Mathematics

INTENT

At Pitmaston we want children to develop a passion for Maths and enjoy the rich, balanced and progressive curriculum on offer. We view Maths as a creative discipline that is an essential aspect to everyday life, critical to Science, technology and engineering. In our school we use Maths to reason, problem solve and develop fluent conceptual understanding in each area of the Maths programmes of study that children can also apply to other areas of the curriculum, such as Science. Children become fluent in the fundamentals of Maths due to the structured curriculum, starting in the Early Years. This supports the ability to reason mathematically and develop an appreciation and sense of enjoyment and curiosity across Maths and other related disciplines.

We provide children with a foundation of understanding number, reasoning, thinking logically whilst building resilient, motivated and reflective learners through a, 'I CAN do it!' attitude, ensuring they are fully prepared for the future. The teaching and learning is frequently reviewed to ensure that it is ambitious, current and effective in meeting all learners' needs and that teachers are supported in the delivery of a progressive Mathematics curriculum from EYFS to Year 6.

We ensure that teachers and teaching assistants receive high quality CPD ensuring they are empowered with confidence in their skills and knowledge required to teach and they are encouraged to raise questions, seek support and request additional training if needed to ensure that this is always the case.

We encourage our children to make links between their learning in Mathematics and everyday life, ensuring that they can make connections that create a better sense of the world around them. Maths at Pitmaston develops inquisitive minds who have a secure mathematical foundation and who aren't afraid to take risks. By adopting a Mastery approach, through the delivery of the White Rose Scheme, we aspire for all children, regardless of their starting point, to maximise their academic achievement and leave Pitmaston with an appreciation, enthusiasm and love for Maths and a positive relationship with the subject.

IMPLEMENTATION

At Pitmaston we successfully deliver the well-recognised scheme, White Rose, from EYFS to Year 6. This ensures the National Curriculum Programmes of Study are covered through the following blocks of work:

- *Number - Place Value, Addition, Subtraction, Multiplication and Division, Fractions, Decimals, Percentages, Algebra, Ratio.*
- *Geometry – Shapes, Position and Direction, Properties of Shape.*
- *Measurement -Money, Time, Length and Height, Weight and Volume, Mass and Capacity, Area and Perimeter, Volume, Converting units, Temperature.*
- *Statistics*

White Rose yearly overviews set out the curriculum in blocks which enables the children to gain a secure understanding of each are of Maths through extended periods of time. We have developed our own personalised adapted curriculum to meet the needs of children working below their age related expectations. These adaptations ensure children make accelerated progress to keep up with their peers and meet the Ready to Progress criteria, detailed in the DfE's document, Mathematics Guidance Key Stages 1 and 2.

Daily Maths lessons are planned using the White Rose Schemes of learning and supporting materials. In addition to White Rose, Pitmaston develops calculations and problem solving through a discrete 10 minute session at the start of every lesson. These calculations are personalised by year groups and responsive to both formal and summative assessment. If needed, differentiated calculations are prepared for children working towards Ready to Progress standards, those working on the Adapted Curriculum and those on Birmingham Continuums. These sessions ensure there is a focus on

retrieval where key concepts are repeated, revised and reinforced. Children use this time to practice their calculation methods, following our calculation policy and have the opportunity to perfect their strategies including evaluating the effectiveness of their chosen methods.

Alongside the White Rose Materials, we also use materials from 3rd Space Learning to further add richness and variety to our maths curriculum. These materials are used from KS1 to KS2 allowing children to be exposed to different forms of problems where fluency, problem solving and reasoning can be accessed in different formats.

Times Table Rockstars is used in KS1 and KS2 to promote a love of times tables where a healthy competitive nature to learning times table facts is at the heart. Children are rewarded for their progress in both accuracy and speed of their times tables recall and enjoy the challenges Times Table Rockstars presents. Children aspire to know all of their times tables fluently by the end of Year 4 and half termly checks from Year 2 to Year 6 enables progress to be tracked and measured in this area.

Across school children work in mixed ability pairs to further allow them the opportunity to discuss their learning, ideas and methods. When problem solving, children are encouraged to 'APE' their answers (answer, prove and explain), as well as clearly communicate these to each other; this remains as one of our key focuses. In each lesson, children are encouraged to participate in 'partner talk' where they are required to justify, prove and explain their thinking aloud using correct mathematical vocabulary independently. The expectation is for all children remain in the class at all times, being exposed to quality first teaching and where groups identified can receive targeted support quickly and effectively by both the class teacher and teaching assistant, hence removing any ceiling on learning.

Feedback during lesson is given in a variety of ways by both the class teacher and teaching assistant, who throughout each lesson will each work with all groups of learners. Children are well informed and visible progress can be seen following verbal feedback in response to the 'live marking' given to rectify misconceptions that may arise.

Every child across school has access to a maths 'toolkit' every lesson which encompasses a range of manipulatives to support children with concrete and pictorial styles of learning before progressing to abstract. These toolkits as well as other Maths resources in school are audited, restocked and organised regularly ensuring that every child has access to high quality and accurate resources to support their learning. Children are familiar with the resources in their toolkits and use these independently to solve problems in a variety of ways, following the White Rose calculation continuums and progression documents.

Correct mathematical vocabulary is used by all teachers and this is discussed with the children at the start of each unit and in each lesson as appropriate and can be seen clearly displayed in each classroom on the working walls. A vocabulary progression ladder has been created that aligns to White Rose and supports children to learn, practise and apply the language of Maths accurately and confidently.

The White Rose calculation continuums are used to plan and deliver calculations with a focus on pictorial representation to reinforce key concepts being taught.

Assessments takes the form of daily assessment for learning, end of units tests and standardised NFER tests. At the end of each lesson teachers assess children's success in achieving the learning objective and complete a whole class assessment tracker. These assessments further inform planning and sequence of learning in subsequent lessons.

At Pitmaston, we strive to continually build upon our staff subject knowledge through high quality CPD which is delivered by both the subject leader, external courses and collaborative lesson study which takes place annually through the use or Iris. The Maths subject leader attends regular meetings with Maths leads from across the City, where best practice is shared and fed back to whole staff. Good practice is always shared between staff both in CPD, Phase meetings which occur fortnightly, and during moderation where teachers are encouraged to discuss these through professional conversation that informs teaching and learning across school.

Children who are working significantly below age related expectations follow the White Rose Scheme at a pitch suited to them, matched appropriately to the Birmingham Continuums lesson objectives.

IMPACT

The impact of our Maths curriculum is that children love Maths, are motivated and inspired to be mathematicians and understand the relevance and importance of it in relation to the real world. Our children know that to understand Maths and number is an essential life skill and that it will be relied upon in many areas of their future. Children feel excited by Maths as a result of the engaging delivery of lessons and enjoyable styles that cater for all learners. They know it is a subject where they can take risks, investigate and ask questions with a 'Can do it!' attitude. They understand that mistakes are part of learning and that this is, 'ok!'.

We are proud that by the end of Key Stage 2, the majority of our children leave school attaining the expected standard in Maths (in line with the national average).

Children can confidently use a range of resources to help them solve, justify and reason sophisticated maths problems and can choose these independently using mathematical vocabulary to explain their ideas in a variety of ways. Children can recall facts and procedures including recollection of the times tables and related division facts.

Each child, as a result of tailored and robust feedback, have a good understanding of their strengths in the subject and their individual areas for development including what they need to do in order to improve. Maths working walls support learning taking place in the classroom and are referred to each lesson to enhance the learning. Exercise books and workbooks show evidence of high quality work with high expectations for all learners regardless of their ability and show that children care, love and take pride in their learning. Activities show a range of opportunities for children to practise number, calculations including formal written methods, fluency and problem solving and reasoning. Our books show a progressive and ambitious curriculum offer from EYFS to Year 6.