



Maths Curriculum Rationale

Intent	Implementation	Impact
<p>At Rosehill, our approach to Maths is grounded in an absolute belief for every child to enjoy and succeed and then use these functional skills to support their lives. Every young person can achieve using combined elements of concrete, pictorial and abstract in order to support learning and apply their skills.</p> <p>We believe that the acquisition of Maths skills is an essential part of the pupils learning. Maths is the most international of all curriculum subjects, and mathematical understanding influences decision making in all areas of life—private, social, and civil.</p> <p>Maths education is a key to increasing the post-school and citizenship opportunities of young people. Research from many sources finds that many pupils struggle with Maths and become disaffected as they continually encounter obstacles to engagement. To counter these findings, we teach Maths at Rosehill at a level that is appropriate to the needs and motivation of each pupil. This is through discrete Maths lessons which are planned on a 3-year rolling plan based on a thematic approach. Maths is also taught in all learning situations that the pupils encounter such as playtime, snack time or lunchtime. Many opportunities are made to ensure that the pupils use their skills in practical situations such as cooking and shopping.</p> <p>Providing pupils with regular opportunities to make links with Maths in the real world and other curriculum areas means they leave Rosehill knowing how interconnected and fundamental Maths is to the world around us.</p>	<p>Our strongest pedagogy matters most for pupils whose learning is most vulnerable. The UNESCO publication Educational practices - effective pedagogy in Maths, draws on a wide range of research, the publication describes the kinds of pedagogical approaches that engage learners and leads to desirable outcomes in Maths. It is imperative, therefore, to understand what effective Maths teaching looks like for autistic learners and what teachers can do to empower learners to lead independent and fulfilling lives.</p> <p>Current research findings show that the quality of Maths instruction significantly affects the nature and outcomes of pupil learning.</p> <p>Drawing on research our pedagogical approach to Maths at Rosehill is;</p> <ul style="list-style-type: none"> • Know the Maths – the progression in Maths learning and key likely misconceptions • Find out the child’s Maths – their secure strategies, areas of strength and also their gaps • Plan to build on success – using knowledge of the child and their Maths to plan successful learning • Base in real world learning – use Maths strategies to develop independence • Create a positive and supportive environment of all pupils – all young people feel confident to make mistakes and learn • Build an ongoing, holistic understanding of pupils and their needs – working with other agencies and developing good relationships with our pupils to know their strengths and learning needs • Ensure all pupils have access to high quality teaching – based on teacher knowledge and engagement • Complement high quality teaching with carefully selected small group and one to one interventions • Work effectively with teaching assistants <p>New concepts are introduced by using this approach; concrete – pupils should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing. Pictorial – alongside</p>	<p>Formative assessment at Rosehill is informal, it contains data in the form of descriptions, comments and pathway objectives. Asking skilful questions throughout the lesson and the day informs teachers and checks for depth of understanding, identifying progress towards learning goals and diagnoses the root causes of misconceptions. Teachers skilfully aim the correct questions at each individual pupil. Pupils achievements against each objective are recorded on a software package called Earwig. Each objective is arranged into pathways; Engagement steps to Pathway 6. Topics for Maths include; number, measures and geometry.</p> <p>A range of monitoring and assessment takes place including; learning walks, book looks, planning looks and pupil voice.</p> <p>The data compiled by Earwig assessments means we can monitor progress over time and allows us to drill down into the data to find trends year on year and identify children who require more support.</p>






Curriculum









Pedagogical Approaches



Approach to Assessment

 <p>End Points</p>	<p>By the end of Key Stage 1 pupils will; join in rote counting beyond 10, recognise numerals up to 10 and relate them to sets of objects, compare sets to identify more/less/bigger/smaller, make sets up to 10 on request, count objects with increasing accuracy, begin to solve addition problems by combing two small sets and counting the total, begin to solve subtraction problems by taking away a number of objects from a set and counting the remainder, begin to use non-standard measures to compare and recognise differences, begin to recognise shapes in the environment.</p> <p>By the end of Key Stage 2 pupils will; read numerals 0 to 20 (and beyond), develop confidence and mental fluency with whole numbers and counting, count onwards and backwards from a given number, recall number facts to 10 (and beyond), identify one more and one less from any given number up to 20 (and beyond), count objects with confidence and accuracy, begin to work with numerals, words and practical resources to solve problems, use a range of measures to describe, compare and recognise differences in quantities, begin to use ordinal numbers (first, second, third), begin to estimate a number and check by counting, develop their ability to recognise, compare and sort different shapes using related vocabulary.</p> <p>Building upon prior learning by the end of KS3 pupils will have; become increasingly fluent with whole numbers and the four operations, recall number facts to 20 (and beyond), demonstrate a secure understanding of place value identifying tens and ones, develop ability to solve a range of problems, including simple fractions, using concrete, pictorial and abstract representations., develop mathematical reasoning in order to analyse shapes and their properties, and confidently describe the relationships between them, use measuring instruments with accuracy and make connections between measure and number, count in equal steps from 0 to 100 forwards and backwards, use mathematical vocabulary correctly in a range of contexts.</p> <p>By the end of KS4 Pupils will have; used place value to compare and order 2 and 3-digit numbers identifying hundreds, tens and ones, begin to recall some multiplication number facts, use mathematical knowledge and skills to solve problems with increasing independence.</p>	 <p>Teachers' Knowledge</p>	 <p>Performance Data & Pupil Progress</p>	<p>this, pupils should use pictorial representations. These representations can then be used to help reason and solve problems. Abstract – both concrete and pictorial representations should support pupils understanding of abstract methods.</p> <p>Researchers are paying increasing attention to teacher knowledge. Professional knowledge of teachers has been investigated from different angles. It is accepted that what teachers know is one of the most important influences on what happens in the classroom. (Stigler & Hiebert, 1999; Hiebert et al., 2003; Pepin 1999).</p> <p>At Rosehill, we place an importance on teacher knowledge and forms part of our School Development Plan.</p> <p>The Maths Lead attends NST network meetings and disseminates the information back to classroom teachers and TA's. We access support from the Math hub and work with similar schools for moderation. The Maths Lead also reads research published from the STEM learning website and Maths hubs, to ensure current research has been quality assured.</p> <p>The school uses the Earwig software to set ambitious targets for all learners. The most recent pupil performance data is analysed by the Maths Lead, where pupils progress can be tracked over time. Pupils can be identified for intervention. This data can also be used for monitoring.</p>

	<p>Building upon prior learning by the end of Post 16 students will; independently use skills and apply mathematical knowledge in practical contexts, demonstrate financial knowledge, skills and attitudes to support social development and independence, recognise symbols and mathematical representations and understand their significance in both the immediate and wider environment, use numerical information, gained from estimations, counting, comparing or measuring to make choices, plan and anticipate outcomes, communicate their choices to others, increasingly with explanations of their reasoning, use mathematical knowledge and understanding to systematically solve problems, by gathering, representing and analysing information (data).</p>				
 Sequencing	<p>The Maths curriculum is cumulative. The 3-year rolling plan is thematic and builds on previous learning. Each half term has a number-based topic followed by either a geometry, statistics or measures topic. The rolling plan has number at its heart. A large proportion of time is spent reinforcing number to build competency. The plans ensure that pupils have opportunities to build reasoning and problem-solving elements in the curriculum. While building functional skills is fundamental in every key stage, key stage five is our final opportunity to ensure that students have real competence in the skills and strategies they have been developing throughout their Maths education - and to extend the knowledge and understanding that they need to equip them for independent living and the next stage in their education or career. The Key Stage 5 curriculum builds on previous learning. However, it is important to revisit and reinforce earlier learning through learning that 'connects' it to contexts that are relevant to this age group, such as the workplace.</p>	 Enabling Environment & Pupil Voice	<p>Our Maths programme includes both knowledge and vocabulary that are specific to the concepts that the pupils are studying. Pupils are enabled to communicate effectively with the use of word mats, communication boards and signs and symbols. Through reasoning pupils are able to discuss their thinking and explain their learning. Special projects for Maths include Maths week and my money week. During these weeks' pupil voice is used to analyse the impact of the learning.</p>	 Pupils' Work	<p>The school has high expectations of all children in terms of the quality and presentation of their work, which we believe leads to a sense of pride. Emphasis on precision of number and symbol formation supports pupils to think logically, organise their reasoning and represent the Maths accurately. Photographic evidence is used frequently in Maths lessons to record work using concrete equipment. These photographs are stored on Earwig to aid assessment and to show progression.</p>
 The Need of all Pupils	<p>A key principle of our teaching is about belief that every child and young person should and can engage with Maths. Maths plays an important role for autistic learners - imparting the practical skills, understanding and knowledge they need to lead creative, independent and fulfilling lives. A key part of learning for our pupils is developing the communication skills, vocabulary, strategies and confidence to use functional Maths skills in the community and workplace.</p>	 Knowing More and Remembering More	<p>Curriculum maps have been carefully constructed to present the content in a logical progression. The school's approach builds on current research into metacognition. This is evident in our assessment, which includes carefully crafted check points in between each stage, for example using recall and retrieval practice of key skills. Using skills in WRL also shows how skills have been embedded over time.</p>	 Talking to Pupils	<p>The Maths Lead talks informally and formally to the pupils as part of the regular monitoring. The purpose is to explore what they have learnt and what they can remember as well as how much they have enjoyed it. In Maths, this is generally based around conceptual understanding. Key improvement actions can be identified as a result.</p>

The resources used in school engage pupils of all abilities. We have a firm belief that every child/ young person can achieve and that they are entitled to the same knowledge and cultural capital, whatever their background or starting point. Pupils will communicate ideas confidently, using mathematical vocabulary (i.e. language, signs and symbols



Assessment

Each part of the lesson is an opportunity for the teacher to assess the learning before moving onto the next part. Misconceptions are identified and addressed. Maths is assessed using the pathways, starting with the first stage, 'Engagement', through to the final stage, 'Pathway 6'. Each pathway builds on the one before, assumes that the pupil has met the previous pathway's outcomes, and in some cases introduces new or additional learning in successive pathways.

