



Penwortham Primary School

Mathematics Policy

Date of Policy: October 2023

Policy Review Date: October 2026

Mathematics Policy

Intent

The 2014 National Curriculum for Maths aims to ensure that all children:

- Become fluent in the fundamentals of Mathematics.
- Are able to reason mathematically.
- Can solve problems by applying their Mathematics.

At Penwortham Primary School, we provide an ambitious curriculum for all pupils which is carefully planned and sequenced from the very beginning in our EYFS class through to preparing our pupils to leave us in at the end of Year 6.

Mathematics helps children to make sense of the world around them through developing their ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

Our curriculum is designed and developed from a variety of sources such as regular assessments throughout the year, latest research and from the interest and needs of our pupils. Our curriculum is adapted to suit the needs of all our pupils to ensure access for all regardless of special need or disabilities. We believe that fluency in Maths facts is a vital skill for children to be effective independent learners. We want our children to calculate with confidence and accuracy whilst finding the most efficient ways to solve problems and puzzles in a wide variety of contexts. We want our children to be able to organise their work in a way that is most effective and for others to share. We aim to expose our children to a wide range of Mathematical vocabulary and encourage them to use it in their own explanations.

Above all, we aim for our children to achieve the very best they can and believe that Mathematics, through a mastery approach of fluency, problem solving and reasoning, is a foundation to achieving this success.

Implementation

We follow the National Curriculum using the White Rose Maths sequence of learning. We are working as part of the Maths Hub programme developing teaching and learning with a Mastery approach.

In Reception we plan from the EYFS framework 2023 using Development Matters through White Rose Maths.

Planning in Years 1-6 is linked directly to the Programmes of Study of the National Curriculum 2014.

Knowledge, understanding and skills are taught daily within the Mathematics lesson. Teachers plan 'concept based' Mathematics units following White Rose Maths sequence of teaching, which focus on one key concept, with the allowance to use and apply fluency skills within this.

Weekly planning then outlines each lesson in more detail including opportunities for support and differentiation.

At Penwortham Primary School we believe that fluency in key Mathematics facts form the foundations of all learning in Mathematics. We have 2-3 sessions per week which allow for practise of these key skills in addition to the daily Mathematics lesson.

Impact

Aims for our policy:

- To provide a number rich environment that promotes a culture of counting, calculating and problem solving.
- To develop a positive attitude towards Mathematics as a subject in which all children gain success and pleasure.
- To develop in pupils a confidence in Mathematics that will not only support their learning across the curriculum, but also extend beyond the classroom environment and enrich their lives.
- To explicitly teach fluency skills throughout the school that continually develop children's understanding and enjoyment of Mathematics.
- To develop an appreciation of relationships within Mathematics.
- To teach children the skill of applying fluency skills when solving problems.
- To develop the ability to think clearly and logically with independence of thought and flexibility of mind.
- To teach the basics – number, place value, times tables, – well so children have all the necessary tools.
- To foster in pupils the confidence, desire and ability to express their reasons orally and in written form using appropriate vocabular.
- To use regular assessments to inform future planning and interventions to ensure all pupils have opportunities to reach their potential.

The Teaching of Mathematics

Each class teacher is responsible for the Mathematics in their class in consultation with and with guidance from the Mathematics subject lead. The approach to the teaching of Mathematics within the school is based on three key principles.

1. A Mathematics lesson every day
2. A clear focus on interactive, investigative and oral work alongside direct, instructional teaching with the whole class and group.
3. An emphasis on mathematical fluency, reasoning and problem solving. The use of CPA (Concrete, pictorial, abstract) process of developing skills is emphasised within all learning.

In EYFS pupils are taught a daily lesson focusing on a specific concept which is then rehearsed within the continuous provision learning areas inside and outside of the classroom area. Planning is a working document, allowing for the development of Mathematical interests displayed by the children. Learning is based on the statements in 'Development Matters' which support working towards the Early Learning Goals for Mathematical Development. Lessons follow the Mastering Number programme with supplemental lessons taken from White Rose Maths for area of learning such as Shape and Measures.

In year 1 – 6 each class organises a daily lesson for Mathematics with an additional 10-15 'Morning Maths' time 2-3 times per week. Year 1 and 2 have 4x weekly 'Mastering Number' 15-20 minute session, a programme focussing on fluency and mastery of Number.

This year, we will introduce the Mastering Number programme in Year 4 and Year 5 which will focus on Multiplicative relationships.

Assessment

Assessment of learning – summative assessment. Within Penwortham Primary School assessment of learning is used appropriately, e.g. to provide a Teacher Assessment judgement at the end of KS1.

Assessment for learning – formative assessment. At Penwortham Primary School we recognise that assessment for learning lies at the heart of promoting learning and in raising standards of attainment. We further recognise that effective assessment for learning depends crucially on actively using the information gained. Assessment for learning occurs during each Maths lessons both orally and in written form. Children are encouraged to reflect on their own learning in lessons.

YR – formative assessment is carried out throughout the year, the results of these determine next steps of learning and form the final Foundation Stage Profile at the end of year.

Y1-6 – formative assessment is carried out throughout the year using termly White Rose Maths summative assessments and End of Block assessments. The results of these determine the next steps of learning and provide informative planning for re-visiting during intervention or review sessions.

In Year 2 and Year 6 End of Key Stage assessments are used to inform attainment and progress.

Teacher Assessment judgements are recorded on the assessment system termly alongside assessment outcomes. This tracks if children are working towards/at/exceeding age-related expectations.

Records of Pupils' Work

Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and efficient method of recording. Children are encouraged to record their reasoning strategies in a journal style manner alongside their written calculations noticing patterns and relationships.

KS1 – Record working in 1cm squares work books.

Year 3-4 – 1 cm squares work books.

Year 5-6 – 7mm squares work books .

All children Y1 – 6 use a separate work book for 'Morning Maths' work.

Y2 use a separate work book for 'Mastering Number'.

All children are encouraged to work systematically and in an organised manner when recording their work.

Marking

See Marking Policy.

Spot marking and Verbal feedback are essential in lesson time by both Teachers and TAs. Self-assessment and peer-assessment should also be encouraged where appropriate.

Vocabulary

We recognise the value and impact that having a wide and varied vocabulary across all subjects can have on a pupil. Teachers plan their topics and themes with an awareness of this and include key vocabulary and technical subject related words that children should understand. These are also displayed on working walls in classrooms.

Inclusion

Taking a mastery approach, differentiation occurs in the support and intervention provided to different children, not in the topics taught, particularly at earlier stages. The National Curriculum states:

'Children 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.'

There is little differentiation in the content taught but the questioning and scaffolding individual children receive in class as they work through problems will differ, with higher attainers challenged through more demanding problems, which deepen their knowledge of the same content before acceleration onto new content. Children's difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support later the same day.

A range of inclusion strategies, as listed on the school's inclusion planning key, are embedded in practice and teachers are aware of the special educational needs of the children in their Maths class, as well as those who have English as an additional language.

Although the expectation is that the majority of children will move through the programmes of study at broadly the same pace, the 2014 National Curriculum states:

'Decisions about when to progress should always be based on the security of children's understanding and their readiness to progress to the next stage.'

If a child's needs are best met by following an alternative plan, including coverage of the content from a previous year, this will be overseen by the SENDCo, in collaboration with the class teacher and with the knowledge of SMT. Specific arrangements for the provision of children with SEND will be communicated to parents and carers during SEND reviews.

Classroom Environment and Resources

Each class has a Mathematics working wall. This is an interactive display board to show the key concepts being taught and learned in Mathematics and is regularly changed to reflect the teaching and learning activities happening in the classroom. This display should include materials to support children in accessing their learning independently.

The use of Mathematics resources is integral to the concrete – pictorial – abstract approach and thus planned into teaching and learning. The school has a wide variety of good quality equipment and manipulative resources, both tangible and ICT based, to support our learning

and teaching. These resources are used by our teachers and children in a number of ways including:

- Demonstrating or modelling an idea, an operation or method of calculation. Resources for this purpose would include: a number line; place value cards; dienes; place value counters and grids; money or coins; measuring equipment for capacity, mass and length; bead strings; the interactive whiteboards and related software; 3D shapes and/or nets; Numicon and related resources and software; multilink cubes; clocks; protractors; calculators; dice; number and fractions' fans; individual whiteboards and pens; and 2D shapes and pattern blocks, amongst other things.
- Enabling children to use a calculation strategy or method that they couldn't do without help, by using any of the above or other resources as required.

Standard resources, such as Base 10, Place Value counters, number lines, multi-link cubes, hundred squares and counters are located within individual classrooms. Resources within individual classes are accessible to all children who should be encouraged to be responsible for their use.

Further resources (often larger items shared by the whole school) are also available as part of a central supply.

An interactive teaching tool for the purpose of modelling strategies is available to all teachers as part of the White Rose Maths scheme. Resources to support teachers' own professional development and understanding of new approaches as part of a mastery approach are available on the White Rose Maths platform. As well as overviews of learning, these include short videos which demonstrate new methods to ensure accuracy.

High quality activity task sheets, produced by White Rose Maths, as part of the national approach to teaching for mastery are used in each year group and a digital version of the White Rose Maths activities allows these to be shared with the class, during the main teaching.

Teachers are encouraged to use the school playgrounds as an outdoor classroom when possible, for example, when teaching length, area or perimeter.

Governors

We have identified a Maths governor. The Maths governor meets with Mathematics lead teacher termly and when possible visits the school to talk to teachers and pupils and carry out learning walks. The Maths governor reports back to the curriculum committee and full governing body on a regular basis.