# Subject Key Summary Points

| Subject | Maths |
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| **Overall Curriculum** | **Boyton has used the latest pedagogy, research and understanding of local contextual needs to structure the curriculum design to ensure the growth of capability mature children who exhibit a sustained curiosity for learning. The 'lived values and experiences' of pupils are determined by the individual school and should run through all operational elements of curriculum provision.**<br><br>Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge across the wider curriculum – for example, in science, DT, Computing and other subjects.<br><br>As quoted in the National Curriculum, 'The programmes of study are set out year-by-year for key stages 1 and 2. Schools are however, only required to teach the relevant programme of study by the end of the key stage. Within each key stage, schools therefore have the flexibility to introduce earlier or later content during an earlier key stage, if appropriate.' |
| **Pedagogy** | Our maths curriculum focuses on developing our pupils through the acquisition of **WISDOM, KNOWLEDGE, and SKILLS.**<br><br>These have been selected because they ensure the whole development of the child will be prioritised, they enable pupils to meet the expectations of the National Curriculum 14 and have ambitions beyond the NC14. Each theme has a set of curriculum tools which ensure it is fully embedded through the lived experiences of staff, children, and stakeholders. Impact scales will measure the effectiveness of curriculum provision on the growth of children within these three equally important themes.<br><br>**Wisdom**<br>Children develop in wisdom in the maths curriculum:<br>Pupils develop conditional knowledge in maths which allows them to apply their declarative and procedural knowledge to a range of increasingly complex problems and reason their choices.<br>Pupils make wise choices in which concrete and pictorial representations are effective to support them in a wide range of mathematical situations.<br><br>**Knowledge**<br>Children acquire knowledge in maths:<br>Pupils are taught declarative knowledge to reduce cognitive load, e.g. multiplications to 12 x 12, number bonds to 10.<br>Pupils are taught procedural knowledge, e.g. a series of steps and algorithms i.e.add, subtract, multiply and divide using effective mental and written methods. |

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| | **Capabilities**<br>Children develop their capabilities:<br>Pupils develop their reasoning skills when choosing which declarative and procedural knowledge to apply to a problem.<br>Pupils demonstrate their capabilities as mathematicians by applying their knowledge in other curriculum areas, e.g. programming in computing, making accurate observations and predictions in science, effectively designing, making and evaluating in DT.<br><br>The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offeredrich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on. Our pedagogy is that children should learn facts, develop methods and have strategies to tackle maths in a range of situations and contexts. This begins in the EYFS as we believe that early acquisition of mathematical knowledge leads to greater success as pupils move through the school.<br>Support and scaffolding is provided in all mathematics lessons and is done in various ways, such as:<br>• setting challenging age-related knowledge, reasoning and problem-solving tasks based on systematic, accurateassessment of pupils' prior skills, knowledge and understanding;<br>• small, differentiated target steps for all children to move through at a pace that suits their needs;<br>• timely support and intervention; systematically and effectively checking pupils' understanding throughoutlessons;<br>• ensuring that marking and constructive feedback is personal, frequent and of a consistently high quality - enablingpupils to understand how to improve and develop their work - with planned in time for children to respond to feedback;<br>• providing pupils with a wide range of concrete, pictorial and abstract representations which they will be able to select with greater independence and understanding. |
| **Assessment** | **Formative:**<br>Each lesson begins with recall of prior declarative and procedural knowledge using tools including Third Space Learning – Fluent in 5. Daily maths practice materials are designed to assess the recall of previous learning.<br>Assessment is regarded as an integral part of teaching and learning and is a continuous process. The class teacher is responsible for assessing all pupils in their class. This is achieved through mini-plenaries, questioning, marking, T.A feedback and pupil self-assessment. Teachers should use skillful questioning to gauge starting points, to assess current understanding and knowledge, to ensure concepts have been acquired, to identify misconceptions. This formative assessment should support the teacher in adapting lessons to ensure pupils are learning new learning, building on prior learning, and making links between new and previous learning. Following each lesson, teachers should adapt their following lessons as necessary to ensure all pupils' needs are met.<br>**Summative:** White Rose pre and post unit assessments are used. Teachers use the pupil results to analyse for gaps to plan follow up work. Summative assessment is used to monitor attainment and progress. Data is used to monitor pupil attainment and progress. |

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| **Culture** | Mathematics is an important contributor to the Trust ambition to develop the whole child through the acquisition of wisdom, knowledge, and skills.<br><br>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 andengineering, and necessary for financial literacy and all forms of employment. A high-quality education in maths, 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.<br>Enrichment is planned for through DT, Science, Outdoor Learning, etc. |
| **Systems** | The school follows the National Curriculum (2014) and teachers use the White Rose scheme of learning as the basis for their planning. This is supplemented with other resources and in particular: NCETM Curriculum Prioritisation and Ready to Progress materials, Daily Maths and TTRS. We begin in the EYFS with a highly structured and carefully sequenced programme of mathematics, with a focus on core facts.<br><br>Children will learn facts – and know why facts are linked (Declarative knowledge).<br><br>They will learn methods – and know how methods work (Procedural knowledge)<br><br>And they will develop strategies – and know why these strategies work (Conditional Knowledge)<br><br>Our systems ensure pupils experience a detailed and carefully sequenced curriculum and within that regular, planned rehearsal and practice in order to ensure that they securely grasp the concepts taught. The aim is for our pupils to become 'free' mathematicians. Pupils need to recall facts swiftly and accurately. This leads to an automacity and frees up working memory for new learning. We also aim to ensure there is a balance of rehearsal, recall and practice with explain and prove reasoning activities.<br>Key concepts are developed as a class (teach, do, teach, do). Manipulatives/models/images are used in inputs and throughout independent learning to help secure understanding. Use concrete resources alongside abstract method. Reasoning/problem solving opportunities are available in every lesson for all children. |
| **Policy** | The Policy for mathematics aims to ensure that all pupils:<br><br>• 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 abilityto recall and apply knowledge rapidly and accurately;<br><br>• **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations,and developing an argument, justification or proof using mathematical language; |

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| | • 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 perseveringin seeking solutions. We want pupils to be able to work systematically through problems without the need to rely on trial and error methods. |
| **Perceptions** | |