Mathematics: Intent, Implementation and Impact

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 (DFE-00180-2013)

The national curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Mathematics is vital for the life opportunities of our children. Our aim is for all children to think mathematically, enabling them to reason and solve problems in a range of contexts. Our intent at Hawthorn Primary School is that children "can do" maths and we want every child to experience a sense of awe and wonder as they solve a problem for the first time, discover different solutions and make links between different concepts. This is enhanced by providing pupils with a deep understanding of the subject through a concrete, pictorial and abstract approach.

Features of our curriculum at Hawthorn Primary

The National Curriculum is delivered using White Rose math's. We endeavor to meet the individual needs of our pupils with a flexible approach, therefore the White Rose curriculum is supplemented using appropriate resources to aid the learning of all pupils including pupils attending our resource base and SEND. We aim to challenge all pupils and enable more able pupils to achieve mastery maths. The White Rose termly overviews (highlighted in our curriculum booklet) ensure we implement full curriculum coverage. The termly overviews identifies the objectives for each topic block which are derived directly from the National Curriculum. The objectives in each block are broken down into a series of carefully planned small steps.

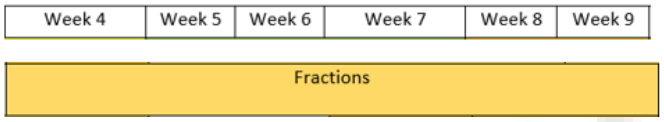
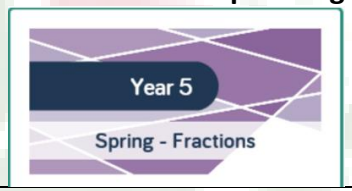
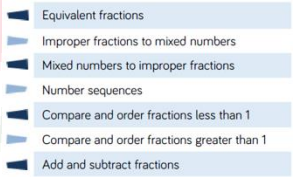
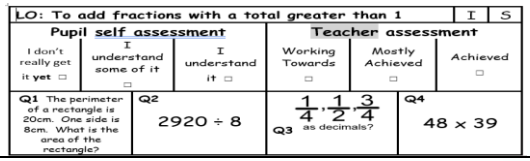
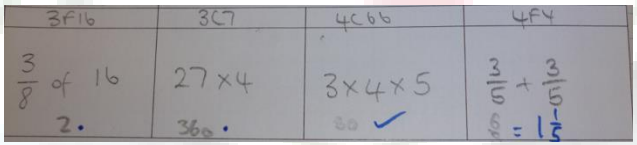
Implementation

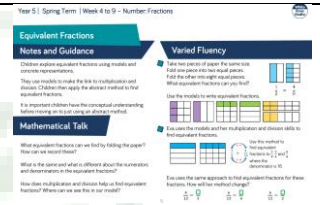
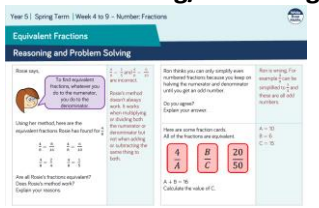
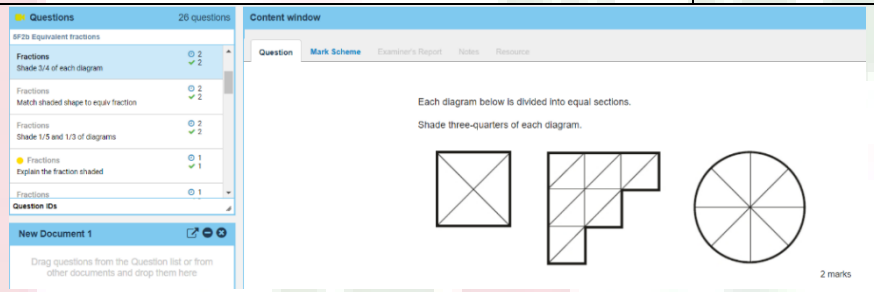
How are lessons taught?

The vision is that each lesson demonstrates the following features:

- A SOLA (start of lesson activity.) The aim of which is to keep arithmetic 'on the boil'
- A date and learning objective and, where possible, a context to the lesson.
- Modelling of the skill. Different representations, procedures and written methods shown (using concrete, pictorial and the abstract where necessary)
- Diagnostic questions used in daily lessons as AFL.
- Application through fluency with variation in task
- Application through problem solving and reasoning
- Weekly reasoning lessons (using Testbase and other suitable resources)
- White Rose 3.0 (updated September 2022)

How this looks from a planning point of view:

<table>
<tr>
<td>What and when to teach
 
</td>
<td>Scheme of work planning
 
</td>
<td>Sequence lessons and create LO's
 
</td>
</tr>
<tr>
<td>LO and SOLA
 
</td>
<td>SOLA
 
</td>
<td>Notes/Guidance/Vocabulary and fluency with diagnostic question for (AFL)</td>
</tr>
</table>

		
Problem solving/reasoning  **Supplemented by WRM powerpoints in addition with other outside resources.**		**Testbase (SAT's style questions)**

Resources

Planning will be supported by the use of White Rose, TT Rockstars, master the curriculum, NCETM Teaching for Mastery, Testbase and various other resources deemed to be appropriate for the teaching and learning of a particular strand or topic. Where appropriate, Concrete, Pictorial and Abstract methods (CPA approach) will be used to enhance teaching and learning. This will help children deepen their understanding of the concepts being taught and enhance their learning experience.

Assessment

Formative assessment involving questioning, in the moment marking, observation, challenge and diagnostic questions will be used in every lesson. At the end of each term, pupils will complete NTS tests. Teachers will record the outcomes on the online assessment system, Educater. These assessments will be examined in line with the end of term. These tests give standardized scores and identify gaps in teaching and learning. The tests also match the White Rose curriculum, so children are being tested on the topics they have been taught each term. Teachers meet half termly to discuss progress in maths. These discussions inform interventions required for the following half term.

Monitoring

Maths will be monitored by the maths team comprising of a range of practitioners across school, using a range of methods such as 'Book Looks' and feedback, learning walks and observations, pupil voice, pupil progress meetings and half termly discussions where progress and attainment will be discussed and next steps put into place.

Staff Development

INSET delivered by Maths team; Coaching, Mentoring, team-teaching and peer observations; Training courses

Impact Summer 2022

- Positive staff feedback (white Rose/workbooks) following staff INSET
- Monitoring assessment supports focused interventions through national tutoring and school led tutoring
- Improved end of key stage data Summer 2022
- Strong times table outcomes in Y4

Impact Summer 2023

- Assessment for learning using diagnostic questions used in daily lessons.
- Improved end of key stage data Summer 2023.

Next steps:

- Pupil voice
- Monitoring Friday reasoning sessions
- Monitoring work completed in books with a range of written work and adapted worksheets evidenced.
- Individualised approach for pupils with SEND working in the resource base.
- Monitoring of diagnostic questions (AFL) used within the curriculum.