Mathematics Policy

Reviewed July 2024

Policy Approved by: _____

At meeting on: _____

Mathematics Policy

'We shine like stars to achieve and make a difference in the world, knowing that with God, all things are possible.'

Vision

Through a positive caring environment, we provide the opportunity for every child to reach their full potential. We embrace Christian values and ensure all children are ready for their next steps.

Mathematics equips pupils with the uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem solving skills and the ability to think in abstract ways. Mathematics is important in everyday life. It is integral to all aspects of life and with this in mind we endeavour to ensure that children develop a positive and enthusiastic attitude towards mathematics that will stay with them forever.

The National Curriculum order for mathematics describes in detail what pupils must learn in each year group. Combined with the Aspull Church Primary Calculation Policy (adapted using the White Rose Maths Hub), this ensures continuity and progression and high expectations for attainment in mathematics.

It is vital that a positive attitude towards mathematics and growth mindset is encouraged amongst all of our pupils in order to foster confidence and achievement in a skill that is essential in our society. At Aspull Church we use the National Curriculum for Mathematics (2014) as the basis of our mathematics programme. We are committed to ensuring that all pupils are given the chance to achieve mastery in the key concepts of mathematics, appropriate for their age group. Assessment for Learning, an emphasis on investigation, problem solving and the development of mathematical thinking and a rigorous approach to the development of teacher subject knowledge are therefore essential components of the Aspull Church Primary School approach to this subject.

Aims

We aim to provide the pupils with a mathematics curriculum and high quality teaching to produce individuals who are numerate, creative, independent, inquisitive, enquiring and confident. We also aim to provide a stimulating environment and adequate resources so that pupils can develop their mathematical skills to the full.

Our pupils should:

- have a well-developed sense of the size of a number and where it fits into the number system
- know by heart number facts such as number bonds, multiplication tables, doubles and halves
- use what they know by heart to figure out numbers mentally
- calculate accurately and efficiently, both mentally and in writing
- draw on a range of efficient calculation strategies
- make sense of number problems, including non-routine/'real' problems and identify the operations needed to solve them

- explain their methods and reasoning, using correct mathematical vocabulary
- judge whether their answers are reasonable and have strategies for checking them where necessary
- suggest suitable units for measuring and make sensible estimates of measurements
- explain and make predictions from the numbers in graphs, diagrams, charts and tables
- develop spatial awareness and an understanding of the properties of 2D and 3D shapes

Provision

At Aspull Church Primary School we are embedding a mastery approach to the teaching and learning of mathematics with the support of the NCETM Maths Hub Programme and White Rose Maths scheme of learning. The 2014 National Curriculum states:

- The expectation is that most pupils will move through the programmes of study at broadly the same pace.

- Pupils who grasp concepts rapidly should be challenged 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, including through additional practice, before moving on.

These three key aims of the National Curriculum should be addressed in each sequence of learning.

FLUENCY – REASONING – PROBLEM SOLVING

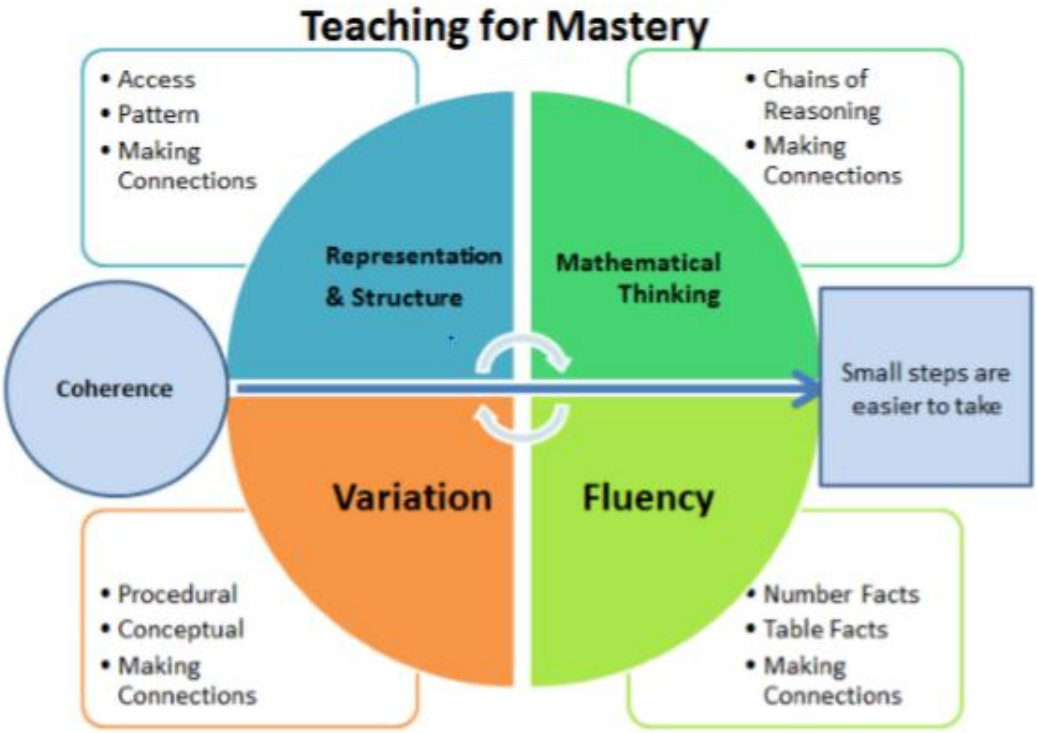
Our teaching for mastery is underpinned by the **NCETM's 5 Big Ideas**.

- Opportunities for Mathematical Thinking allow children to make chains of reasoning connected with the other areas of their mathematics.

- A focus on Representation and Structure ensures concepts are explored using concrete, pictorial and abstract representations, the children actively look for patterns and generalise whilst problem solving.

- Coherence is achieved through the planning of small, connected steps to link every question and lesson within a topic.

- Teachers use both procedural and conceptual Variation within their lessons and there remains an emphasis on Fluency with a relentless focus on number and times table facts.



Established classroom principles:

1. Everyone can learn mathematics to the highest levels.
2. 'I can't do it **yet**' rather than 'I can't do it'
3. Mistakes are valuable.
4. Questions are important.
5. Mathematics is about creativity and problem solving.
6. Mathematics is about making connections and communicating what we think.
7. Depth is much more important than speed.
8. Mathematics lessons are about learning, not performing.

This document has been created using content provided by the NCETM/Maths Hub Mastery Specialist Programme.

Teaching for Mastery Principles

• It is achievable for all – we have high expectations and encourage a positive 'can do' mindset towards mathematics in all pupils, creating learning experiences which develop children's resilience in the face of a challenge and carefully scaffolding learning so everyone can make progress.

• Deep and sustainable learning – lessons are designed with careful small steps, questions and tasks in place to ensure the learning is not superficial.

• The ability to build on something that has already been sufficiently mastered – pupils' learning of concepts is seen a continuum across the school.

• The ability to reason about a concept and make connections – pupils are encouraged to make connections and spot patterns between different concepts (e.g. the link between ratio, division and fractions) and use precise mathematical language, which frees up working memory and deepens conceptual understanding.

• Conceptual and procedural fluency – teachers move mathematics from one context to another (using objects, pictorial representations, equations and word problems). There are high expectations for pupils to learn times tables, key number facts (so they are automatic) and have a true sense of number. Pupils are also encouraged to think whether their method for tackling a given calculation or problem is Appropriate, Reliable and Efficient.

• Problem solving is central – this develops pupils' understanding of why something works so that they truly have an appreciation of what they are doing rather than just learning to repeat routines without grasping what is happening.

• Challenge through greater depth - rather than accelerated content, (moving onto next year's concepts) teachers set tasks to deepen knowledge and improve reasoning skills within the objectives of their year group.

Pupils are provided with a variety of opportunities to develop and extend their Mathematical skills, including:

- Group work
- Paired work
- Whole class teaching
- Individual work including 1:1 tuition

Pupils engage in:

- the development of mental strategies
- written methods
- practical work
- investigational work
- problem solving
- mathematical discussion
- consolidation of basic skills and number facts
- maths games

We recognise the importance of establishing a secure foundation in mental calculation and recall of number facts before standard written methods are introduced. We use accurate mathematical vocabulary in our teaching and children are expected to use it in their verbal and written explanations.

Mathematics contributes to many subjects and it is important the children are given opportunities to apply and use Mathematics in real contexts. It is important that time is found in other subjects for pupils to develop their Numeracy Skills, e.g. there should be regular, carefully planned opportunities for measuring in science and technology, for the consideration of properties of shape and geometric patterns in technology and art, and for the collection and presentation of data in history and geography.

We endeavour at all times to set work that is challenging, motivating and encourages the pupils to think about how they learn and to talk about what they have been learning. Additional enrichment opportunities are provided for pupils to further develop mathematical thinking e.g. through cooking, music, and maths investigations and games.

Teachers plan a range of fluency and reasoning and problem solving activities to ensure that pupils develop the skills of mathematical thinking and enquiry. They follow the White Rose scheme of learning, ensuring that our children are able to master the curriculum and reach aspirational targets set, by carefully planning and resourcing to meet the needs of their children.

To provide adequate time for developing mathematics, maths is taught daily and discretely. Maths lessons sometimes vary in length ranging from 45 minutes to 1 hour daily. Children from Year 1 to Year 6 take part in a weekly 'Assertive Maths' lesson.

Teaching Approaches

Teachers use a range of teaching strategies to engage the children in maths and ensure progress is made by all children within a class. A typical lesson would include:

Both teaching input and pupil activities, a balance between whole class, guided grouped and independent work, (groups, pairs and individual work), effectively differentiated activities/objectives and appropriate challenge (using practise and consolidate, mastery and greater depth challenges)

Sometimes the focus for the session is new learning. Where this is the case, lessons are teacher led with a heavy focus on repetition of new vocabulary and methods. A 'ping pong' approach is used to keep all children working at pace. Quality questioning ensures intervention is provided throughout all steps of the lesson. At other times, pupils may be practising and consolidating, enabling them to independently master the application of a concept they have learned earlier. The focus of the session may vary for different children depending on their learning needs.

Children are expected to consolidate and further develop their learning in mathematics through additional activities at home. The school invests in the 'Mathletics' learning platform that can be used to set differentiated homework for pupils. It is an expectation that children achieve a given number of points on a weekly basis. Children from Y2 upwards also access 'Timestable Rockstars' to develop fluency and pace of multiplication and division facts.

Teachers plan learning that is differentiated to meet the needs of all pupils, whether they have a specific learning difficulty in maths or whether they are particularly able. All children have to opportunity to tackle mastery and greater depth tasks. From Y2 upwards we encourage the children to take ownership of their own learning so that they can identify when they are ready to take on further challenge and when they may need additional practice or support in order to master a learning objective.

Teachers endeavour to challenge all learners with appropriate challenges and adult support where required. Children will SEND are set specific tasks, using B Squared targets but wherever possible, these are related to the unit of work that the cohort are studying.

Target Setting
Teachers use a range of assessment techniques to ensure that children's attainment and progress is carefully tracked throughout each lesson and unit of work. This is then used, alongside White Rose end of term assessment gap analysis, to set targets, inform future planning and identify children who require intervention in order to achieve.

Formative Assessment
Teachers integrate the use of formative assessment strategies such as effective questioning, clear learning objectives, the use of success criteria and effective feedback and response in their teaching. Marking and verbal feedback is used throughout the lesson to enable children to redirect their learning during that particular lesson if needed or to offer additional challenge.

Summative Assessment
Pupils are assessed against NC targets every half term. Together with teacher judgements, test results are used to track pupil's progress on Target Tracker half termly. At the end of each term children in Y1, Y3, Y4 and Y5 are assessed using the White Rose assessments. Gap analysis is then used to inform planning for the following half term.

National Curriculum tests are used at the end of KS1 and KS2; teachers use past and sample papers to inform their assessments as they prepare pupils for these assessments. Analysis of the results is used to inform teachers of a need for further whole class teaching, group teaching or intervention.

Teachers share assessment papers with parents once children have had the opportunity to go through them and data has been recorded.

The school's Assessment and Marking Policies inform high quality feedback and pupils' response to it in Mathematics.

Early Years Foundation Stage (EYFS)
We follow EYFS curriculum guidance for Mathematics. However, we are committed to ensuring the confident development of number sense and put emphasis on mastery of key early concepts. Pupils initially explore numbers to 20 and the development of models and images for numbers as a solid foundation for further progress.

Resources
A bank of mathematics resources are kept in Key Stages. There are also maths resources readily available in EYFS and KS1 classrooms to encourage the children to independently access any resources needed to support their learning.

Role of the Subject Leader

- Ensures teachers understand the requirements of the National Curriculum and supports planning.
- Leads by example by setting high standards in their own teaching.
- Prepares, organises and leads CPD and joint professional development.
- Observes colleagues when required with a view to identifying the support they need.
- Attends appropriate CPD.
- Keeps parents informed about Mathematics at Aspull Church Primary School.

• Monitors and evaluates the teaching and learning in Mathematics half-termly, completing reports to share with SLT, staff and governors.