



Stottesdon C. of E. Primary School

The Shropshire Gateway Educational Trust



MATHS POLICY

All references in this policy are saved in: Staff Public/ Policies 2023/Maths Policy

This policy needs to be read alongside other school policies such as:

- Assessment
- Teaching and Learning
- Equalities Policy
- SEN Policy
- Gifted and Talented
- Curriculum Statement
- Early Years Policy
- Transition from Reception to Y1 document

This policy should also be read alongside the National Curriculum and other documents from the Standards and Testing Agency.

Rationale:

"Mathematics is a creative and highly inter-connected 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."

(The National Curriculum for Mathematics 2014)

At Stottesdon C of E Primary School, we believe that Mathematics is a tool for everyday life. It is a whole network of concepts and relationships which provide a way of viewing and making sense of the world. It is used to analyse and communicate information and ideas and to tackle a range of practical tasks and real life problems. It also provides the materials and means for creating new imaginative worlds to explore.

Aims

Using the Programmes of Study from the National Curriculum for Mathematics we **aim** to:

- Develop an enjoyment and curiosity of mathematics that will enable all children to feel confident and to become successful;
- Develop all children's mathematical thinking.
- Develop all children's understanding and knowledge of key mathematical concepts at depth.

- Develop automaticity in all children's maths, so that they do not experience cognitive overload when approaching new learning.
- Develop all children's resilience and abilities to use and apply mathematics to solve problems: in purely mathematics contexts; throughout the curriculum and in 'real life' settings.
- Develop the confidence of all children to reason and communicate ideas both in written form and orally.
- Give all children ownership of a wide range of mathematical vocabulary which is modelled and used in the classroom environment.
- Develop both independent and collaborative ways of working, encouraging all children to share ideas and solve problems together.
- Develop a strong sense of number, where all children use their knowledge to calculate, not count. This sense of number is developed through robust exposure to the structure of number.
- Develop all children's ability to recall and use mental facts fluently, accurately and quickly.
- Develop all children's use of effective and efficient written and mental calculation methods.
- Develop all children's logical thinking, reasoning and ability to problem solve as transferable life skills.

The National Curriculum

Stottesdon C of E Primary follows The National Curriculum 2014, which describes what must be taught in each Key Stage. Every teacher in Stottesdon School has access to a copy of the National Curriculum 2014. In Early Years, the curriculum is guided by the Early Years Foundation Stage 2021. The mathematical aims of the National Curriculum 2014 are to ensure that all pupils:

- become fluent in the fundamentals of mathematics, through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- 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.

Teaching and Learning

Teachers aim to deliver engaging lessons that:

- Provide regular independent retrieval practise of declarative and procedural knowledge previously learnt so that these can be accessed in children's long term memory.
- Provide explicit, systematic instruction of new learning for all learners, where appropriate using worked examples to develop all children's understanding of the maths journey.
- Plan for all children to make use of specific, particular manipulatives (eg fingers, diennes, rekenreks unifix, bead strings, place value resources etc) and representations to: develop understanding; see the structure of the mathematics involved; internalise visual representations of number and key facts; and make the links between the manipulatives and the maths they are undertaking. This involves making informed choices of equipment that are carefully selected to reveal the maths being represented. Increasingly, as children develop mathematical fluency and skills, these should be considered temporary; they should act as a 'scaffold' that can be removed once depth of understanding, fluency and independence is achieved. We aim that all children's maths will become increasingly abstract over time based upon this robust foundation.
- Are carefully sequenced within a maths curriculum that allows all children to build a robust base of declarative and procedural knowledge that can be applied to taught problem solving (conditional knowledge) over time.
- Use the principles of variation theory (concrete, pictorial and abstract representation and procedural knowledge).
- Teach all pupils strategies for solving problems: using carefully selected questions that allow children to apply the maths that they are familiar with (both declarative and procedural) therefore reducing



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cognitive overload and freeing working memory for using their conditional knowledge to solve problems; encouraging a variety of different taught approaches; accessing worked examples to analyse the effectiveness of different approaches; and allowing children time to reflect upon and communicate their approaches to problem solving.

- Use precise mathematical vocabulary, stem sentences and careful questioning and discussion to ensure all pupils have a robust understanding of the mathematics taught.
- Takes small steps to reduce cognitive overload for all pupils.
- Enable all pupils to develop a rich network of mathematical knowledge and understanding, by: emphasising the many connections between declarative, procedural and conditional knowledge so that pupils can develop fluent recall of facts, understand procedures and consciously choose problem solving strategies.
- Provide fluid groupings to give all pupils the opportunity to achieve. This may be aided by support in class, precise formative assessment, careful choice of models and images, pre-teaching and overlearning wherever necessary.
- Are planned and delivered by teachers who ensure that their subject and pedagogical knowledge is both deep and rigorous and who take responsibility for continuous development of this.
- Provide opportunity for all children to self/peer assess their work and to respond to high quality feedback from teachers.
- Teach children to present workings neatly in an organised manner in their maths books, so that they can spot patterns in the maths they are learning and develop automaticity in the procedures they use.

A typical lesson structure could consist of:

- Retrieval of previous learning.
- Clear understanding of the next learning objectives.
- Whole class teaching.
- Group Work.
- Paired work
- Individual work.
- Work on tablets/computers/technology
- Games
- Guided work
- Independent work.
- Reflection on learning.

Pupils engage in:

- Retrieval of important facts, knowledge, skills and routines.
- The development of fluent mental strategies, with a focus on calculating using recall of mathematical facts. (At Stottesdon School we recognise the importance of establishing a secure foundation in mental calculation and recall of number facts before standard written methods are introduced.)
- Engagement with concrete, pictorial and abstract representations.
- Written methods. (Children are encouraged to make appropriate choices for calculation)
- Reasoning/investigational work
 - conjecture
 - proof
 - generalisation through investigation of mathematical patterns.

- Problem-solving.
- Mathematical thinking and discussion using precise mathematical language.
- Practise through worked examples, routine practise and application.

In addition to the daily maths lessons, teachers will provide regular and (as appropriate ad hoc) opportunities to practice maths to help develop fluency, these might include:

- Early morning activities.
- Times tables practice sessions.
- Making the most of moments throughout the day to highlight and use mathematics, for example, in daily routines, play activities, and other curriculum areas.

Teachers of the EYFS ensure:

- That mathematics is both taught daily and integrated throughout the day so that children learn through a mixture of adult led activities and child initiated activities both inside and outside of the classroom.
- Stimulating areas of provision within the classroom support maths, ensuring children are able to access throughout the day, to practise and develop skills being taught.
- Consistent daily maths lessons take the form of direct teaching, which is followed up by enhanced and explorative activities placed in areas of provision in their learning environment which may be accessed independently or supported by an adult.
- Children explore their understanding of cardinality and counting, comparison, composition, pattern, shape and space and measures. This is taught through skilful planning of a variety of activities that enable the children to enjoy, explore, practice and talk confidently about mathematics.

Planning

Planning at Stottesdon aims to provide children with proficiency in all aspects of the maths curriculum, and the units build on prior learning and are forward thinking towards the next steps in the maths journey. It is carefully sequenced to make the links between declarative, procedural and conditional knowledge.

Long Term Planning (curriculum map level)

- EYFS use development matters for their long term planning.
- Reception class use NCETM mastering number long term planning, augmented by planning for shape, space and measure.
- Key stage one use NCETM mastering number long term planning in conjunction with Herts for Learning Essential Maths mixed age planning as guiding frameworks.
- Key stage two use Herts for Learning Essential Maths mixed age planning as a guiding framework.
- Herts 4 learning Long term plans provide an overview of the learning for each term. The times indicated are for guidance only and cover fewer weeks than there are likely to be in a term. This allows for flexibility within the materials.

Medium Term Planning (unit plans)

Teachers in Key stage 1 and 2 use the following resources to support their planning.

- NCETM Mastering Number (See appendix).
- Herts for learning Mixed age planning Essential maths, which has sequences of learning that include: identification of NC statements, key concepts, stepped learning opportunities and possible misconceptions within the units of work.
- Written calculation policy (this is within the maths subject folder).
- Headstart problem solving and reasoning materials for each group.

At Stottesdon, we believe it is important to use formative assessment to facilitate planning and teachers may linger longer on specific areas of mathematics to ensure that pupils have gained good understanding before moving on.



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EYFS Planning

EYFS planning is:

- Guided by the requirements and recommendations set out in the Statutory Framework for EYFS (September 2021).
- Plans for characteristics of effective learning.
- Is accessible to all early years staff.
- Is continuous and formative.
- Is supported by high quality planning schemes and resources, to which staff regularly refer, including: our calculation policy and guidance appendices.
- Typically:
 - The EYFS teacher uses a wide range of guidance and resources from the NCETM Number blocks Support Materials and Schemes of Learning from White Rose Maths to support nursery adult led maths input, the continuous learning provision and learning environment.
 - Reception use NCETM Mastering Number to form the main EYFS maths input. This programme has a focus on fluency and ensures that attention is given to the key knowledge and understanding needed in the EYFS.
 - In addition to this project, teachers plan and provide opportunities for children to build their understanding of shape, measure and spatial awareness. This ensures our children are exposed to a rich, exciting and complete maths curriculum to support their transition to Year 1.

Short Term Planning (daily plans)

- Is supported by NCETM mastering number weekly planning and Herts for learning unit planning, which helps reduce teacher work load and provides a consistent, sequenced, forward thinking approach to teaching mathematics across the school.
- Identifies learning objectives, success criteria, resources to be used, national curriculum links, vocabulary and STEM sentences.
- Provides specific exemplification or worked examples to aid pupil's understanding and promote cohesion in delivering our maths curriculum.
- Is supported by practise materials that allows all children to reactivate prior learning, uses examples to support new learning, gives regular routine practise of new learning and opportunities to apply new learning.
- Provides teaching staff with the opportunity for assessment and reflection.
- Is flexible and adapted where necessary based on formative assessment and to reduce cognitive overload for children.
- Promotes mathematical discussion and thinking.

Cross-Curricular Links

Mathematics is taught discretely and is applied in other areas of the curriculum so children see that maths is not an isolated subject. Mathematics is a tool for everyday life. It is a network of concepts and relationships and is used to analyse and communicate information and ideas in practical tasks and problems. By making links to other subjects where appropriate we aim to provide real context in which to apply skills taught during the maths lessons.

Organisation

- When children start in Reception they begin their mastering number sessions (up to 45 minutes), supported by continuous related provision.
- In Key Stage 1 mathematics lessons are held on a daily basis and consist of a mastering number session (approximately 10-20 minutes) and a further maths lesson (40 - 50 minutes).
- In Key Stage 2 the daily maths lessons last for approximately one hour.
- Children are grouped flexibly, based on ongoing formative assessment and according to their mathematical and well-being needs.

Work is recorded in books as follows:

- **Nursery:** Tapestry Observations
- **Reception Foundation Stage:** A4 books (no squares)
- **Key Stage 1 (year 1):** 2cm square numeracy books.
- **Key Stage 1 (year 2) and Key Stage 2:** All children use 1cm square numeracy books.

All pupil recording should be proactively taught to help organise and sequence their work, so it helps them understand, analyse and see the structure or pattern within their maths. Children are encouraged to record one number per square, use rulers and record their working next to questions

Display

Each classroom has a maths working wall that:

- Is accessible to learners.
- Is a visual support to current concepts being taught in the classroom.
- Is often reflected in children's maths books to aid access.
- Can support the progression of concrete, pictorial abstract models.
- Provides variation of examples where appropriate.
- Can contain examples of children's own working.
- Promotes the use of accurate mathematical vocabulary.

Assessment of Maths

There are three levels of assessment for maths in our school:

Formative assessment

Teachers:

- use formative assessment, within their lessons, and series of lessons to:
 - assess children's learning
 - plan support, and next steps.
- They adapt planning and grouping flexibly dependent upon this. This may involve lingering longer for key concepts.
- Children regularly reflect upon their own learning within the lesson.
- Regular mini plenaries/checks are made by teachers to ensure that children have understood the main teaching points of a lesson or a unit of work.
- Use assessment to plan timely (often the same day) high quality targeted support interventions (such as overlearning) to address misconceptions and to help children learn mathematics.

Medium term assessments will be:

- Made using a combination of our assessments grids and for some year groups more formal half termly assessments/activities.
- Used by staff to inform planning adaptations for the next term's work.
- Reflects learning that has been previously taught, either during that term, the school year or previous school years.
- Linked to the key objectives outlined in the National Curriculum 2014, and may be linked to the interim assessment frameworks for year 2 and 6.
- Supported by the Mathematics guidance: key stages 1 and 2 Non-statutory guidance for the national curriculum in England June 2020 ready to progress criteria.



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- Supported by formal assessments undertaken 3 times per year, each term. These assessments will inform maths assessment grids, and at the end of each term, data from this will be submitted onto otrack. This may be herts 4 learning diagnostic assessments, or other materials as deemed appropriate by the class teacher.
- Also used formatively for the next term's planning.

Long-term assessments are carried out at the end of each academic year:

- For children in Reception this will be in the form of teacher assessment using the Early Years Foundation Stage Profile.
- For children in years one, three, four and five, this will be in the form of teacher assessment against our maths assessment grids, supported by medium and short term assessments.
- For children in year two this will be in the form of teacher assessments against the interim assessment framework, and will take into account work in books, medium term assessments and the formal end of key stage assessments.
- For children in year 4 this will also be in the form of the national Multiplication tables check.
- For children in year six this will be in the form of teacher assessment, and in the form of the formal end of Key stage 2 tests, which are reported on nationally.

Resources

- Shared resources for the delivery of the maths curriculum are kept in classrooms and the central storage area in the old part of the school.
- Children are encouraged to use resources in their mathematical explanations.
- A wide range of resources to scaffold the learning of key concepts are provided.
- Manipulatives and representations are carefully chosen to allow teachers to model, explain and draw out the mathematical concepts being taught.
- High quality schemes are used where appropriate.
- Materials are constantly updated, as new and relevant items become available.

Equal Opportunities

As staff we endeavour to maintain an awareness of, and to provide for equal opportunities for all our pupils in mathematics. We aim to take into account cultural background, gender and Special Needs, both in our teaching and in the published materials we use with our pupils.

Children with Special Educational Needs

- Wherever possible we aim to fully include SEN pupils in the daily mathematics lesson so that they benefit from the emphasis on oral and mental work and by listening and participating with other children in demonstrating and explaining their methods.
- Structured interventions (that are evidence based, start early, are motivating and do not remove pupils from activities that they enjoy) may be used to help some pupils attain the learning objectives for their year group.
- Some children will benefit from regular pre-teaching and overlearning.
- Where necessary, precision teaching may be implemented to help with recall.
- Where possible, we aim for children to work flexibly within their current year group.
- Individual targets support SEND pupils with their bespoke next steps.

- When planning, teachers will aim to address the child's needs through resources that remove barriers or the use of support staff.

Homework in Maths

During their whole school life children are expected to carry out some homework for maths. This may be to consolidate skills or knowledge or to develop and extend strategies and techniques. However, homework in maths will take many different forms:

- Online resource such as Numbots and Times Tables Rock Stars.
- Learning tables, facts
- Playing a number game
- A practical activity in a home context e.g. weighing/measuring.
- Preparing work to present to the class
- Thinking about how to solve a problem
- More formal written work which practises learning from school.

Feedback is given to the child, either in written form or verbally in a discussion session, to show that their work is valued and to evaluate their success with them.

Support for parents

Parental support is given in a variety of ways:

- Information regarding the maths curriculum for each year group and useful links to maths resources, can be found in the [Supporting your child](#) area of the school website and within the [curriculum area](#) under the learning tab.
- Parental workshops are delivered in each class at the start of the school year, and can be delivered at other times, when necessary.
- Early years staff facilitate "Stay and do" maths sessions to support parents in understanding how early maths is taught at Stottesdon.
- Our written calculation policy is shared at parental workshops and is available throughout the year on request.
- Where children either with SEND or who may need augmented support in maths can receive targeted support and activities for extra practise at home. Teachers liaise closely with parents to help deliver this.
- The school news often includes information about next steps or themes of the week's work. This may also be included in Class Dojo information for parents at Reception.
- Parents are given feedback regarding their child's progress through reports sent home and at parents' evening. Where children are working below age related expectations teachers inform parents of progress. Additionally, teachers will always respond to questions regarding children's progress and attainment as requested.

Monitoring and Review

Monitoring of the standards of children's work and the quality of teaching in Mathematics is the responsibility of the subject leader. The focus for subject monitoring will be based upon the subject leader action plan, which is based upon the school development plan. The work of the subject leader also involves supporting colleagues in their teaching, being informed about current developments in the subject, and providing a strategic lead and direction for Mathematics in the school. The subject leader gives the Head teacher an annual summary report evaluating the strengths and weaknesses in the subject and indicating areas for further improvement.