Tenbury C of E Primary Academy

'Therefore encourage one another and build each other up'

MATHEMATICS POLICY

Introduction

At Tenbury C of E Primary Academy a positive attitude towards mathematics is encouraged amongst all of our pupils in order to foster confidence and achievement in a skill that is essential in our society. We deliver this through an exciting and inclusive curriculum which challenges and deepens the mathematical understanding of our pupils. We are committed to ensuring that ALL pupils achieve mastery in the key concepts of mathematics, in order that they make genuine progress and develop skills for reasoning, enquiring and problem solving. Assessment for learning, an emphasis on number sense, communication and conceptual understanding to develop mathematical thinking are therefore essential components of our approach to learning in mathematics. This policy should be read alongside our Calculation Policy.

Aims

- To enable pupils to use their mathematical skills and knowledge confidently, now, and in the future.
- To develop the ability to think clearly and logically, with confidence, flexibility and independence.
- To develop a deeper understanding of mathematics through the development of number sense, a process of enquiry and investigation from an early age.
- To develop fluency in the fundamentals of mathematics.
- To develop an ability and inclination to work both alone and cooperatively to solve mathematical problems.
- To develop strategies to allow pupils to work efficiently.
- To develop personal qualities such as perseverance, independent thinking, cooperation, determination, aspiration, teamwork, communication, focus and self-confidence through a sense of achievement and success.
- To enable children to select and use a range of mathematical tools effectively
- To develop children's ability to move between concrete, iconic and symbolic representations fluently and confidently.
- To enable children and staff to have fun learning together!

Teaching for MASTERY

Tenbury Primary follows a Mastery approach to learning Mathematics with number at its heart. The mastery of maths curriculum is something that we want *all* pupils to acquire. Our mastery approach to teaching maths has the aim to help pupils acquire mastery of the subject. We believe mastery of maths means a deep, long-term, secure and adaptable understanding of the subject which develops:

- Fluency (rapid and accurate recall and application of facts and concepts).
- A growing confidence to reason mathematically.
- The ability to apply maths to solve problems, to conjecture and to test hypotheses.
- Real DEPTH of understanding.

We aim for the children to achieve mastery of the key areas and domains in Maths, narrowing the gap between the most and least able learners. By mastery we follow the definitions published by the 'National Centre for Excellence in the Teaching of Mathematics' (2016). These are stated in the bullet points below:

- Maths teaching for mastery rejects the idea that a large proportion of people 'just can't do maths'.

- All pupils are encouraged by the belief that by working hard at maths they can succeed.

- Pupils are taught through whole-class interactive teaching, where the focus is on **all** pupils working together on the same lesson content at the same time, as happens in Shanghai and several other regions that teach maths successfully. This ensures that all can master concepts before moving to the next part of the curriculum sequence, allowing no pupil to be left behind.

- If a pupil fails to grasp a concept or procedure, this is identified quickly and early intervention ensures the pupil is ready to move forward with the whole class in the next lesson.

- Lesson design identifies the new mathematics that is to be taught, the key points, the difficult points and a carefully sequenced journey through the learning. In a typical lesson pupils sit facing the teacher and the teacher leads back and forth interaction, including questioning, short tasks, explanation, demonstration, and discussion.

- Procedural fluency and conceptual understanding are developed in tandem because each supports the development of the other.

- It is recognised that practice is a vital part of learning, but the practice used is **intelligent practice** that both reinforces pupils' procedural fluency and develops their conceptual understanding.

- Significant time is spent developing deep knowledge of the key ideas that are needed to underpin future learning. The structure and connections within the mathematics are emphasised, so that pupils develop deep learning that can be sustained.

- Key facts such as multiplication tables and addition facts within 10 are learnt to automaticity to avoid cognitive overload in the working memory and enable pupils to focus on new concepts.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress will always be based on the security of the pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly will be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material will consolidate their understanding through same or next day intervention. Intervention is also achieved through a range of strategies such as the use of differentiated work or booster programmes. There is also the use of peer-support pairs and guided or targeted input from the teacher and teaching assistant.

We believe that all students, when introduced to a key new concept, should have the opportunity to build competency in this topic by taking the concrete-pictorial-abstract approach:

- Concrete-students should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing e.g. Numicon
- Pictorial-students should then build on this concrete approach by using pictorial representations. These representations can then be used to reason and solve problems
- Abstract-with the foundations firmly laid, students should be able to move confidently to an abstract approach using numbers and key concepts

During our daily lessons we encourage children to ask as well as answer mathematical questions. We develop their ability to independently select and use appropriate concrete apparatus to support their conceptual understanding and build procedural fluency. They have the opportunity to independently access and use a wide range of resources, such as bead frames, bead strings, number lines, Dienes/ Base 10 apparatus, place value counters, Numicon, multilink, place value cards, Cuisinaire rods and other small apparatus to support their work. We develop the children's ability to represent problems using visualisation skills, jottings and pictorial representations such as Empty Number Lines, the 'Singapore Bar

Model' and their own ideas. Wherever possible, we provide meaningful contexts and encourage the children to apply their learning to everyday situations. At all times the policy aims are the drivers behind the planning and delivery of lessons.

Repetition of key ideas, sometimes in the form of whole class recitation may be used. This helps to verbalise and embed mathematical ideas and provides pupils with a shared language to think about and communicate mathematics. Children are encouraged at all times to communicate their understanding of maths so that it clarifies their thoughts. They should be given opportunities to explain their reasoning using mathematical language and in sentences.

Mathematics Curriculum Planning

Mathematics is a core subject in the National Curriculum 2014 , and we use the new Mathematics Programmes of Study: Key stages 1 and 2 as the basis for our school curriculum, ensuring we teach the relevant statutory content. We have adopted the **White Rose Maths Hub Mastery Scheme of Work** which places number as a priority and a large proportion of time is spent reinforcing number to build competency. The scheme ensures teachers stay in the required key stage and support the ideal of depth before breadth. It also ensures students have the opportunity to stay together as they work through the schemes as a whole group. The scheme also provides plenty of time to build reasoning and problem solving elements into the curriculum. Other resources such as NCETM, Maths No Problem, Power Maths and Classroom Secrets are used to supplement the teaching. The school's Calculation Policy details the approach and learning progression in the main operations of addition, subtraction, multiplication and division.

We carry out the curriculum planning in mathematics in three phases (long-term – a yearly overview, medium-term – term-by-term objectives and short-term – lesson and unit long slides). Our long-term plans provide an overview to ensure the appropriate content is covered in each year group.

Our medium-term mathematics plans give details of the main teaching objectives for that theme or topic and provide the structure of the 'Mastery' approach to our curriculum design and organisation. This means that areas of Maths will be taught in longer 'blocks'. For Number, Addition and Subtraction, Multiplication and Division and Fractions these blocks will be taught in a progressive manner across the year. Blocks relating to other areas of Maths may only be taught once but are revisited through Flashback 4 and the connections class teachers make between different areas of maths. Wherever possible, problem solving and reasoning will also be areas of focus.

Our short term planning is done via slides to save the teachers the time of having to type up lesson plans which correspond directly to the questions and representations they will be using throughout their lesson. The subject leaders monitor these slides regularly as part of their annual leadership and monitoring cycle.

Early Years Foundation Stage

We teach mathematics in our Foundation Stage where we relate the mathematical aspects of the children's work to the objectives set out in the Early Learning Goals, which underpin the curriculum planning for children during the Early Years Foundation Stage. We give all the children ample 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. The NCETM materials and ideas are used and developed to assist in the delivery of the prime areas of learning through mathematical activities.

Presentation of Maths Work:

Each lesson must include the short date (e.g. 03.11.23) on the left-hand side of the page with the Learning Intention (L.I.) written on the next line directly underneath. Both must be underlined with a ruler. Children must also have a 2 square margin drawn in their books if they do not already have books with margins in. Children are encouraged to present their written calculations in pencil as neatly as possibly by putting one digit in a square. A ruler must be used for the drawing all lines. The emphasis of neatly produced work is important as poor presentation and careless setting out can lead to incorrect calculations. This is in line with our presentation and handwriting policies.

For problem solving and reasoning activities pupils will:

- Record their ideas and thoughts on solving a problem
- Record their method to find a solution
- Evaluate their strategies when solving problems
- Provide a commentary on what they did and why.

Marking of Work

The marking of the children's work must be kept in line with the school's 'Marking' Policy. The purpose of marking in maths is primarily diagnostic. It communicates to a child whether they have been successful. Marking serves to inform a teacher's planning in terms of any misconceptions. Teachers use the necessary codes outlined in our marking policy in the current colour of pen.

Written comments must be focused on moving learning forwards and encourage risk taking, perseverance and the often open-ended nature of maths:

- Comments reflect successful progress linked to the calculation undertaken
- Steps suggests an area for improvement or a correction of a calculation

Marking should model how corrections should be made, giving children the chance to learn from their misconceptions or correct methods and allow time for reflection of marking. Incorrect answers will be **marked with a pink dot**. Children should not be allowed to alter any answer in pencil once it has been marked. Responding to marking and corrections should be carried out at the start of the next lesson (or within the lesson) using their purple pen. The process of correcting work is encouraged to establish the importance of self-checking work by the child and to avoid making similar errors in the future.

It may be appropriate to provide 'Interventions' within lessons to tackle misconceptions and challenge progress, and promote children's independence and use of support strategies.

Maths Learning Environment

We aim to create a rich and stimulating Maths environment that promotes learning and independence through Maths Working Walls in each classroom by children and adults using a maths working wall.

. Maths Working Walls and resource areas in the classroom will:

- Support the children with their Maths
- Contain information relevant to current teaching (key vocabulary, models/images, concrete apparatus, success criteria, targets)
- Include Maths resources clearly labelled and accessible for the children
- Be clear/large enough for children to read
- Be changed regularly so it doesn't become just 'wallpaper'
- Include examples of children's work to illustrate what good/ success looks like. Children use the Working Wall in their self-assessment

Assessment - Assessment for learning

Assessment for learning is embedded into each lesson and teachers use assessment for learning techniques and strategies on a daily basis in order to identify pupils' strengths and difficulties, inform the next steps for each child's learning and improve the learning outcomes for each child. Short–term planning is constantly reviewed and modified on the basis of these assessments.

Summative assessment

We make termly summative judgements of each child's achievement against the objectives taught that term. We use end of term assessments based on the national curriculum yearly expectations. We also use assessments written by White Rose Maths Hub in line with the scheme of work. Children also complete the end of unit tests created by White Rose Maths

Hub which help with assessing their understanding of a unit before moving onto the next one.

Some of the evidence base for these assessments may also come from day-to-day class work, looking at examples where pupils have used and applied their knowledge. There is an emphasis on evidence that comes from specific tasks and tests used to assess the degree of retention, independence and breadth of application shown. We use these judgements to assess progress and achievement against individual, school and national targets. We identify and target those children not making expected progress and intervene accordingly.

Teachers in Year 2 will also use the End of Key Stage National Curriculum tasks and tests as one part of the assessment picture for each child and teachers in Year 6 will also use the statutory End of Key Stage National Curriculum Tests. Standardisation and moderation staff meetings will take place involving teachers in all year groups to check that that teachers are confident in knowing thoroughly the 'Age Related Expectations' for their age range.

We give parents the opportunity to discuss their child's progress and attainment in teacher/parent meetings. We also write a summary of each child's progress and achievement in the Annual Report for parents.

Governors

Tenbury Primary Academy has a designated link governor who:

a) Meets with the Mathematics Subject Leader to find out about;

- the school's systems for planning work, supporting staff and monitoring progress
- the allocation, use and adequacy of resources
- how the standards of achievement are changing over time

b) Visits School and talks to pupils about their experiences of Mathematics
c) Promotes and supports the positive involvement of parents in Mathematics
d) Attends training and other events relating to the Mathematics curriculum
e) Reports jointly with the Subject Leader, both for the School Prospectus and to the governing body with recommendations, if appropriate
f) Visits lessons to see progression in Maths across year groups and the implementation of the Maths Mastery Approach.

The role of the Subject Leader

The Head teacher will:

•Provide support by encouraging staff and praising good practice

- Monitor planning and reviews for compliance with school expectations and for improvement – Does it make a positive difference to learning?
- Give feedback to teachers following lesson observations
- Support staff development through in service training and provision of resources
- Undertake formal lesson observations and feedback to staff. The focus of observations will be negotiated, usually linked to the School Development Plan and/or Performance Management
- As a result of observations, identify good practice in teaching and learning and establish ways of working so that this can be shared and developed across the school

The Mathematics Leader will:

- Provide a strategic lead and direction for Mathematics in the school
- Provide support and advice to staff in the delivery of the Mathematics programme of study
- Remain informed about current developments in the subject
- Disseminate relevant information to staff
- Deliver INSET sessions to staff, to support staff development
- Monitor and evaluate teaching and learning of Maths
- Monitor standards in the subject, through planning and work scrutiny, statistics, quality of teaching and pupil assessments
- Order and maintain resources to enhance effectiveness of Maths teaching within the school
- Consider with staff and work with SLT members in the evaluation and planning of actions included within the School Development Plan

The Class teacher will:

- Be responsible for the teaching of Maths as set out in the policy
- Provide planning and assessments for access by the Head Teacher and Maths leader
- Provide samples of maths work to the Maths leader when required
- Assess children's work in order to detail future planning
- Attend Pupil Progress Meetings with the Head Teacher, discuss impact of interventions and agree further interventions as required

Special needs provision

At our school we teach mathematics to all children, whatever their ability and individual needs. Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our mathematics teaching we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of disadvantaged and vulnerable children, including those pupils who generate Pupil Premium, those with special educational needs, those with disabilities, and those learning English as an additional language. We take all reasonable steps to achieve this. Pupil Premium funds are allocated as required for additional 1-1 or small group support. The

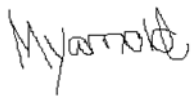
performance of the Pupil Premium group (based on very small numbers of pupils) is equal to or better than the rest of the cohort in most cases.

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors such as classroom organisation, teaching materials, teaching style, intervention and differentiation so that we can take some additional or different action to enable the child to learn more effectively. Ongoing assessment for learning, and summative assessment allows us to consider each child's attainment and progress against expectations. This ensures that our teaching is matched to the child's needs.

Tenbury C of E Primary Academy – Policy for Mathematics – May 2023

The Governing Body accepted this policy: November 2023

The policy is to be reviewed: Summer 2025



Signed_____ Chair of Governors