



Maths; Intent, Implementation and Impact

Curriculum Intent

At Coundon Primary we understand that mathematics is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. Therefore, in teaching mathematics we are providing 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.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between different representations of mathematical ideas. At Coundon Primary our Maths curriculum is designed to build year on year in order to achieve end of Key Stage Outcomes. The aims of the curriculum are to ensure that all pupils become fluent in the fundamentals of Mathematics, can demonstrate the depth of understanding through coherent reasoning and apply their knowledge to problem solving. We take a 'mastery approach' to the teaching and learning of mathematics. We believe that all children can succeed in all areas of maths. Through this, all children are encouraged to believe in their ability to master maths and persevere when faced with challenge. We aim to spark curiosity, develop confidence and encourage a 'relational understanding' – whereby children are able to spot connections that exist between different mathematical topics. We want to create children with strong number sense, who can quickly recall facts including times tables and accurately calculate using the four operations. Whilst developing children's fluency in maths, we also look to apply mathematical skills in a range of situations to help develop a deep and long-term retention of learning. We seek to challenge children through more complex mathematical concepts, with the ultimate aim of developing well-rounded mathematicians, who can recall facts, show their fluency, and have the ability to reason and problem-solving.

In Early Years we aim to build firm foundations in numbers to 10 by putting them in context in an enriching and engaging environment. Children are regularly exposed to numbers in a wide range of contexts. In addition to this we explore mathematical concepts using the CPA approach which uses concrete, pictorial strategies which support children's conceptual understanding when applying their knowledge in an abstract approach. All of this enables children to become confident in their basic number skills as they enter Year 1. Progressing to Key Stage 1, children continue to develop their knowledge of maths by continuing to use the CPA approach and we ensure all concepts are anchored using concrete and pictorial strategies. This provides them with a solid foundation of number and number facts which bridges the gap to the abstract. In Year 2, the sequence of concrete, pictorial, abstract is embedded to allow children to have a good understanding of the procedures and concepts taught. Regular opportunities to apply mathematical language are provided throughout Key Stage 1 and lessons are planned and adapted to ensure challenge at all levels. Through Key Stage 2, the CPA approach is continued, and concepts are practised and revised for long-term acquisition. This is planned alongside a cohesive sequence of learning that links fluency in mathematical concepts together and provides challenge at all levels through regular reasoning and problem-solving opportunities. Progress is recorded by continual assessment through daily marking and half termly assessments.

Curriculum Implementation

At Coundon, children study mathematics on a daily basis covering a broad and balanced curriculum including elements of number, calculation, geometry, measures and statistics. As with all our subjects, maths lessons have three main teaching purposes: knowledge, fluency and depth. Teachers plan for a five-stage mathematics lesson, which is made up of: Recap, Discover, Think Together, Independent Practice and Reflect. When starting a lesson, children will recap learning from the previous day, week, month or year. The children will be faced with a discover problem or question that they must discuss and explore. Typically, children are given time to question and discuss with their classmates before giving an answer. Next, teachers clarify the problem by addressing misconceptions and questioning students about possible approaches. Teachers will then model further examples to help consolidate understanding. During practice, children will be engaging with tasks that challenge them and allow them to develop and apply their understanding of the mathematics skill. Teachers act as facilitators during practice and may have focus groups to provide targeted support. All children will then partake in a reflection of their understanding, this usually comes in the form of reasoning and problem-solving where teachers encourage further discussion and explanation.

The White Rose Maths scheme follows a block by-block approach to teaching mathematics, which is comprised in a Yearly Overview. These schemes have number at the heart, at Coundon we believe number forms the platform for developing competent mathematicians. Hence, a large proportion of time is allocated to reinforce number skills. We value the concept of depth before breadth, so children are given plenty of opportunity to challenge themselves by engaging in reasoning and problem solving that is specifically designed for their year group. Throughout our curriculum we follow the principles of the 'Mastery approach', including the 5 Big Ideas from the NCETM which are: Representation and Structure, Variation, Fluency, Mathematical Thinking and Coherence. In practice this means we are following a small steps approach where concepts are broken down into small parts that the children can understand and not suffer cognitive overload from. Through using White Rose and its associated Premium Resources, teachers can ensure, by working through the small step progressions, that the class have the opportunity to be successful and learn together. By employing low differentiation systems, teachers have high aspirations for all and are able to adapt the level of challenge by varying the amount of mathematical application that their children engage with.

At Coundon we use a Concrete, Pictorial and Abstract approach in these small steps when introducing and teaching concepts, so children have real understanding of a mathematical concept, but eventually can do the maths without any structures. In order to be able to do maths without any structures they need to be fluent in key mathematical facts and be able to apply these facts effectively. Variation also runs through the curriculum as it is important that children are exposed to a concept in variety of different ways to draw attention to important aspects of that concept. Variation also exists in the sequence of lessons so the children can pay attention to what changes and what stays the same throughout each of the small steps. Finally for the children to deeply understand the maths they are being taught, we ensure there is plenty of partner talk and opportunities for the children to reason and explain their ideas both verbally and written down, so it is not just passively received and then forgotten.

EYFS

Nursery – to ensure we meet the children's needs we are beginning to use the White Rose curriculum which meets all objectives from Development Matters. We use also use a mixture of different resources ensuring the children are exposed to numbers up to 10, within the learning environment in a variety of different ways and where appropriate and where the children are ready, they work individually and in small groups to further this knowledge.

Reception – to ensure we meet the needs of the national curriculum we will beginning to use Mastering Number to ensure all concepts of number are covered and supplement this with White Rose for shape, space and measure. This is done in a variety of different ways including continuous provision, individual/small group work and short whole class maths lessons.

Years 1 to 6

To meet the needs of the national curriculum we use the White Rose Curriculum. Alongside this, in Years 1 and 2 we are using Mastering Number to continue to build the children's arithmetic skills focusing on key number facts to 20. In Years 3, 4, 5 we have now introduced Mastering Number with a focus in Year 3 on recalling number facts learnt and in Year 4 and 5 with a focus on multiplication and division facts. In Year 6, children received a daily PAL (Practise and Learn) session which incorporates counting, learning key facts and overlearning. In addition, the children use Numbots and Times Table Rockstars as additional independent learning that can be done both in school and at home which focuses on their times tables.

From the 2019/20 academic year onwards, schools in England have been required to administer an online multiplication tables check (MTC) to Year 4 pupils. The purpose of the MTC is to determine whether pupils can recall their times tables fluently, which is essential for future success in mathematics. To support the children with their multiplication practice we use and promote 'Times Table Rockstars' as an online and fun learning platform which offers tailored times table development.

Assessment

Mathematics assessment is primarily recorded on Sonar. Assessment is also gathered through White Rose tests. End of block test assess the children's understanding within the topic block they have just been taught. Whereas, the end of term tests will provide the child's summative score for that term. Teachers track assessment scores and analyse tests. They use this data to identify gaps in the children's knowledge in order to be responsive and plan for the next steps in learning.

Many enrichment opportunities are being developed as part of the maths curriculum. Encouraging Coundon children to be involved in maths beyond their lessons helps them to understand the value of money, but also teaches them how maths can relate to real life. This includes celebrating Maths Week England, taking part in other themed maths days and receiving financial literacy workshops from Skint2Mint, in association with Coventry Building Society.

Curriculum Impact

Mathematical concepts or skills are mastered when a child can show understanding in multiple ways. Teachers plan a range of opportunities to use maths, sharing multiple representations that develop children's ability to recognise relationships and make connections in maths lessons.

Children can use mathematical language to explain their ideas, and can begin to apply their knowledge of a concept when engaging with unfamiliar problems. Pupils also use acquired vocabulary from maths lessons, have the skills to use methods independently and begin to show resilience when tackling difficult problems.

Children show a high level of pride in their presentation in books. They enjoy maths and want to develop their levels of mathematical understanding. They can demonstrate quick recall of facts and procedures, including the recollection of times tables, which support their learning across the curriculum.

Children are beginning to know how and why maths is used in the outside world and in the workplace. They are beginning to understand the different ways that maths can be used to support their future potential. At the end of each year, we expect the children to have achieved the expected standard for their year group. Some children will have progressed further and achieved greater

depth. Children who have gaps in their knowledge receive appropriate support and intervention. We are in a constant cycle of assessment and being responsive, to enable all of our Coundon mathematicians to succeed.

Ultimately, Coundon Primary children should have a secure understanding of maths which they can apply in different contexts. They should be confident rounded mathematicians, who can recall facts, show their fluency, and have the ability to reason and problem-solve.