Maths

Subject Policy

Our School Vision

Our vision is that all children at East Markham Primary School will be happy, successful learners who believe in themselves and achieve their full potential. With this always in mind, our school motto is '**Believe, Achieve, Succeed**'.

What is Mathematics?

Mathematics is the science that deals with the logic of shape, quantity and arrangement. Mathematics is all around us, in everything we do. It is the building block for everything in our daily lives, including mobile devices, architecture (ancient and modern), art, money, engineering, and even sports.

The study of Mathematics provides a foundation for understanding the world. It gives children the ability to understand and become fluent within the number system and develop connections. It enables children to follow a line of enquiry, conjecture relationships, make generalisations and develop justification for their reasoning using mathematical language.

Intent

We want our children to embed our school motto, 'Believe, Achieve, Succeed', and school values, Respect, Empathy, Resilience, Courage and Passion. These all underpin all areas of school life.
Our curriculum intent is to generate an **aspirational and diverse** curriculum which inspires learners, whilst rigorously ensuring coverage and progression in key skills.

Mathematics is a hugely important subject as it entwines in all subjects. We want our children to have the knowledge to make their own decisions and the have the skills to questions and enquiry about evidence given to them. We want to understand, break down and evaluate their justifications; not accepting information at face value. We want our children to be confident to articulate their findings and reasonings using the correct mathematical vocabulary.
Through our teaching we aim to raise the awareness of mathematics as a potential future career path. The children should leave our school confident about the wide range of careers prospects for mathematicians. This could include careers such as scientists, engineers, accounts etc.

Implementation

Environment

Where appropriate, children will be exposed to a variety of resources, such as ten frames, Numicon, bar models, place value counters, shapes either in concrete, abstract or in pictorial form. There should be purposeful displays showing strategies to provide evidence to why they have an answer. Vocabulary related to the strand and pertinent to their age range should be on display and referred to consistently. Mathematics should also be displayed in other areas of the curriculum e.g. geography- co-ordinates, history- timelines.

Roles and responsibilities;

Subject Leader

The mathematics subject leader monitors the way their subject is taught throughout the school by:

- Planning scrutinies
- Work scrutinies
- Learning walks
- Pupil voice
- Lesson observations
- Teacher interviews

The mathematic subject leader has the responsibility for monitoring the way in which resources are stored and managed. They provide ongoing CPD to ensure the highest quality of teaching and learning. They will ensure that staff have access to current research into mathematics.

Teaching Staff

Other staff will ensure that the school curriculum is implemented in accordance with this policy.
Staff will ensure they are using the correct mathematical vocabulary. They will be confident with their subject knowledge and are aware of the expectations for key endpoints of the previous/ next year groups and also the end of key stage. They will keep up to date with current research and mathematical issues (supported by the subject leader).

Organisation and Planning

How do we teach Mathematics?

At East Markham we believe that Mathematics should be taught through an enquiry-led approach. Using an enquiry-led approach means that the children can ask their own questions, make their own judgments and justifications for their answers.

Mathematics is taught through strands in our school. In Foundation – Number and Shape and Space, in Year 1 to 5 – number, geometry, measurement and statistics and in Year 6 – number, geometry, measurement, statistics, ratio and proportion and algebra.

Number includes: - counting, place value, calculations, fractions, percentages and decimals.

Geometry includes: - properties of shape, position and direction.

Measurement includes: - in length, capacity and mass, time, temperature, area and perimeter.

Statistics includes: - reading and constructing taly charts, pictograms, bar charts, line graphs, pie charts, times tables.

Ratio and Proportion includes: - relationships between two numbers, finding quantities of unknown amounts.

Algebra includes: - substituting letters for numbers and solving equations.

In Foundation 1 (Nursery), they are using the Number Sense Programme. This allows children to explore numbers through oral, practical and play activities using real life problems. F2 (Reception) through to Year 6 us using the DfE approved White Rose scheme to ensure consistency and progression.

What is the White Rose Aim?

The White Rose Maths curriculum is designed to provide students with a solid foundation in mathematics. Students will gain a deep understanding of mathematics and enjoy solving mathematical problems with this course. The program comes with a plethora of problem-solving questions and randomly generated questions that are designed to really stretch pupils abilities.

This program is not just about teaching maths, it is about developing mathematical thinking skills. The aim of this program is to ensure that students are able to think mathematically and solve problems with confidence.

"Our aim is for young mathematicians to become:

- Confident and able to recall and apply mathematical knowledge in different contexts
- Able to explain their methods and thinking processes and apply skills in context
- Fluent in different areas of maths
- Efficient in applying problem-solving and reasoning skills
- Independent thinkers
- Making number work fun Maths
- Aware of the Maths/ concepts/ process they are doing"

White Rose Maths offers a 'small steps' progression and yearly frameworks, which allow children to learn at their own pace while still achieving high standards. White Rose Maths helps children develop their conceptual understanding of mathematics by using concrete objects, pictorial representations and abstract thinking.

Fluency Scheme?

STATE HOW WHITE ROSE IS TAUGHT – F2 to Year 6
Step by step.

In the Foundation Stage they will: -

- develop their skills, knowledge and understanding of mathematics through oral, practical and play activities.
- use and applying mathematics in practical tasks, in real-life problems, and within mathematics itself.
- develop their use and understanding of mathematical language in context, through communicating/talking about their work and the methods used to develop their reasoning.
- use more formal methods of working and recording when they are developmentally ready.
- explore, estimate and solve real life problems in both the indoor and outdoor environment.
- develop their understanding of measures, investigate the properties of shape and develop early ideas of position and movement through practical experiences.

- sort, match, sequence compare objects and events, explore and create simple patterns and relationships, and present their work in a variety of ways.

In Key Stage 1 mathematics continues to build on the knowledge skills and understanding begun in Foundation stage. They will: -

- develop confidence and mental fluency with whole numbers, counting and place value, involving working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].
- develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary.
- using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.
- develop their use and understanding of mathematical language in context, through communicating/talking about their work and the methods used to develop their reasoning.
- read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.
- by the end of year 2, pupils will know the number bonds to 20 and be precise in using and understanding place value.

In Lower Key Stage 2, mathematics continues to build on the knowledge skills and understanding begun in previous phases. They will: -

- be increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value.
- develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.
- develop their ability to solve a range of problems, including with simple fractions and decimal place value.
- become increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them.
- use measuring instruments with accuracy and make connections between measure and number.
- develop their use and understanding of mathematical language in context, through communicating/talking about their work and the methods used to develop their reasoning.
- read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.
- By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

In Upper Key Stage 2, mathematics continues to build on the knowledge skills and understanding begun in previous phases. They will: -

- extend their understanding of the number system and place value to include larger integers.
- develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.
- develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation.

- classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.
- extend knowledge developed in measure and link to number
- develop their use and understanding of mathematical language in context, through communicating/talking about their work and the methods used to develop their reasoning.
- read, spell and pronounce mathematical vocabulary correctly
- introduced to the language of algebra as a means for solving a variety of problems.
- by the end of year 6, pupils will be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Inclusion

Inclusion statement

Impact

Maths is so powerful, it changes their lives, their possibilities, their careers, their progress, their hopes and their adventures.

Carol Vordeman August 21 2018

Mathematics is a subject that we are proud of and its impact can stretch wider when its value is recognised. It should be interactive and engaging with content made relevant to children's real world experiences and contextualised thus to support consolidation and retainment of knowledge and skils. Our children will leave East Markham having a depth of knowledge across all the strands of number, measure, geometry, statistics, algebra and ratio and proportion. They will have learnt knowledge and skills, through high-quality teaching, which can support them through later life.

They will be passionate about mathematics and have an appreciation of the power of mathematics as well as a sense of enjoyment and curiosity about it. We make sure they have opportunities to use their learning experiences and to understand mathematics is not just about knowing times tables, but giving our children a 'can do' approach. We encourage resilience when using our enquiry –based led questions and let children come to their own conclusions, teaching them that is fine to make a mistake or change their mind now that they have learnt new skills and knowledge.

Our children will be aspirational about mathematics, knowing some of the many future careers that further learning in this subject will lead to, or knowing its value in their everyday lives. In turn, this will enable our children to consider careers perhaps no one in their family have done before or they didn't know existed.

We hope mathematics enables them to gain an understanding of the world, tackle problems and embark on many forms of employment were mathematics is essential so further broadening their horizons and in turn achieve personal satisfaction.