

Astley St Stephen's CE
Primary School



Mathematics Policy

Subject Leader: Mrs M Lowe

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Contents:

Statement of intent

1. Legal framework
2. Roles and responsibilities
3. The national curriculum
4. Cross-curricular links
5. Teaching and assessment
6. Equal opportunities
7. Monitoring and review

Statement of intent

This policy has been written with the express desire that children at St Stephen's Primary School have a positive and successful learning experience in mathematics. We aim to provide a high-quality curriculum that is engaging, inspiring, broad, innovative and creative.

Our focus on teaching maths using a mastery approach will ensure that pupils acquire a deep, long-term, secure and adaptable understanding of the subject. Children will meet the National Curriculum expectations in mathematics, which will be taught by highly-enthusiastic qualified staff who will support children to develop mastery of concepts and inspire enthusiasm and interest in mathematics.

We aim to help children to become independent learners with inquisitive minds who have secure mathematical foundations and are aspirational in their learning. We want to ensure children are confident mathematicians who are not afraid to take risks as we develop cross-curricular links and provide children with opportunities to use maths in other subjects and understand the value of maths in the wider world.

1. Legal framework

This policy has due regard to all relevant legislation and statutory guidance including, but not limited to, the following:

- DfE (2014) 'National Curriculum in England: Mathematics programmes of study'
- DfE (2013) 'Mathematics programmes of study: key stages 1 and 2'
- DfE (2020) 'Headteachers' standards 2020'
- DfE (2023) 'Statutory framework for the Early Years Foundation Stage'

This policy operates in conjunction with the following school policies:

- Pupil Code of Conduct
- Calculation Policy
- Curriculum Policy
- Teaching and Learning Policy
- Assessment Policy
- Early Years Teaching and Learning Policy
- Early Years Assessment Policy

2. Roles and responsibilities

The governing board is responsible for:

- Ensuring a broad and balanced mathematics curriculum is implemented in the school.
- Ensuring the school's mathematics curriculum is accessible to all pupils.

The headteacher is responsible for:

- Appointing an appropriate subject leader.
- Establishing and sustain high-quality, expert mathematics teaching across all phases, built on an evidence-informed understanding of effective teaching and how pupils learn.
- Ensuring mathematics teaching is underpinned by high levels of expertise in mathematics and approaches which respect the distinct nature of mathematics as a discipline
- Ensuring effective use is made of formative assessment.
- Ensuring a broad, structured and coherent mathematics curriculum entitlement which sets out the knowledge, skills and values that will be taught.
- Establishing effective curricular leadership, developing subject leaders with high levels of relevant expertise with access to professional networks and communities.
- Ensuring valid, reliable and proportionate approaches are used when assessing pupils' knowledge and understanding of the mathematics curriculum.
- Establishing and sustain culture and practices that enable all pupils, including pupils with SEND, to access the curriculum and learn effectively.

The subject leader is responsible for:

- Encouraging staff to provide effective learning opportunities for pupils.
- Helping to expand on colleagues' areas of expertise in mathematics.
- Organising the deployment of resources and carrying out an annual audit.
- Liaising with teachers across all phases.
- Communicating developments in mathematics to teachers and the SLT, as appropriate.
- Leading staff meetings and providing staff with the appropriate training.
- Organising, providing and monitoring CPD opportunities regarding mathematics skills.
- Ensuring common standards are met for recording and assessing pupils' performance.
- Advising on the contribution of mathematics in other curriculum areas, including cross-curricular and extracurricular activities.
- Collating assessment data and setting new priorities for the development of mathematics in subsequent years.

Teachers are responsible for:

- Acting in accordance with this policy.
- Ensuring progression of pupils' mathematics skills, with due regard to the national curriculum.
- Planning lessons effectively, ensuring a mastery approach is followed to ensure success for all.
- Liaising with the subject leader about key skills, resources and support for individual pupils.
- Monitoring the progress of pupils in their class and reporting this on an annual basis.
- Reporting any concerns regarding the teaching of the subject to the subject leader or a member of the SLT.
- Undertaking any training that is necessary to effectively teach mathematics.

The SENCO is responsible for:

- Liaising with the subject leader to implement and develop the mastery approach for mathematics throughout the school to ensure it is inclusive for all.
- Organising and providing training for staff regarding the mathematics curriculum for pupils with SEND.
- Advising staff on how best to support pupils' needs.
- Advising staff on the inclusion of mathematics objectives in pupils' individual education plans.
- Advising staff on the use of TAs to meet pupils' needs.

Pupils are responsible for:

- Ensuring they complete work on time and to the best of their ability.
- Ensuring they behave in accordance with the Pupil Code of Conduct.

3. The National Curriculum and EYFS Statutory Framework

Early Years Provision

During Reception, in accordance with the 'Statutory framework for the early years foundation stage', focus will be put on the seven early learning goals (ELGs), with the mathematics aspect of pupils' work relating to the objectives set out within the framework. The ELGs cover:

1. Communication and language: listening, attention and understanding; and speaking.
2. Personal, social and emotional development: self-regulation, managing self, and building relationships.
3. Physical development: gross motor skills and fine motor skills.
4. Literacy: comprehension, word reading, and writing.
5. Mathematics: number and numerical patterns.
6. Understanding the world: past and present; people, culture and communities; and the natural world.
7. Expressive arts and design: creating with materials; and being imaginative and expressive.

Activities and experiences for pupils will be based on the seven areas of learning and development, as outlined in the DfE's 'Early years foundation stage statutory framework: For group and school-based providers'.

Activities will provide pupils with the opportunity to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems, and describing shapes, spaces and measurements.

All activities will adhere to the objectives set out in the framework.

Children will be taught how to:

- Count confidently.
- Develop a deep understanding of the numbers to 10.
- Understand the relationship between the numbers to 10 and the patterns within those numbers.
- Develop a secure base knowledge and vocabulary from which mastery of mathematics is built.
- Develop their spatial reasoning skills across all areas of mathematics including shape, space and measures.
- Develop positive attitudes and interests in mathematics.
- Look for patterns and relationships.
- Spot connections.

- Talk to adults and peers about what they notice and not be afraid to make mistakes.

Teaching staff will utilise the early learning goals (ELGs), which summarise the knowledge, skills and understanding that all children should have gained by the end of the EYFS. For the ELG for numbers, children at the expected level of development will:

- Have a deep understanding of numbers 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.

For the ELG for 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 evens and odds, double facts and how quantities can be distributed equally.

4. The National Curriculum for Key Stage One and Two

The national curriculum will be followed for all mathematics teaching.

Spoken language

The National Curriculum for England states:

“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.”

The National Curriculum sets out specific expectations in relation to the use of vocabulary and its link to spelling to be met at the end of Year 2, 4 and 6:

Years 1 and 2

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Years 3 and 4

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Years 5 and 6

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Teachers often use informal, everyday language in mathematics lessons before or alongside technical mathematical vocabulary. Although this can help children to grasp the meaning of different words and phrases, a structured approach to the teaching and learning of vocabulary is essential if children are to move on and begin using the correct mathematical terminology.

At St Stephen's we believe new words should be introduced in a suitable context, if possible, with relevant real objects, mathematical apparatus, pictures and/or diagrams. We will explain their meanings carefully and rehearse them several times to ensure a good level of understanding and recollection. We will encourage their use in context in oral sessions through a range of questioning styles.

We will use every opportunity to draw attention to new words or symbols with the whole class, in a group or when talking to individual pupils. The final stages are learning to read and write new mathematical vocabulary in a range of circumstances, ultimately spelling the relevant words correctly.

Programmes of Study for Key Stage One and Two:

The below demonstrates the 'ready-to-progress' criteria (DfE and NCETM) across all year groups and is not exhaustive of everything children will learn through the curriculum. The ready-to-progress criteria are intended as goals for the end of the year.

In Year 1, pupils will be taught to:

Number and place value

- Count within 100, forwards and backwards, beginning with any number.
- Reason about the location of numbers to 20 within the linear number system, including comparing using $<$ $>$ and $=$.

Number facts

- Develop fluency in addition and subtraction facts within 10.
- Count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple and count forwards and backwards through the odd numbers.

Addition and subtraction

- Read, write and interpret equations containing addition, subtraction and equals symbols, and relate additive expressions and equations to real-life contexts.
- Compose numbers to 10 from two parts and partition numbers to 10 into parts, including recognising odd and even numbers.

Geometry

- Recognise and name common 2D and 3D shapes presented in different orientations and know that rectangles, triangles, cuboids and pyramids are not always similar to one another
- Compose 2D and 3D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations.

In Year 2, pupils will be taught to:

Number and place value

- Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and non-standard partitioning.
- Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10.

Number facts

- Secure fluency in addition and subtraction facts within 10 through continued practice.

Addition and subtraction

- Add and subtract across 10.
- Recognise the subtraction structure of 'difference' and answer questions of the form "How many more?"
- Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only 1s or only 10s to or from a two-digit number.
- Add and subtract within 100 by applying related one-digit addition and subtraction facts.
- Add and subtract any two-digit numbers.

Multiplication and division

- Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables.

- Relate grouping problems where the number of groups is unknown to multiplication equations within a missing factor, and to division equations.

Geometry

- Use precise language to describe the properties of 2D and 3D shapes, and compare shapes by reasoning about similarities and differences in properties.

In Year 3, pupils will be taught to:

Number and place value

- Divide 100 into 2, 3, 5 and 10 equal parts and read scales/number lines marked in multiples of 100 with 2, 4, 5 and 10 equal parts.

Number facts

- Secure fluency in addition and subtraction facts that bridge 10, through continued practice.
- Recall multiplication facts and corresponding division facts, in the 10, 5, 2, 4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number.
- Apply place-value knowledge to known additive and multiplicative number facts.

Addition and subtraction

- Calculate complements to 100.
- Add and subtract up to three-digit numbers using columnar methods.
- Manipulate the additive relationship:
 - Understand the inverse relationship between addition and subtraction and how both relate to the part-part-whole structure.
 - Understand and use the commutative property of addition, and understand the related property for subtraction.

Multiplication and division

- Apply known multiplication and division facts to solve contextual problems with different structures, including quotative and partitive division.

Fractions

- Interpret and write proper fractions to represent one or several parts of a whole that is divided into equal parts.

- Find unit fractions of quantities using known division facts.
- Reason about the location of any fraction within one in the linear number system.
- Add and subtract fractions with the same denominator, within one.

Geometry

- Recognise right angles as a property of shape or a description of a turn, and identify right angles in 2D shapes presented in different orientations.
- Draw polygons by joining marked points and identify parallel and perpendicular sides.

In Year 4, pupils will be taught to:

Number and place value

- Know that 10 hundreds are equivalent to 1 thousand and that 1,000 is 10 times the size of 100 and apply this to identify and work out how many 100s there are in other four-digit multiples of 100.
- Recognise the place value of each digit in four-digit numbers using standard and non-standard partitioning.
- Reason about the location of any four-digit number in the linear number system including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each.
- Divide 1,000 into 2, 4, 5 and 10 equal parts and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts.

Number facts

- Recall multiplication and division facts up to 12×12 and recognise products in multiplication tables as multiples of the corresponding number.
- Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders and interpret remainders appropriately according to the context.
- Apply place-value knowledge to known additive and multiplicative number facts.

Multiplication and division

- Multiply and divide whole numbers by 10 and 100 and understand this as equivalent to making a number 10 or 100 times the size.
- Manipulate multiplication and division equations and understand and apply the commutative property of multiplication.
- Understand and apply the distributive property of multiplication.

Fractions

- Reason about the location of mixed numbers in the linear number system.
- Convert mixed numbers to improper fractions and vice versa.
- Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers.

Geometry

- Draw polygons, specified by coordinates in the first quadrant and translate within the first quadrant.
- Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal.
- Find the perimeter of regular and irregular polygons.
- Identify line symmetry in 2D shapes presented in different orientations.
- Reflect shapes in a line of symmetry and complete a symmetric figure or pattern with respect to a specified line of symmetry.

In Year 5, pupils will be taught to:

Number and place value

- Know that 10 tenths are equivalent to 1 one and that 1 is 10 times the size of 0.1.
- Know that 100 hundredths are equivalent to 1 one and that 1 is 100 times the size of 0.01.
- Know that 10 hundredths are equivalent to 1 tenth and that 0.1 is 10 times the size of 0.01.
- Recognise the place value of each digit in numbers with up to 2 decimal places and compose and decompose numbers with up to 2 decimal places using standard and non-standard partitioning.
- Reason about the location of any number with up to 2 decimal places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each.
- Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts.
- Convert between units of measures including using common decimals and fractions.

Number facts

- Secure fluency in multiplication table facts and corresponding division facts, through continues practice.
- Apply place-value knowledge to known additive and multiplicative number facts.

Multiplication and division

- Multiply and divide numbers by 10 and 100 and understand this as equivalent to making a number 10 or 100 times the size or 1 tenth or 1 hundredth times the size.
- Find factors and multiples of positive whole numbers, including common factors and common multiples and express a given number as a product of 2 or 3 factors.
- Multiply any whole number with up to four digits by any one-digit number using a formal written method.
- Divide a number with up to 4 digits by a one-digit number using a formal written method and interpret remainders appropriately for the context.

Fractions

- Find non-unit fractions of quantities.
- Find equivalent fractions and understand that they have the same value and the same position in the linear number system.
- Recall decimal fraction equivalents for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$, and for multiples of these proper fractions.

Geometry

- Compare angles, estimate and measure angles in degrees and draw angles of a given size.
- Compare areas and calculate the area of rectangles using standard units.

In Year 6, pupils will be taught to:

Number and place value

- Understand the relationship between powers of 10 from 1 hundredth to 10 million and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size.
- Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose numbers up to 10 million using standard and non-standard partitioning.

- Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system and round numbers, as appropriate, including in contexts.
- Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.

Addition, subtraction, multiplication and division

- Understand that 2 numbers can be related additively or multiplicatively and quantify additive and multiplicative relationships.
- Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships and place-value understanding.
- Solve problems involving ratio relationships.
- Solve problems with 2 unknowns.

Fractions

- Recognise when fractions can be simplified and use common factors to simplify fractions.
- Express fractions in a common denomination and use this to compare fractions that are similar in value.
- Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.

Geometry

- Draw, compose and decompose shapes according to given properties, including dimensions, angles and area and solve related problems.

5. Cross-curricular links

Wherever possible, the maths curriculum will provide opportunities to establish links with other curriculum areas.

English

Mathematical terminology is used, where appropriate. Maths-based texts are sometimes used in English lessons, home reading books and in guided reading sessions.

Science

Pupils' data collection and analysis skills are further developed through the conduction of physical experiments, using units of measurement, calculating averages and interpreting results.

Pupils record their finding using charts, tables and graphs.

Humanities

Data analysis, pattern seeking and problem-solving skills are developed through the teaching of geography.

Pupils' understanding of time and measurements of time are developed through discussions of historical events.

ICT

Pupils are encouraged to use calculators and other electrical devices, gaining confidence throughout their school experience.

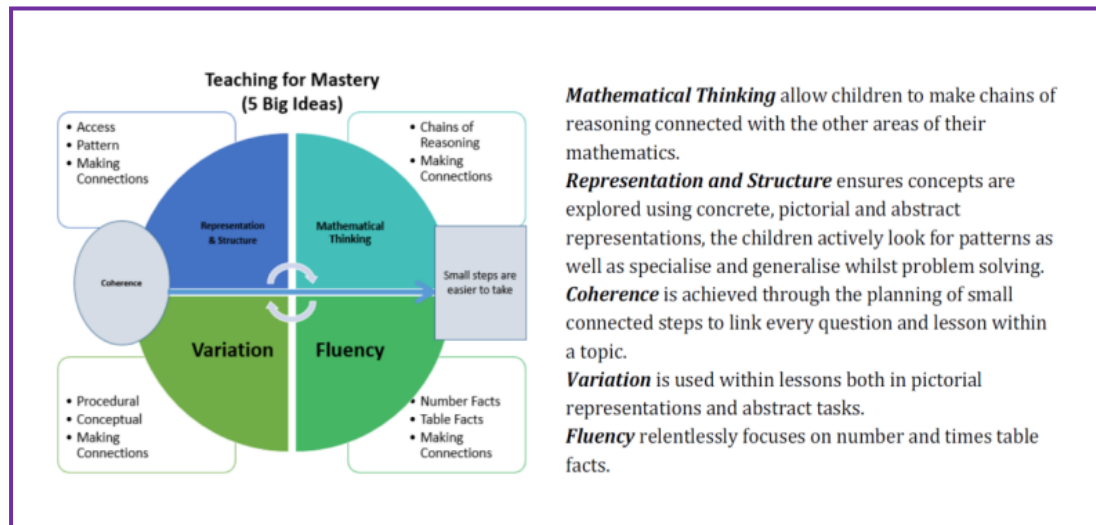
ICT will be used to enhance pupils' maths skills through the use of online resources and the creation of spreadsheets. ICT will also be used to record findings, using text, data and tables.

6. Teaching, Learning and Assessment

In September 2023, St. Stephens Primary School started its journey towards a whole school mastery approach to the teaching and learning of mathematics. We understand that this will be a gradual process and may take time to fully embed. The rationale behind changing our school approach to teaching mathematics arose from our involvement in the NCETM Northwest 3 Maths Hub and Teaching for Mastery Programme and our belief in the philosophy that all children can achieve, as well as the 2014 National Curriculum, which 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.

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



Lesson planning

All relevant staff members are briefed on the school's planning procedures as part of their staff training.

Throughout the school, maths is taught as a discrete lesson and as part of cross-curricular themes when appropriate.

Teachers will use the key learning content in the DfE's statutory guidance 'National curriculum in England: mathematics programmes of study', supported by the "Small Steps" of the White Rose maths scheme, Third Space learning, NRich and the NCETM resources.

Lesson plans will demonstrate a balance of interactive and independent elements used in teaching, ensuring that all pupils engage with their learning. There will be a clear focus on direct, instructional teaching and interactive oral work with the whole class and targeted groups.

Teachers will ensure that all maths lessons include a focus on mental calculation.

Long-term planning will be used to outline the units to be taught within each year group.

Medium-term planning will be used to outline the vocabulary and skills that will be taught in each unit of work, as well as highlight the opportunities for assessment. Medium-term plans will identify learning objectives, main learning activities and differentiation.

Short-term planning will be used flexibly to reflect the objectives of the lesson, the success criteria and the aims of the next lesson. Short-term planning is the responsibility of the teacher. This is achieved by building on their medium-term planning, taking into account pupils' needs and identifying the method in which topics could be taught.

All lessons will have clear learning questions, which are shared and reviewed with pupils.

Teaching

Early Years Foundation Stage – In Reception, mathematics is taught using the NCETM “Mastering Number” programme through a daily session delivered four days a week, with one day a week dedicated to shape, space and measures. This is then enhanced with carefully curated activities and resources within the class continuous provision.

Key Stage One and Two - Throughout the school, mathematics will be taught as a discreet subject, with maths skills being embedded and applied across the curriculum wherever relevant. As a school, we do not prioritise between procedural fluency and conceptual understanding, and we believe that children must develop these in parallel.

A typical mathematics lesson at St Stephens will include:

- A clear learning question, linked to the small step being taught - the children are encouraged to discuss what they are learning and make connections with prior learning.
- The whole class working on the same small step of learning at a pace that suits them (With exception only when necessary). During the lesson key vocabulary and key questions are shared and the children are encouraged to use specific mathematical language using full sentences.
- Pre-teaching sessions prior to the lesson to support understanding as required.
- Activities which promote children’s fluency of number and their reasoning and problem-solving skills.
- As appropriate, a range of manipulatives being used to explore key concepts. All children are expected to explore these either to support understanding or to explain their understanding.
- For children who are struggling to grasp the concept, adults will support in class with precise questioning to identify pupils to work in a guided teacher groups.
- Post-teaching sessions may be provided for children who require additional support to grasp or revisit a concept.
- Children who master mathematical concepts more rapidly are given the opportunity to deepen their understanding by attempting additional challenges. These activities are carefully designed to encourage children to use and develop their mathematical skills.

Assessment

EYFS – In Reception, there are two main assessments – the baseline assessment which is completed at the start of the academic year, and an EYFS Profile, which will be completed for each pupil in the final term of the year in which they reach age five.

The progress and development of pupils within the EYFS is assessed against the early learning goals outlined in the 'Statutory framework for the early years foundation stage'.

To support the judgements made in the EYFS Profile, formative assessments will be carried out throughout the year by EYFS staff to ensure accuracy.

Key Stage One and Two - Pupils will be assessed and their progression recorded in line with the school's Assessment Policy. Assessment in mathematics will be based upon the understanding and application of the small steps taught within each unit.

Pupils will be assessed continually throughout the year and will undertake a summative assessment each term. Formative assessment will be carried out informally throughout the year. This will enable teachers to identify pupils' understanding of subjects and inform their immediate lesson planning. The results of end-of-year summative assessments will be passed to relevant members of staff, including the pupil's future mathematics teacher.

Assessment will take various forms, including the following:

- Talking to pupils and asking questions
- Discussing pupils' work with them
- Marking work against learning questions / small step objectives
- Specific assignments for individual pupils
- Observing oral responses and explanations
- Pupils' self-evaluation of their work
- Classroom tests and formal exams using the White Rose termly assessment papers and previous SATS tests

The school will act as an exam centre for the SATs statutory assessments in Mathematics. Lessons for Year 6 pupils will be adequately tailored to prepare them for their assessments, including revision time.

Parents will be provided with a written report about their child's progress during the summer term every year. Reports will include information on the pupil's attitude towards mathematics and how they have performed. Verbal reports will be provided at parent-teacher meetings during the Autumn and Spring terms.

Resources

The subject leader is responsible for the management and maintenance of maths resources, as well as liaising with the School Business Manager in order to purchase further resources.

Maths resources will be stored in each classroom, including calculators, rules and protractors if required regularly.

Resources which are not required regularly, and those in relation to key whole-school topics, will be stored in the maths resources area.

Working walls will be utilised and updated regularly, in accordance with the area of maths being taught at the time.

Maths equipment and resources will be easily accessible to pupils during lessons.

The subject leader will undertake an audit of maths equipment and resources on an annual basis.

7. Equal opportunities

All pupils will be given equal access to the entire mathematics curriculum through a range of adaptive teaching styles and resources.

Where required, pupils with SEND and pupils with EAL will be provided with additional support in order to fully engage with the mathematics curriculum.

Where it is inappropriate for a pupil to participate in a lesson because of reasons related to any protected characteristics, the lesson will be adapted to meet the pupil's needs and alternative arrangements involving extra support will be provided where necessary.

The school aims to provide more academically able pupils with the opportunity to extend their mathematics skills and knowledge through extension activities such as additional challenges throughout their lessons and enrichment sessions such as the Year 6 maths reasoning club.

8. Monitoring and review

This policy will be reviewed every two years by the governing board and subject leader. The next scheduled review for this policy is February 2027.

The governor responsible for mathematics will be briefed to oversee the teaching of mathematics and will meet regularly with the subject leader to review progress.

Any changes made to this policy will be communicated to all teachers.