Lower Heath CE Primary School
Part of the Marches Academy Trust

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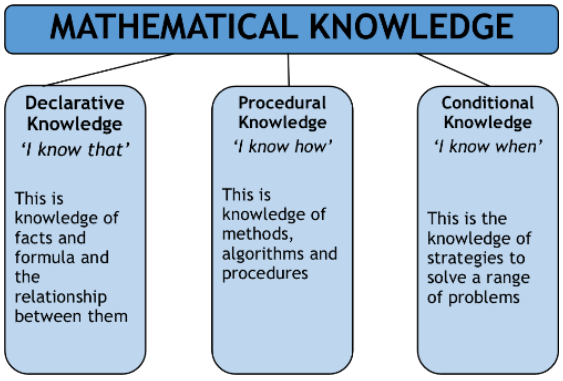
Mathematics at Lower Heath CE Primary School

Intent	
The Importance of mathematics	We believe that a high-quality mathematics education is fundamental to providing the very best life chances to the children at our school. *"Good numeracy is the best protection against unemployment, low wages and poor health."* Andreas Schleicher OEDC. Having a fundamental understanding of mathematics allows people to effectively take part in our society. As well as providing essential skills for employment and further education, a confident grasp of mathematics allows people to make sense of the world and make informed choices regarding their lives. A high-quality mathematics education supports learners in many other areas of the curriculum such as science, geography, economics and engineering. It also encourages a logical and methodical mindset and gives confidence that through hard work and practice, success is possible.
Our Curriculum Aims	Our curriculum at Lower Heath is designed to equip all children with the knowledge and mindset to reap all the benefits of being a mathematically fluent adult. Our curriculum is consistent across year groups and progressive in approach. We use planning and resources that allow all teachers to provide high-quality mathematics teaching. Mathematics in the UK often has a reputation as being 'difficult' or only for those who are 'mathematical'. We want to give all children the confidence that through a carefully structured, progressive curriculum, ALL children can succeed in mathematics. The education inspection framework (EIF) states that schools should ensure that their mathematics curriculum *'helps pupils to gain enjoyment through a growing self-confidence in their ability'*. This is our aim – to make mathematics enjoyable for all – not by trying to make maths 'fun' but through developing children's mathematical ability and confidence so that they can succeed and enjoy what they are learning.
Key Knowledge	It is vital to children's mathematical education that they know more and remember more of key mathematical knowledge. In our mathematics curriculum, different strands of knowledge have been identified. Throughout their journey through Lower Heath's mathematics curriculum, children will develop and embed their mathematical knowledge.  The implementation section of this document will outline how these areas of knowledge are developed throughout our mathematics curriculum.

Implementation

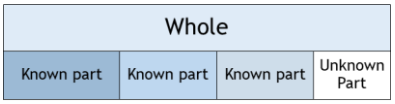
At Lower Heath, we want to ensure that progression through the curriculum is a guarantee for all and is not dependent upon the strengths, preferences and choices of individual members of teaching staff. As a school with mixed-age classes, a key factor in the development of our curriculum has been to ensure all children develop the building blocks required during their mathematical development whether they are in the lower, or higher year group.

With this overarching principle in mind, we use high quality schemes of work to ensure our curriculum is well sequenced and coherent as well as manageable in terms of workload for the teachers at our school.

From EYFS, through to Year 6, we have based our curriculum on the 'Power Maths' scheme.

This scheme helps us to provide a clearly structured teaching and learning process that ensures every child masters each maths concept securely and deeply. For each year group, the curriculum is broken down into core concepts, taught in units. A unit divides into smaller learning steps – lessons. Step by step, strong foundations of cumulative knowledge and understanding are built. (See long-term plan for details of each taught unit.)

In order to develop children's declarative knowledge of key mathematical concepts from an early age, we also use 'Numbersense' from EYFS to Year 2 as a separate session in addition to their main maths lesson. This resource provides a systematic and structured programme that ensures children develop visual models of number, a deep understanding of number and number relationships, and fluency in addition and subtraction facts.

Declarative Knowledge	Childrens' recall of key mathematical facts to automaticity is the foundations on which mathematical success is built upon. At Lower Heath, we develop this knowledge through the following: • Use of the 'Numbersense' program to systematically teach addition/subtraction facts in KS1 and multiplication/division facts in KS2 • Use of resources such as 'Times Tables Rockstars' and 'Numbots' to aid children in the practice of these facts • A clear, systematic approach to teaching key facts such as equivalent fractions, decimals, negative numbers through the Power Maths scheme. • The opportunity to practice and recall this knowledge within intelligent practice sessions in maths lessons and within a daily additional fluency session in each class • The celebration and value of mathematical fluency through weekly 'maths rockstars' awards presented in whole-class celebration assemblies • The development of declarative knowledge is the key focus of weekly mathematics homework. All parents are invited to attend parental workshops where the importance of declarative knowledge is reinforced and parents can be advised on effective ways in which to support their children.
Procedural Knowledge	• Through daily maths lessons, children are taught progressing through concrete, pictorial and abstract approaches to achieve a high level of procedural fluency. This fluency is built upon strong declarative knowledge. • Manipulatives, models and images are used to help children develop a clear abstract understanding of a concept. Concrete apparatus are used as an intermediate stage and are discarded when children no longer need them. • Through the consistent use of our scheme of work, efficient, systematic and neat layout of procedures and calculations is developed. This is modelled and scaffolded through the Power Maths practice books and is further practiced and recalled in children's separate 'Maths Fluency' exercise books where neat, clear and efficient procedures can be modelled and practised. • Through daily, silent practice, children develop their accuracy, speed and confidence in calculation. This acts as a foundation for children's success in developing conditional knowledge.
Conditional Knowledge	• The structure of the daily maths lesson allows children to use their procedural knowledge to tackle a range of increasingly complex problems. • The scheme develops children's understanding of the underlying structure of specific problem types and allow them to generate efficient calculations to solve a problem. For example, a bar model may be used to reveal the underlying structure of a problem where a whole and several parts is known and one part is unknown.  Unknown part = Whole – (Known part + Known part+ Known part)

Assessment	• Daily, within-lesson formative assessment is used to identify and address misconceptions. For example, in whole-class teaching through effective, targeted and systematic questioning (no hands-up, use of mini-whiteboards etc.) children who are struggling with a concept can be targeted for support and intervention within the lesson, with the aim that these children can keep up with the rest of the class. • Frequent low-stakes testing takes place to ensure that gaps can be identified and children know how well they are doing and they can see the progress they are making. These low-stakes tests will take the form of end-of-unit tests, weekly times table and number facts tests and frequent arithmetic tests in KS2. • Each term, each child will take a summative assessment (see assessment policy). This will take the form of an NFER standardised test (Yrs 1,3,4,5) or a past KS1/KS2 SATS test. The results of these tests are analysed to provide information on where gaps or weaknesses lie across a cohort. These weaknesses can then be addressed in fluency sessions.
Staff development	• Regular staff meetings that focus on effective maths pedagogy and assessment are held. • Each Power Maths unit is resourced with a unit video and explanation to help all teachers to develop mathematical subject knowledge. These resources focus on key subject knowledge and help teachers to identify common misconceptions in each aspect of mathematics that is being taught. • A programme of lesson studies helps teachers to identify and develop good practice through the observation of each other's mathematics teaching. This low-threat approach helps all staff to identify strengths and weakness in pedagogy and develop a shared understanding of excellent mathematics teaching and learning.
Impact:	
What is the impact of our maths curriculum?	Children leaving Lower Heath and moving on to their next stage of education will: • Have age-appropriate declarative, procedural and conditional knowledge. This will be evidenced through their books, their statutory assessment results and the way they talk about their mathematics education. • Children will be confident and positive about mathematics and will understand how it is vital in their lives. • Children will be prepared for their secondary education and will be well placed to thrive within KS3. • Children will have the knowledge and foundations to allow them to have a successful life and take a full and active role in our society.