Mathematics Policy

	Name	Signature	Date
Prepared by:	Miss Pizzey		June 2022
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Approved by:			
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Introduction

This policy outlines the teaching, organisation and management of mathematics learnt and taught at Great Barton Primary Academy.

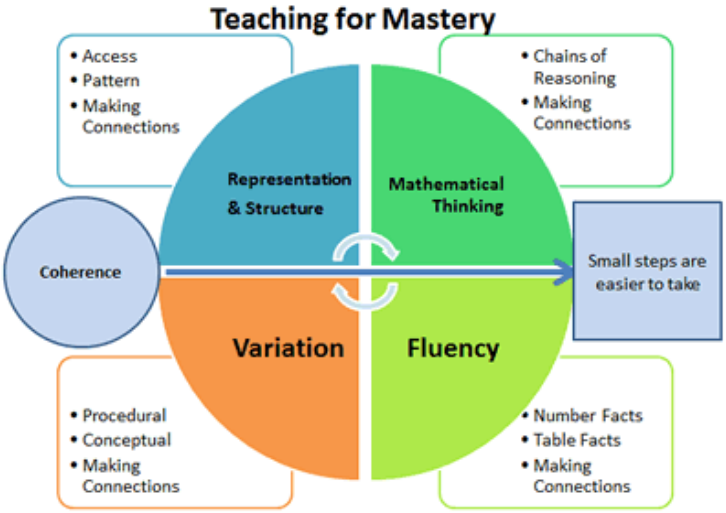
Aims (Intent)

Mathematics is a core subject in the National Curriculum. We use the White Rose Hub mastery schemes of work as the basis for implementing the statutory requirements of the programme of study for mathematics.

At Great Barton Primary Academy, we are committed to raising the standards of learning and teaching of mathematics. We aim to implement, a maths curriculum which is accessible to all and will maximise the development of every child's ability and academic achievement. Our aim is to create enthusiastic, creative and articulate mathematicians through an engaging curriculum and one that constantly reviews and builds upon previous learning. Each individual lesson is based upon the key elements of a mastery curriculum and follows a concrete, pictorial and abstract approach. Through the use of this approach, we intend for every child to be able to succeed and to become more independent, more confident and more resilient. We want children to make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. We aim to teach our learners to become efficient, logical thinkers and to become more deeply inquisitive; looking for patterns, sequences and links between different areas of learning to encourage deeper understanding. We want children to know that maths is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. As our pupils progress through the school, we intend for them to have an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Learning and Teaching (Implementation)

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.
Central to our approach are the '5 Big Ideas' which underpin Maths Mastery – Coherence, Representation & Structure, Mathematical Thinking, Variation and Fluency.



Our daily maths lessons consist of whole-class direct teaching, alongside paired tasks and independent work. During these lessons we encourage children to ask as well as answer mathematical questions to deepen their understanding and develop their reasoning skills. They have the opportunity to use a wide range of vocabulary and resources to support their learning.

In all classes there are children of differing mathematical ability. We recognise this fact and provide suitable learning opportunities for all children by matching the resources, support and challenge of the task to the ability of the child. We achieve this through a range of learning and teaching methods and strategies and provide opportunities through:

- Teacher modelling.
- Speaking and listening techniques.
- Real-life models and scenarios.
- Cross-curricular links.
- The development of mental/oral strategies.
- Written methods and questioning techniques.
- Appropriate and challenging practical work.
- Investigative work.
- Problem solving.
- Mathematical discussion.
- Consolidation and practice of fundamental skills and routines.
- Whole class, grouped, paired and individual work.
- Reflective learning, cooperative learning.
- Self and peer assessment strategies.
- Teacher assessment i.e. SMART *(Simplistic, Measurable, Attainable, Realistic, Timed)* targets.

Teaching Time
To provide adequate time for developing Mathematics skills each class teacher will provide a daily mathematics lesson (or mathematics activities, in the first half of the Reception year).

In addition, there may be a separate 15 minute daily 'Maths Meeting', focusing on counting and games to provide regular practise of all areas of the maths curriculum.

Links will be made to mathematics within other subjects so pupils can develop, reinforce and apply their mathematics skills. These links are planned across the curriculum.

Class Organisation
Within a maths lesson there will be a good balance between whole-class work, group teaching, talk-partner tasks and individual practice.

A Typical Lesson
A typical lesson in Year 1 to 6 will be structured flexibly, but will often include:

- Oral work and mental calculation.
- A main teaching activity- This will include both teaching input and pupil activities and a balance between whole class, grouped, paired and individual work. A concrete-pictorial-abstract approach will be used in lessons, particularly when new concepts are being introduced. The use of concrete resources may reduce as the children move into upper KS2.
- A plenary - This will involve work with the whole class to sort out misconceptions, identify progress, to summarise key facts and ideas and what to remember, to make links to other work and to discuss next steps. This may take place during the lesson, rather than at the end.

Planning and Marking

Mathematics is a core subject in the National Curriculum, and we use the White Rose Hub Mastery Schemes of Work as the basis for implementing the statutory requirements of the programme of study for mathematics.
The White Rose programme is designed to build good practice in schools to ensure maths teaching and learning is of the highest quality and all children to make good progress.

The White Rose Mastery programme supports progression throughout the primary years and has a strong concrete, pictorial and abstract thread running throughout. This means that children are exposed to conceptual ideas at a ***concrete*** level with a range of apparatus (e.g. counters, beads and Dienes) before moving on to ***pictorial*** representations. This may mean diagrams, sketches or using the Singapore bar model. Doing so develops children's deep conceptual understanding and skills proficiency which supports the next move into ***abstract*** mathematics, such as long division.

Maths lessons are designed to be interactive with a significant emphasis on children's talk. Through discussing their ideas, children construct new understanding, engage in a supportive community of practice, take responsibility for their learning and allow the teacher a window into their thinking which enables appropriate action to help them progress. Fluency, reasoning and problem solving are three themes of the maths National Curriculum (DfE, 2014) and inform all maths teaching in our school.

We carry out curriculum planning in mathematics in line with the White Rose Mastery scheme which is based on the National Curriculum. Each topic area within maths follows a line of progression from EYFS to Year 6.

Medium term plans are based on the White Rose long term plans for each year group, with weekly plans being derived from unit planning from the White Rose schemes of work documents, following small steps.

The Mathematics Lead and SLT are responsible for monitoring the mathematics planning within our school.

Marking in maths follows the school's marking policy.

Resource Management

Materials are updated as necessary, as new and relevant items become available. The orders of new resources are made by the Mathematics Lead, in consultation with staff.

At Great Barton Primary Academy, there are a range of resources available to support the teaching of mathematics. All classrooms have a range of appropriate small apparatus. Additional equipment and topic specific items are stored centrally. Resources borrowed from the storage shelves are to be returned once they have been used, so they can be made available to other members of staff.

Resources and Display

In our school we have various teacher resources and books available in classrooms:

- A range of models and images, age-appropriate equipment (class based), practical mathematics equipment (centrally stored)

- Children are encouraged to work independently where appropriate within the classroom, selecting the equipment they need, using it properly and appropriately and returning it to its correct place when an activity is completed.
- We recognise the importance of a stimulating learning environment. The school provides an environment, which is rich in a wide variety of print, pictures, diagrams, charts, tables, models and images.
- Each classroom has a maths working wall, with mathematical vocabulary, visual aids and interactive activities, where appropriate.
- Computing will be used in various ways to support teaching and motivate children's learning across all aged groups. Integrated computing lessons will involve the computer, calculators and audio-visual aids. They will however only be used in a daily mathematics lesson when it is the most efficient and effective way of meeting the lesson objectives.

Assessment

Assessment will take place at three connected levels: short-term, medium-term and long-term. These assessments will be used to inform teaching in a continuous cycle of planning, teaching and assessment.

Short-term
These are an informal part of every lesson and are matched to the teaching objectives displayed in the medium term planning.

Medium-term
These take the form of half-termly teacher assessments with attainment being judged against the curriculum objectives for the relevant year group. Years 2-6 sit PUMA tests at the end of each term (Year 1 at the end of the Summer Term) as an extra tracking measure.

Long-term
These will take place towards the end of the school year to assess and review pupils' progress and attainment.

Monitoring

Monitoring of the standards of children's work and of quality of teaching in mathematics is the responsibility of the Maths Subject Lead, overseen by the Head Teacher and link governor.

The work of the Subject Lead involves supporting colleagues in the teaching of mathematics, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school.

Monitoring may take the form of learning walks, pupil/parent/staff questionnaires, data analysis, talking to children about their work, book scrutiny and lesson observations.

Inclusion

Great Barton Primary Academy believes that every child has the right to develop their full potential, irrespective of ability, race, gender, creed or physical ability. We aim to ensure that, in partnership with parents, we offer all pupils equality of access and opportunity for successful learning.

We recognise and celebrate the diversity of our pupils, staff and parents, who are encouraged to share their experiences and culture to enhance the quality of learning for all. Pupils' classroom work and displays will celebrate diversities in society.

All pupils are entitled to a broad, balanced, relevant and differentiated curriculum. They will be given every opportunity to be successful in their learning and achieve as high a standard as possible.

We actively seek to remove barriers to learning and participation so each pupil can achieve their personal potential.

When teaching Mathematics, we plan, assess and provide for a wide range of abilities, aptitudes and interests. When planning provision for pupils with Special Educational Needs, Gifted and Talented, or EAL pupils we recognise the need to

- Set suitable learning challenges
- Respond to pupils' diverse needs
- Work to overcome barriers to learning

Please also refer to the school's SEND and Inclusion Policies.

In planning for SEND pupils' learning, we consider the curriculum, the physical and social environment and the nature of support from peers and adults. The selection of appropriate learning objectives, teaching styles and resources will enable access to curriculum, according to each pupil's specific needs. Support from the teacher or teaching assistant will be used effectively to achieve these aims. The SENDCo is available to advise on differentiation in planning, provision and classroom strategies.

Gifted and Talented
Gifted and Talented pupils are identified by their teachers, who plan opportunities for those pupils to develop their abilities, skills and talents within the maths mastery approach. They are provided with appropriate extension challenges and stimulating tasks, with challenging learning outcomes. These may include open-ended investigations or extension activities which include deeper problem solving opportunites.

EAL pupils
EAL planning and learning will take account of pupils' stage of learning English. Pupils will be given opportunities to develop their spoken and written English. Planning, classroom strategies and resources will be modified appropriately.

Early Years Foundation Stage

We teach Mathematics in the Early Years Foundation Stage as an integral part of the school's work. As the Reception class is part of the Early Years Foundation Stage, we relate the mathematics aspects of the children's work to the objectives set out in the Early Learning Goals through the White Rose plans for the EYFS. We give all the children opportunity to develop their understanding of number, measurement, pattern, shape and space through varied activities that allow them to enjoy, explore, practise and talk confidently about Mathematics. (For further details see Early Years Foundation Stage Policy).

Calculation Policy

The calculation policy (see separate document) is based upon the White Rose Hub mastery documents which provide models and images on how each topic is to be represented and delivered.