

TEMPLE EWELL C. E. PRIMARY SCHOOL

Policy for Mathematics

"Ask, and it will be given to you; seek, and you will find; knock,
and it will be opened to you"

Matthew 7:7

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Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

National Curriculum 2014

Intent

At Temple Ewell we believe that mathematics is an essential part of children's development. Our intent is to ensure that all children become fluent in the fundamentals of mathematics, are able to reason mathematically and can solve problems by applying their mathematical understanding. These skills are embedded within mathematics lessons and developed consistently over time. We are committed to ensuring that children are able to recognise maths in the wider world and that they are able to use their mathematical skills and knowledge confidently in their lives in a range of different contexts. We want all children to enjoy Mathematics and to experience success in the subject, with the ability to reason mathematically. We are committed to developing children's curiosity about the subject, as well as an appreciation of the beauty and power of Mathematics.

Our Aims:

Mathematics teaching at Temple Ewell aims to ensure that all children:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.
- Mathematics is an interconnected subject in which pupils need 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.

Implementation

The principles and features, which underpin mathematics teaching at Temple Ewell, are:

- Teachers reinforce an expectation that all children are capable of achieving high standards in Mathematics.
- The large majority of children progress through the curriculum content at the same pace.
- Children's learning is supported by emphasising deep knowledge and through individual support and intervention as needed.
- Adaptive teaching is used to support all children to make progress within mathematics
- Teaching is underpinned by methodical curriculum design and supported by carefully crafted lessons and resources to foster deep conceptual and procedural knowledge.
- Practice and consolidation play a central role. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts.
- Teachers use precise questioning in class to test conceptual and procedural knowledge and assess children regularly to identify those requiring intervention, so that all children keep up. Children's explanations and their proficiency in articulating mathematical reasoning, with the precise use of mathematical vocabulary, are supported through the use of stem sentences provided by the teacher.

The mathematics curriculum at Temple Ewell follows the National Curriculum 2014 expectations and programmes of study. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study. To ensure whole consistency and progression, the school uses the White Rose Maths scheme to structure learning. Teachers may choose to supplement or adjust this to better meet the needs of their pupils. Applying mathematics and problem solving form an integral part of mathematics teaching at Temple Ewell and all domains will include this element of

maths. Mathematics lessons will include practical, investigational, problem solving, oral activities and real life applications.

Children develop their understanding through the use of concrete resources, pictorial representations and abstract thinking (the C-P-A approach).

Teachers use careful questions to draw out children's discussions and their reasoning. Mathematical topics are taught in blocks, to enable the achievement of 'mastery' over time. Children who grasp new concepts rapidly are challenged through being offered rich and sophisticated problems to ensure mastery of key skills and understanding before any acceleration through new content occurs.

The way that calculations are taught within mathematics lessons is outlined in a separate Calculation Policy which is followed by all staff to ensure a consistent and cohesive approach through the school.

Decisions about when to move children to new skills or concepts are always based on the security of pupils' understanding and their readiness to progress to the next stage. Children who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

Children should apply their mathematical knowledge to science and other subjects; where possible mathematics will be linked to other areas of the curriculum to ensure a depth of understanding and an ability to apply mathematical concepts. Where possible cross-curricular links will be made; for example, measuring accurately could be linked to Design and Technology and making a real item, time might be linked to Athletics within PE lessons, place value to Timelines in History.

Organisation

There are mixed age classes at Temple Ewell. To enable effective teaching links between year group expectations will be made and where possible children in different year groups will be working on similar learning points at an age appropriate level. The majority of children will be working on age appropriate expectations, for example a year 1 child in a 1 / 2 split year class will work on year 1 expectations, however there will be times when it is appropriate for the whole class to be working on the same aspect of mathematics.

EYFS

Children in Reception will be working towards achieving the Early Learning Goals found within the Early Years Foundation Stage statutory framework. At the end of Reception, the children will be assessed against the Early Learning Goals which are as follows:

ELG: Number Children at the expected level of development will:

- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

ELG: Numerical Patterns Children at the expected level of development will:

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including even and odd, double facts and how quantities can be distributed equally.

The children build a strong foundation of mathematical skills through positive play experiences and active learning opportunities. Early experiences of number and numerical pattern are embedded through an immersive environment. Pupils develop mathematical knowledge holistically through the daily routines and the learning environment alongside structured mathematics lessons.

Inclusion

At Temple Ewell we view each child as an individual learner and through continuous assessment and monitoring of pupil progress we ensure the curriculum is accessible and appropriately matched with equal opportunities to meet all our pupils' needs through effective planning and adaptive teaching informed by ongoing assessment, teaching and learning. Provision for pupils is the responsibility of all staff teachers and is overseen by the SENCO.

Teachers plan for the needs of pupils which includes considering and adapting teaching to take into account strengths and learning styles, pupil progress, gifted and talented children, children highlighted as not reaching expected by end of year, children with English as an additional language, gender, behavioural needs, emotional wellbeing and specific identified learning needs. When teachers deem it as being required children are given additional support or the curriculum is adapted to meet their learning needs.

Assessment

By the end of each key stage, pupils are expected to know, apply and understand matters, skills and processes specified in the relevant programme of study.

Teachers are expected to make regular assessments of pupils' progress. Children's work is assessed against age appropriate expectations and programmes of study. Teachers use 'Targeted Tasks' to ensure that assessments are accurate; these are short problem solving activities or set problems that link to what is being taught which provide an opportunity for pupils to demonstrate their understanding. Assessments are moderated to ensure a consistent approach.

- Informal testing of mental recall and mental calculation, given orally
- Quality first teaching and questioning to inform planning
- Assessments against key objectives for each year group
- Evaluation of group progress against termly aims
- Assessment and recording of each pupil's progress against National Curriculum level descriptions at the end of each term
- Formal assessments at the end of each key stage

Marking and feedback to children

Marking and the provision of feedback form an integral part of assessment at Temple Ewell. Pupils' work will be reviewed by staff as part of the assessment process, findings from this will be used to inform future lessons. Feedback will be given to children, as is deemed appropriate by staff, to ensure their understanding is clarified and moved forward.

(See the marking policy for specific guidance on this)

Monitoring and evaluation

Mathematics is monitored throughout the year by senior management and the Subject Leader. Monitoring will take the form of:

- Lesson observations
- Book monitoring by senior leaders, the subject leader and governors as appropriate
- Pupil voice
- Work scrutiny
- Data reviews throughout the year
- Pupil Progress meetings

Use of ICT

ICT is used as a teaching and learning tool within Mathematics lessons when teachers deem it appropriate.

Calculators should not be used as a substitute for good written and mental arithmetic. They are therefore introduced near the end of Key Stage 2 to support pupils' conceptual understanding and exploration of more complex number problems.

Spoken Language

"The national curriculum for mathematics reflects the importance of spoken language in pupils' development across the whole curriculum - cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof. They must be assisted in making their thinking clear to themselves as well as others and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions." (National Curriculum 2014)

Spoken language is seen as a key aspect of Mathematics learning at Temple Ewell, children are encouraged and provided opportunities to discuss and explain their reasoning in every mathematics lesson throughout the school.

Home Learning

Homework activities are set by class teachers. This takes the form of Problem solving and the learning of timetables or key facts.

(See the Homework Policy for further information)

Impact

At Temple Ewell we see mathematics as essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. Children have a high-quality mathematics education that provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

The impact on children at Temple Ewell is clear and sustained learning within mathematics. The children are fluent in the fundamentals of mathematics, pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems that increase in complexity and difficulty as they move through the school. Pupils can reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language. They can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Mathematics is an interconnected subject in which pupils move fluently between representations of mathematical ideas.

Review

This policy will be reviewed by the mathematics Subject Leader, following discussions with the Head Teacher and other colleagues. Resources, teaching methods and developmental needs will be evaluated. Priorities for in service training and support will be established. Information from this evaluation will form the basis for an action plan which will be fed into the School Improvement Plan.