LEEMING RAF CP SCHOOL

MATHS CURRICULUM DESIGN

"Inspiring Excellence"

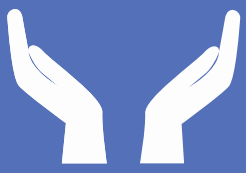
"MATHEMATICS IS NOT A LANGUAGE, IT'S AN ADVENTURE"
- PAUL LOCKHART

Mathematics is vital to every element of our lives. Underpinning science, engineering, finance, computing, and a myriad of other disciplines, secure mathematical knowledge is core to future success. Taught daily through formal lessons with additional fluency sessions and integrated learning (e.g. in provision or across the curriculum), maths is therefore a central part of our learning at Leeming. We start this journey by following NCETM's Mastering Number scheme in both EYFS and KS1 to secure firm foundations in the development of good number sense. We base our main lessons on the White Rose Maths mastery-based scheme of work – used in 80% of UK primary schools, and across 140 countries - since many of our pupils will move during their time in school there is a high probability that they will encounter the same scheme elsewhere, thus allowing us to build their cumulative knowledge.

KNOWING

The knowledge associated with mathematics is vast, but can be expressed through three primary aspects: facts and formula (declarative knowledge) "I know that", methodology and approach (procedural knowledge) "I know how" and problem solving and reasoning (conditional knowledge)" I know when". As pupils learn across these areas, they will know not only facts (number-bonds, times tables, laws, shape properties, equations etc.), but also **how** to use these facts by applying them to calculations, and **when** to use different operations and formula to solve problems. Through White Rose Maths, we build this knowledge progressively and cyclically. WRM is based on the DfE's 'Ready to Progress' criteria, but subdivides each of these elements into the smaller steps vital for children to master in order to become secure in their maths knowledge. This helps children not to become overloaded with big concepts, allowing their working memory to process each component and slowly synthesise this learning into a cohesive whole.

BECOMING



It is, of course, crucial that children do not attempt to assimilate maths knowledge without the opportunity to put this into practice. It is not enough to be told '2 + 2 = 4'; children must be given the chance to explore this learning in practical ways - for example through manipulatives (hands-on resources) and experimentation - to embed a deep understanding of what would otherwise be an abstract concept. Becoming a mathematician begins from the moment children start in the Early Years, securing basic number fluency and learning the foundations of mathematics. This continues throughout the curriculum; as children are presented with mathematical questions and challenges, they are constantly reinforcing their learning and consolidating their knowledge through reasoning and the development of mathematical thinking. Our aim is that pupils will develop automaticity, rapid recall and mathematical fluency by constantly putting the knowledge they are taught into practice - both independently and collaboratively - and that they will be able to apply it in new and unfamiliar situations. Where appropriate, we also seek to draw mathematics into other curriculum areas (e.g. Science) to promote and model the ways maths is intrinsic to different careers and disciplines.

FEELING

Maths is not, perhaps, thought of traditionally as emotive as one of the arts. However, we find our pupils develop huge emotional reactions to maths and we strive to develop a "can-do" attitude. It also isn't always about finding one right answer. The thrill of unlocking the 'code' of mathematics – seeing relationships between numbers and operations, the ways in which a formula can help crack a tricky calculation etc. can be exhilarating. We also know that maths can easily be a subject that pupils find frustrating or demoralising – it is our job, therefore, to inspire and scaffold pupils who are struggling with maths to ensure that they overcome these obstacles and embrace the emotions associated with both challenge and success. By regularly including problem solving, but doing so in context and at the right time within a unit of learning - using the declarative and procedural knowledge pupils have gained previously - children are empowered to experience the excitement of maths and develop confidence in the subject.