Mathematics Policy – The Mastery Approach to Learning

Intent

At King's Meadow School, children are taught mathematics in accordance with the National Curriculum. Our school believes that every child is entitled to a high-quality mathematics education, which will provide a foundation for them understanding the world. As a result, they will have an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject. Our pupils will:

- become fluent in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately.
- solve problems by applying their mathematics to a variety of questions with increasing sophistication, including unfamiliar contexts and to model real-life scenarios.
- reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.

Children of all abilities and backgrounds will be supported through high quality teaching and targeted interventions to succeed. We provide them with the knowledge and support to feel confident and succeed in the statutory assessments and to be successful in their future maths journeys.

In addition, our school is committed to fostering positive attitudes towards Maths, whilst ensuring that all pupils develop a deep understanding in line with their age group. Teachers will actively diagnose and address perceived 'gaps' in an individual's understanding. Opportunities to celebrate mathematics and mathematical achievements each term will continually raise the profile of Mathematics.

We also work with parents to ensure that home learning supports and enhances their understanding of topics covered in school.

Coverage:

To ensure that the children at KMS receive a broad and balanced mathematical curriculum, we ensure that the following domains are covered each year:

- Number:
  - number and place value
  - addition and subtraction
  - multiplication and division
  - fractions, including decimals and percentages
  - ratio
- Measurement:
- Geometry
  - properties of shape
  - position and direction
- Statistics

- Problem Solving

Implement

Mastery

The Mastery learning model forms the basis of our approach to teaching maths. This means that we plan for topics to be explored in depth enabling children to gain the knowledge and understanding for their year group. We spend a larger amount of time exploring number and the basic functions, this allows for a strong foundation to learn other areas of maths. We also teach fluency in maths so that the children know key facts and strategies securely and can apply this knowledge in other situations.

We believe the mastery approach ensures that all children progress securely throughout the year and gives them a solid understanding of the core concepts in maths which allows them to access new learning easily. The learning is supported through consistent use of physical resources and pictoral models. We provide opportunities for children to use and apply their mathematical knowledge and skills to solve problems logically. This includes lots of discussions and exploring concepts in different ways enabling the children to reason mathematically. Children also use and apply their mathematical skills across the curriculum. This enables children to further their knowledge and understanding of mathematical concepts as well as appreciate the relevance of mathematics in real life contexts.

At King's Meadow, children will be taught the content from their year group only. They will spend time becoming true masters of content, applying and being creative with new knowledge in multiple ways.

In essence, this means:

- **Teach less, learn more** – focussed and carefully considered content, building strategically on previous learning.
- **Support and challenge** – all children are entitled to additional support to ensure they do not fall behind (through resources, extra time with an adult or targeted intervention) and to have their thinking challenged through deeper exploration and reasoning.
- **Understanding real life applications** – wherever possible learning should be relevant and not abstract, and children should view mathematical concepts from different angles.
- **Reason and explain** – provide opportunities to discuss and explore mathematical challenges with the aim to find and explain a solution clearly.
- **Create fluent mathematicians** - Children encouraged to learn key facts and strategies which they can apply to other areas of maths.

To achieve this teacher's will be:

- Promoting a love of maths
- Teaching Mixed Ability classes
- Teaching all pupils, the same concept at the same time, with a variety of scaffolding resources available in order for the children to achieve
- Taking time to ensure a deep understanding before moving on
- Teaching key facts and strategies frequently until fluent
- Using contextual variation – presenting concepts in different ways.
- Using procedural variation – looking at a concept from a different point of view to challenge thinking (twisting a problem)

- Using a CPA approach (concrete, pictorial and abstract)
- Providing opportunities for verbal and written reasoning (support/ challenge, stem sentences…).
- Reducing the number of simple questions answered, before applying their knowledge, through the use of guided and intelligent practise and well thought out problems.
- Giving pupils who need it additional support over shorter more intense timescales – ideally same day - to prevent gaps in learning occurring.

Curriculum

Maths is taught for an hour every day with an extra ten minuet fluency session for KS1 and KS2. As a school, we follow the White Rose scheme of learning which sets out a series of modules for each year group broken down into a set of coherent lessons which slowly take the children on their maths learning journey. The curriculum is weighted so that more time is spent early on place value, number and the four main calculations as these form a solid foundation for learning the other areas of maths.

Fluency

On top of the daily lesson of maths, each teacher will deliver ten minutes of fluency related maths each day.

In the foundation stage and KS1, this time is used to deliver a mastery of number scheme of work. This scheme is focussed on understanding numbers up to 20 in detail including the relationships between them all. Having a good understanding through the mastery of number scheme, allows the children to reduce the cognitive load required by other areas of maths. In foundation, the mastery of number scheme takes up four out of five maths sessions a week. The fifth session is based on the other areas of maths they need to cover.

In KS2, this time is focussed on improving the fluency of the children's maths. This could include times table facts, exploring different methods for solving problems, recapping mathematical strategies and discussing the efficiency of the children's working.

Mop-up

To help all children to keep up with class, teachers will identify children who have developed misconceptions during lessons and will provide catch up sessions for them. These are completed as soon as possible after the lesson and are designed to be short and snappy to get the children ready for the next lesson. This could include some pre-teaching to allow them to access the next lesson more prepared.

Interventions

After each assessment week, the PUMA tests are analysed, and a list of topic specific interventions is created alongside a list of children who may benefit from them. Intervention time is used strategically to target certain children with a specific intervention to improve a small area of maths.

Maths competitions

Every term we hold a maths bee. During the maths bee, the top eight mathematicians in each class complete in a mental maths competition to win house points for their house. We also give awards for the children that are most active on Times Table Rockstars. Both initiatives promote a positive attitude towards maths across the school.

Times Tables

We subscribe to Times Table Rockstars and each child from Year one upwards has an account which they can access at home to help practise their times tables and increase their accuracy and speed of recall.

On top of this, we track the children's times table ability using a times table passport. This passport follows them throughout the school and gets a stamp in it every time they can accurately recall the next set times table.

The aim is to have our Year 4 children secure in their times tables facts before entering UKS2.

Homework

From Year 1 upwards, each child is supplied with a CPG maths book. Every week the teachers will assign homework from them which links to the learning that the children have completed within the lesson that week.

Impact

Through the delivery of Maths, we ensure that children have a deep and clear understanding of mathematical topics. We prepare them for their continuing learning journey throughout their Maths education and beyond. We foster, develop and promote a positive attitude towards maths and provide opportunities inside and out of lessons for children to succeed. We monitor all data three times a year, comparing it with local and national figures, and use the findings to shape the next steps.

Formative Assessment

Through questioning and observation in lessons, there are plenty of opportunities for formative assessment. Children who are identified as requiring extra support can be given more resources, be put into maths mop-up time or have extra support put in place and those children who are ready for a deeper question can have one set.

Summative Assessment

Every term, Y1-Y5 complete a PUMA assessment and Y6 complete a SAT assessment. These tests are analysed for weaker subject areas and interventions are strategically chosen from this information. Individual pupils are also identified and discussed at a CAP meeting to make sure that appropriate support is provided.

We also complete regular times tables tests with all children and track their progress on a passport. During assessment weeks, we also check individual progress through a larger times table test.

Statutory Assessment

We complete the optional Y2 SAT assessment and the statutory Y6 SAT assessment. Y4 also complete the MTC focussed on times tables. Children in reception are also assessed against the Early Learning Goals at the end of the year.