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| Mathematics Curriculum Design | | | | | |
| Curriculum Intent | | | | | |
| At S.S John and Monica we recognise that Mathematics is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. We aim to provide a high-quality mathematics education with a mastery approach so that all children:  • become fluent in the fundamentals of mathematics;  • reason mathematically;  • can solve problems by applying their mathematics. (National Curriculum 2014)  It is our intent to provide children with a high-quality, broad and challenging Mathematics curriculum with the development of children’s ‘maths sense’ and enjoyment at the heart of each maths lesson. We believe that all pupils can succeed in mathematics. We don’t believe that there are individuals who can do maths and those that can’t. A positive teacher mind-set and strong subject knowledge are key to student success in mathematics. By building confidence, resilience and a passion for maths, we can show that whatever your prior experience or preconceptions, maths is an exciting adventure that everyone can enjoy, value and master!  *‘The intention of these approaches is to provide all children with full access to the curriculum, enabling them to achieve confidence and competence – ‘mastery’ – in mathematics, rather than many failing to develop the maths skills they need for the future.*’ NCETM 2014 | | | | | |
| Curriculum Implementation | | | | | |
| At SS John and Monica all mathematic policy and guidance follows recommendations and guidance as set out by the NCETM/Maths hub. Our policy and lesson design follow a research and best practice model.  Each maths lesson follows an episodic teaching sequence where each ‘mini episode’ within a lesson builds towards mastery and understanding of a small mathematical step. We use the White Rose Schemes of Learning to guide our teaching of maths from Reception to Year 6. White Rose is based on the mastery approach which is used so successfully in countries such as Singapore.  It breaks the curriculum down into small, manageable steps that all children work on in a daily lesson together. The time taken on each small step varies from step to step with some small steps taking just one lesson to embed and others needing more time. This is where teacher subject knowledge and assessment are vital tools to understand the needs of individual classes and children. Those that need more support are given additional help either in the lesson, before or afterwards following the same day catch up/keep up model, yet all children work on the same lesson objective unless they are unable to due to complex SEN needs. Those that need more challenge are given rich tasks and deeper problems to build a more profound understanding.  The schemes interleave prior content in new concepts. For example when children look at measurement, there are lots of questions that practice the four operations and fractions. This helps children make links between topics and understand them more deeply. There is a distinct focus on number work as children who have an excellent grasp of number make better mathematicians. Spending longer on mastering key topics will build a child’s confidence and help secure understanding. We look to reinforce number fluency throughout the year. This is done using calculation sessions each afternoon, where children focus on set written calculations or mental calculations in line with their year group expectations.  Reasoning and problem solving are integral to the schemes and to our approach. In assessing progression in reasoning skills we have used the research taken from NRich and recognise the 5 step progression in reasoning:   * Step one:  Describing: simply tells what they did. * Step two: Explaining: offers some reasons for what they did. These may or may not be correct.  The argument may yet not hang together coherently. This is the beginning of inductive reasoning. * Step three: Convincing: confident that their chain of reasoning is right and may use words such as, ‘I reckon’ or ‘without doubt’. The underlying mathematical argument may or may not be accurate yet is likely to have more coherence and completeness than the explaining stage. This is called inductive reasoning. * Step four: Justifying: a correct logical argument that has a complete chain of reasoning to it and uses words such as ‘because’, ‘therefore’, ‘and so’, ‘that leads to’ ... * Step five:  Proving: a watertight argument that is mathematically sound, often based on generalisations and underlying structure. This is also called deductive reasoning.   We value and promote reasoning explicitly, persistently, consistently and frequently and, in particular, help children to develop complete chains of reasoning. This aspect of mathematics helps children to deepen understanding and extend our higher attainders as we take them onto generalisations and proof, whilst focusing on the same mathematical content  Finally we expect most lessons to have an element of applying knowledge and skills. It is through such activities that children see the real purpose of maths, and gain the most enjoyment and satisfaction. | | | | | |
| Curriculum Impact | | | | | |
| We aim for all children to achieve age related expectations at the end of each year group and use both formative and summative assessment each term to help use determine if this is the case. This ‘data’ is shared with senior leaders during pupil progress meetings each term. Children who are not meeting either age related expectations or prior attainment are targeted to help them to succeed.  However, the main impact of our maths curriculum here at S.s John and Monica’s will be on children’s perception of maths. It is truly our aim to foster and develop a love of all things maths. It is though this love of maths that children will embrace the challenge that maths presents and develop resilience, confidence and a positive attitude towards the subject. The skills developed within our maths curriculum are interchangeable life skills which will prepare our children as they learn and grow. | | | | | |