QUEEN EMMA'S
PRIMARY SCHOOL
BELONGING, BEING AND BECOMING

FINSTOCK
CHURCH OF ENGLAND
PRIMARY SCHOOL

Policies and Procedures

Mathematics Policy

Information for Office:	
Policy Author:	Leadership Team
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Approved by:	Headteacher

Aims

That children develop the knowledge, skills and understanding of mathematics that they need to succeed in life and prepare for their next steps in learning.

That children will develop their knowledge of mathematics cumulatively over time and complete the full programmes of study - linking mathematics to other curriculum subjects and extending beyond the academic or technical application and thus encouraging children to develop and discover their own interests and talents.

That children develop their character – including their resilience, confidence, and independence through mathematics – increasingly adopting a positive attitude to learning and a growth mind-set. We encourage children to foster a commitment to their learning, know how to study effectively, become resilient to setbacks and take pride in their achievements.

Rationale

Our rationale is based on the mastery approach key principles being:
The expectation that most pupils will move through the programmes of study at broadly the same pace.

Pupils who grasp concepts rapidly should be challenged further through being offered rich and sophisticated problems before any acceleration through new content.

Those who are not sufficiently fluent with earlier material should consolidate their understanding, through additional practice before moving on.

EYFS

We follow EYFS curriculum guidance for Mathematics which encompasses number and numerical patterns. We are committed to ensuring the confident development of number sense and put emphasis on mastery of key early concepts. Sessions have a concrete – pictorial – abstract approach to conceptual development. Teaching follows the White Rose Maths scheme of learning and is augmented with Numberblocks, songs and rhymes and targeted activities in enhanced provision. White Rose Maths supports transition into Year 1 where children begin to explain their recording and problem solving.

Year 1 to Year 6

From Year 1 to Year 6, we teach children using White Rose Maths. Our approach ensures that when children are introduced to a new concept, they build competency by using the Concrete, Pictorial, Abstract (CPA) approach:

Concrete
Children should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

Pictorial
Alongside this, children should use pictorial representations. These representations can then be used to help reason and solve problems.

Abstract
Both concrete and pictorial representations should support children's understanding of abstract methods.

White Rose Maths
White Rose is designed to support a mastery approach to teaching and learning and have been designed to support the aims and objectives of the National Curriculum.

The overviews:

- Have number at the heart. A large proportion of time is spent reinforcing number to build competency.
- Ensure teachers stay in the required key stage and support the ideal of depth before breadth.
- Provide the opportunity for children to have their gaps closed through flexible and fluid groups.
- Provide plenty of opportunities to build reasoning and problem-solving elements into the curriculum.

We want pupils to become fluent in the fundamentals of mathematics, to be able to reason and to solve problems. Our curriculum embraces these National Curriculum aims.

We place number at the heart of learning, as we believe secure understanding and confidence with number underpin success across the whole curriculum. We prioritise depth over breadth, ensuring key concepts are revisited, reinforced and embedded through careful sequencing and repetition.

To learn mathematics effectively, concepts must be introduced in a carefully structured sequence, as some ideas rely on secure understanding of earlier ones. For example, pupils need a strong grasp of place value before tackling addition and subtraction, and addition must be understood before multiplication as repeated addition. This emphasis on prioritising and carefully ordering number skills is evident throughout our primary curriculum. Other areas of mathematics, such as shape and statistics, are taught after number but do not depend on one another. These strands are therefore interwoven

across the year to ensure pupils experience a broad and balanced range of mathematical learning in each term and year group.

Teaching Principles

1. Teachers believe in the importance of mathematics and that the vast majority of children can succeed in learning mathematics in line with national expectations.

2. Teachers assess competence in prerequisites before engaging with concepts to ensure children can access the learning.

3. The learning needs of individuals are addressed through a range of strategies; gap grouping, pre-teach, 1-1 tutoring, careful scaffolding, questioning and appropriate rapid intervention where necessary, to provide the appropriate support and challenge.

4. The reasoning behind mathematical processes is emphasised. Teacher/pupil interaction explores how answers were obtained as well as why the method worked and what might be the most efficient strategy.

5. Precise mathematical language, often couched in full sentences, is used by teachers so that mathematical ideas are conveyed with clarity and precision. We value 'mathematical talk' and children have lots of opportunity to talk about and evaluate their mathematics during lessons.

6. Conceptual variation and procedural variation are used extensively throughout teaching. This helps to present the mathematics in ways that promote deep, sustainable learning.
    a. Conceptual variation is where the concept is varied and there is intelligent practice. Positive variation is showing what the concept is, and negative variation is showing what the concept isn't. This clears away misconceptions at the very start. Within positive variation, both standard and non-standard representations are shown.

    b. Procedural variation is where different procedures and/or representations are used to bring about understanding. For example, teachers may collect several solutions for a problem (some right, some wrong) before guiding the class towards the most efficient method. It also involves highlighting the essential features of a concept or idea through varying the non-essential features. Variation is not the same as variety – careful attention needs to be paid to what aspects are being varied (and what is not being varied) and for what purpose.

7. Sufficient time is spent on key concepts to ensure learning is well developed and deeply embedded before moving on.

Features of Lesson Design

1. Teacher input gives ample time for independent practice whilst the teacher delivers rapid intervention should somebody require it. Independent practice includes reasoning, problem solving and higher-order thinking activities.

2. Lessons are sharply focused with one new objective introduced at a time.

3. Difficult points and potential misconceptions are identified in advance and strategies to address them planned. Key questions are planned, to challenge thinking and develop learning for all pupils.

4. High quality resources and well-designed tasks support learning and provide access to the mathematics is integrated into lessons.

5. There is regular interchange between concrete/contextual ideas and their abstract/symbolic representation.

6. Making comparisons is an important form of developing deep knowledge. The questions "What's the same, what's different?" are often used to draw attention to essential features of concepts.

Assessment

Teachers and leaders use assessment to help learners embed and use knowledge fluently or to check understanding and inform teaching. Teachers check learners' understanding systematically, identify misconceptions accurately and provide clear, direct feedback. In so doing, they respond and adapt their teaching as necessary without unnecessarily elaborate or differentiated approaches. Live feedback is completed using pink (for 'think') and green (for 'got it') highlighters by both teachers and learning support assistants.

Cornerstones assessments: There is a baseline Number and Arithmetic Progress Assessment and a further 7 progress tests to be completed throughout the year. Summative assessments are completed 3 x per year. Teachers respond and adapt their teaching based on the gap analysis tool produced from these assessments. The results of these assessments are shared with Cornerstones who then compare our results nationally to provide us with standardised data.

National Curriculum tests are used at the end of KS2; teachers use past and sample papers to inform their assessments as they prepare pupils for these assessments.

Teachers understand the limitations of assessment and do not use it in a way that creates unnecessary burdens for staff or learners.

Resources

A bank of essential concrete mathematics resources is available for all teachers. Additional resources for wider mathematics, such as weighing scales, are kept in the central storage area. Each Teacher has access to the White Rose platform where they can find schemes of learning to aid planning, teaching resources, and assessment tools.

In addition to daily mathematics teaching, we use Times Tables Rock Stars and NumBots to support the development and consolidation of number fluency. These online platforms are used both in school and at home to strengthen pupils' recall of number facts, including counting, number bonds and multiplication tables. Pupils have individual logins, allowing them to practise at an appropriate level and progress at their own pace.

Belonging
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