…we really care and make learning fun.

Stottesdon C. of E. Primary School

The Shropshire Gateway Educational Trust

Ofsted Outstanding 2011|2012

MATHS POLICY

All references in this policy are saved in: Staff Public/ Policies 2021/Maths Policy

This policy needs to be read alongside other school policies including:

- 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 understanding and knowledge of key mathematical concepts at a deep level.
- Develop 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 to reason and communicate ideas both in written form and orally;
- Develop both independent and collaborative ways of working, encouraging children to share ideas and solve problems together;
- Give children ownership of a wide range of mathematical vocabulary which is modelled and used in the classroom environment;
- Develop a strong sense of number, where children use their knowledge to calculate, not count. This sense of number is developed through robust exposure to the structure of number.
- Develop children's ability to recall and use mental facts fluently, accurately and quickly.
- Develop children's use of effective and efficient written and mental calculation methods;
- Develop 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, including 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

Lessons can follow a variety of formats to suit the concepts being taught. Teachers aim to deliver high quality, challenging, engaging, in depth lessons that:

- Provide regular independent practise of skills learnt so that these can become internalised (key skills, mental starters)
- Make use of manipulatives and representations to develop understanding, ensuring that children make the links between the manipulatives and the maths they are undertaking. This involves careful choice of equipment that is appropriate for the area of maths being studied. Increasingly, as children develop mathematical skills, these should be considered temporary; they should act as a 'scaffold' that can be removed once independence is achieved. (At key stage 1 encouraging children to use their fingers is an important manipulative).
- Use the principles of variation theory, ensuring variation in models and variation in approaches.
- Teach pupils strategies for solving problems, using carefully selected problems, a variety of different approaches, worked examples to analyse the effectiveness of different approaches and time to reflect upon and communicate their approaches to problem solving.
- Provide an appropriate balance of fluency, reasoning and problem solving, allowing problem solving and reasoning questions to be accessed by all.
- Use the precise mathematical vocabulary recommended in the National curriculum 2014 (Children are expected to use this vocabulary in their verbal and written explanations) and seize chances to reinforce mathematical vocabulary both in the maths lesson and throughout the curriculum.
- Enable pupils to develop a rich network of mathematical knowledge and understanding, by: emphasising the many connections between mathematical facts, procedures, and concepts; ensuring that pupils develop fluent recall of facts; teaching pupils to understand procedures; and teaching pupils to consciously choose between mathematical strategies

- Provide opportunity for all pupils to achieve. This may be aided by support in class, pre-teaching and overlearning.
- Be planned and delivered by teachers who ensure that their subject and pedagogical knowledge is both deep and rigorous and take responsibility for continuous development of this.
- Provide opportunity for children to self/peer assess their work and to respond to high quality feedback from teachers.

A typical lesson could consist of:

- Group Work.
- Paired work
- Whole Class teaching.
- Individual work.
- Work on tablets/computers/technology
- Games
- Guided work
- Independent work.

Pupils engage in:

- 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.)
- 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
- Consolidation of basic skills and routines.

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
- Weekly key skills assessments.
- Shape of the day.
- Teaching time.
- 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 activities placed in areas of provision in the classroom which may be accessed independently or supported by an adult.

Planning

Long Term Planning

- The National Curriculum for Mathematics 2014, Mathematics guidance: key stages 1 and 2 Non-statutory guidance for the national curriculum in England June 2020 (known also the The Ready To Progress Criteria), Development Matters and the Early Learning Goals (Number and Numerical Patterns), provide the long term planning for mathematics taught in the school.

Medium Term Planning

Years 1-6 teachers, ensure their medium term planning is flexible, so that it meet the needs of the children. They use the following resources to support their planning.

- NCETM professional development materials.
- The White Rose scheme of learning.
- Shropshire learning gateway planning and our curriculum maps.
- Continuous formative, and termly summative assessments that enable teachers to adopt a flexible approach that meets the needs of the child.

EYFS Planning

EYFS planning is:

- Similarly informed by continuous assessment
- Is based on Development Matters and the Early Learning Goals (Number and Numerical Patterns)
- 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, NCETM professional development materials, white rose maths.
- Is informed from case study approach, which is updated regularly.

Short Term Planning

- Is recorded over a few days (usually weekly) using the teacher's own preferred method of planning (see planning policy).
- Identifies learning objectives, success criteria, resources to be used, vocabulary and differentiation.
- Provides teaching staff with the opportunity for assessment and reflection.
- Is supported by high quality planning schemes and resources, to which staff regularly refer, including: our calculation policy and guidance appendices, NCETM professional development materials, white rose maths hub planning, inspire maths, Shanghai maths and other high quality planning.
- Is flexible and adapted based on a formative assessment and planning cycle.

Cross-Curricular Links

Mathematics is taught both discretely and where possible with 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 the organisation is more flexible building up to a daily 45-minute lesson.
- In Key Stage 1 mathematics lessons are held on a daily basis and last from 45 minutes to 1 hour.
- In Key Stage 2 the daily maths lessons last for approximately one hour.

- Children can work in mixed ability groups or set for ability, depending upon the subject being taught, and the pedagogy of the lesson. Where children are set, there is flexibility depending on the area of maths being taught and progression within the lesson.
- Planned opportunities to use cross curricular maths are detailed in our Curriculum Maps.

Work is recorded in books as follows:

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

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.
- Can support the progression of concrete, pictoral abstract models.
- Provides variation of examples where appropriate.
- Is updated regularly.
- 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 flexibly dependent upon this.
- 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 testing
- Used by staff to inform planning for the next term's work.
- 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.

- 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.
- 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 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 upon by the government.

These long term assessments are used to:

- Assess pupil's work against the key objectives for the year
- Assess pupil's against national standard at years 2 and 6

Targets

- Using knowledge from assessments our School sets children's individual or group targets to focus their attention on specific skills and goals.
- Targets are regularly updated in class when they are achieved.

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.
- Teachers use concrete resources to model mathematical conceptions.
- 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 mathsematical concepts being taught.
- High quality online resources and text books resources 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 within their current year group.
- Individual targets support SEND pupils.
- When planning, teachers will aim to address the child's needs through modified tasks 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:

- Mathletics or other online activities.
- 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

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 show them what they need to do to improve their work.

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. The subject leader will annually present a mathematics report to the governors.

.

Appendices

Calculation policy
Calculation policy guidance