning mindset. Pupils are equipped with the key maths and numeracy skills they need to succeed in later life.

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When pupils leave Highfield in Year 8, they will be confident, fluent, resilient, curious, adaptable and mathematically articulate.

Curriculum coverage is ensured through following the White Rose scheme of learning adapted appropriately to suit individual classes.

Ready To Progress criteria has been used to prioritise topics and assess prior knowledge before moving on. This was particularly relevant when returning to school following closures due to Covid.

The mastery approach means high expectations for all. Pupils are expected to deepen their understanding, explaining how or why and explaining their reasoning.

## Implementation

- TCLT works together to ensure a consistent approach to the teaching of Mathematics across all key stages. Regular trust meetings ensure a shared approach to calculation, language and teaching strategies. First schools in the trust have begun to embed the mastery approach to Mathematics teaching and at Highfield Middle School we continue this approach and are working with the Great North Maths Hub to support this.
- We identify starting points by baseline testing, for Year 5 on entry, which highlights strengths and weaknesses. Along with these and recap lessons aligned with the DfE Ready to Progress Criteria at Key Stage 2, staff identify gaps in prior knowledge to inform planning for individual classes.
- Teachers select from a range of resources including, but not limited to, White Rose to ensure appropriate support and challenge for individuals.
- Manipulatives and visual aids such as place value grids and counters, bar-models, times-tables grids, and number lines are used to support understanding.
- Our sequencing of lessons across Key Stages 2 and 3 follows the White Rose Maths curriculum and supports learning through the use of concrete and pictorial representations to support the abstract.
- New material is introduced in small steps with modelling, worked examples and opportunities for both guided and independent practice, a feature of Mathematics lessons. Pupils deepen their understanding with reasoning and problem solving as well as varied fluency within lessons. Teachers use purposeful questioning to gain feedback on how well material has been understood and then adjust their teaching appropriately.
- Our Mathematics curriculum is sequenced to build on prior learning by teaching topics in blocks, delivered in small steps and revisited through low stakes retrieval activities and interleaving of topics throughout the year. In years 5 and 6, the curriculum emphasises number skills first - beginning with place value then the 4 operations, ensuring that these are understood before being applied in the shape and statistics units. The Key Stage 3 curriculum begins with algebra and is carefully sequenced to build skills hierarchically and to provide opportunities to revisit and consolidate in other areas of the curriculum. Through whole school curriculum mapping, this sequencing is considered by other subject areas such as Science and Geography and is used to inform their planning.
- Pupils at Key Stage 2 receive 5 lessons per week, one of which has a focus on fluency - teaching and rehearsing key number facts and skills. Pupils consolidate their mental and written arithmetic skills including recall of multiplication facts. Key Stage 3 pupils receive 4 lessons per week - in the Autumn term, pupils in Band 2 have a weekly fluency lesson to address key skills missed due to the pandemic.
- Beyond Maths lessons, pupils take part in weekly Numeracy Ninjas sessions with their pastoral class to further reinforce and practice key mental and written arithmetic skills. Progress is rewarded by achieving Ninja belt stickers and certificates each term.
- We use a number of evidence-based strategies to support pupils' long-term learning: retrieval practice is a regular feature of Mathematics lessons, the small-steps approach ensures that the working memory is not overloaded and that pupils have the chance to master each skill through carefully guided practice. Weekly homework is used to supplement in-class learning and to improve fluency with multiplication tables and key skills.

- In Years 5 and 6, pupils have a Doodle Maths login and they complete weekly multiplication practice and tasks tailored to address their weaknesses. Weekly certificates, Highfield points and rewards in assemblies are used to motivate and reward pupils.
- Progress is assessed through topic tests, termly assessments, formative assessment within lessons and through the quality of written and verbal responses. Pupils receive regular, specific feedback, designed to move their learning forward; this may be verbal or written feedback given individually, or whole class feedback which they use to improve their own work.
- Short term, focused interventions in blocks of ~6 weeks are delivered to small groups of pupils to aid catch-up. These sessions take place during non-core subjects and are delivered by the Maths leads. Decisions on who the target pupils will be are based on referrals by the class teacher in conjunction with termly analysis of data. In addition to these catch-up sessions, pupils identified to have gaps in their key numeracy skills, attend shorter, weekly, 30 minute intervention sessions with a Teaching Assistant which focus on mental and written arithmetic skills.
- Standards within the Mathematics department are monitored by the Mathematics leads, Senior Leaders and School Improvement Partner through learning walks, book study and lesson observations.

## **Impact**

The impact will be measured by

- Teacher assessment of pupil progress within lessons and monitoring of progress through topic tests at the end of each unit.
- Baseline and progress testing to measure pupil attainment against curriculum standards (PT assessments).
- Summative assessments carried out at the end of each term for which pupils receive a grade using BTED. In Year 5 and 6, pupils' progress with arithmetic and reasoning are assessed separately and an overall BTED grade is awarded.
- Termly data input by class teachers of an overall BTED grade based on Teacher Assessment and results of end of term written assessments. Maths leads will then analyse this data to identify differences between key groups and plan to address attainment gaps and overcome barriers to learning.
- Key Stage 2 SATs
- End of year assessments