



Mathematics Policy

Intent

At the Grange Primary Community School we intend to:

- *Ensure our children have access to a high-quality Maths curriculum that is both challenging and enjoyable.*
- *Provide our children with a range of mathematical opportunities, which will enable them to make the connections needed to enjoy greater depth in learning*
- *Ensure children are confident mathematicians who are not afraid to take risks.*
- *Fully develop independent learners with inquisitive minds who have secure mathematical foundations and an interest in self-improvement.*

At The Grange Community Primary School we believe that Mathematics is a key skill that helps us to make sense of the world around us. 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 understand and apply their knowledge to solve real life problems.

At The Grange Community Primary School we also believe that Mathematics equips children with a uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem-solving skills and the ability to think in abstract ways.

Mathematics is important in everyday life, many forms of employment, science and technology, medicine, the economy, the environment and development and in public decision-making. Different cultures have contributed to the development and application of mathematics. Today, the subject transcends cultural boundaries, and its importance is universally recognised.

Implementation

The Grange Community Primary School uses a variety of teaching and learning styles in mathematics lessons. Our principal aim is to develop children's knowledge, skills, fluency and understanding in mathematics.



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We do this through a daily lesson that has a mix of whole-class and group teaching. During these lessons, children revisit prior learning and we encourage children to ask as well as answer mathematical questions. They have the opportunity to use a wide range of resources such as number lines, number squares, digit cards and small apparatus to support their work appropriate to their age and ability level.

At *The Grange Community Primary School* children use ICT in mathematics lessons where it will enhance their learning, as in modelling ideas and methods. Wherever possible, we encourage the children to use and apply their learning in everyday situations.

In all classes there are children of differing mathematical ability. We recognise this fact and provide suitable support through a range of methods including practical resources always being available and their use being modelled by the class teacher. In addition to this, in some lessons children work independently or in pairs. We use classroom assistants to support targeted groups and to provide in class feedback to ensure that work is matched to the needs of individuals.

The purpose of mathematics in our school is to develop:

- positive attitudes towards the subject and awareness of the relevance of mathematics in the real-world competence and confidence in using and applying mathematical knowledge, concepts and skills
- an ability to solve problems, to reason, to think logically and to work systematically and accurately.
- initiative and motivation to work both independently and in cooperation with others.
- confident communication of mathematics where pupils ask and answer questions, openly share work and learn from mistakes.
- an ability to use and apply mathematics across the curriculum and in real life.
- an understanding of mathematics through a process of enquiry and investigation

Impact

At The Grange Community Primary School, our pupils will have:

- become fluent, competent and efficient mathematicians.
- The ability to recall facts and procedures, including the recollection of multiplication tables.
- The ability to recognise relationships and make connections in maths.



- The ability to clearly explain their reasoning and justify their thought processes.
- The flexibility to move between different contexts and representations of maths.
- High aspirations, which will see them through to further study, work and a successful adult life.

Pupils learn in an environment where maths is promoted as being an exciting and enjoyable subject in which they can investigate and ask questions. As a result, pupils have a positive view of maths. Positive relationships between staff and pupils mean that children feel safe to make mistakes and know that it is OK to be 'wrong' because the journey to finding an answer is most important. Children are confident to 'have a go' and can use manipulatives, along with learnt strategies to solve problems.

Our children have a good understanding of their strengths and targets for development in maths and what they need to do to improve. Our maths books evidence work of a high standard of which children clearly take pride; the activities demonstrate good coverage of fluency, reasoning and problem solving.

Our feedback and interventions support children to strive to be the best mathematicians they can be, ensuring a high proportion of children are on track or above.

THE NATIONAL CURRICULUM

The aims of the 2014 National Curriculum are for our pupils to:

- become fluent in the fundamentals of mathematics through varied and frequent practice with complexity increasing over time
- develop conceptual understanding and ability to recall and apply knowledge rapidly and accurately
- reason mathematically; follow a line of enquiry, conjecture relationships and generalisations
- develop an argument, justification and proof by using mathematical language.
- problem solve by applying knowledge to a variety of routine and non-routine problems, breaking down problems into simpler steps and persevering in answering

The National Curriculum sets out year-by-year programmes of study for Key Stages 1 and 2. This ensures continuity and progression in the teaching of mathematics.



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The National Curriculum order for mathematics describes what must be taught in each key stage. *The Grange Community Primary School* follows the primary mathematics framework, which provides detailed guidance for the implementation of the orders and ensures continuity and progression in the teaching of mathematics.

Every teacher in *The Grange Community Primary School* has access to the framework for teaching mathematics and the curriculum map outlining progression, which has been designed by the subject leader to meet the needs of children in our school. In early years, the curriculum is guided by the Early Learning Goals.

Early Years Foundation Stage

At *The Grange Community Primary School* children follow the early years foundation stage curriculum. We give all children the opportunity to talk and communicate in a widening range of situation and to practise and extend their range of vocabulary and numeracy skills. They have the opportunity to explore, enjoy, learn about, and use mathematics in a range of situations. Mathematics is planned on a half termly basis and assessed using the criteria from the early learning goals. Mathematics is taught both as a discrete subject and within the whole early years curriculum to give children opportunities to use their Numeracy skills in real life situations.

Key Stages 1 and 2

At *The Grange Community Primary School* daily Maths lessons are at least an hour long in both KS1 and KS2. KS1 follow the 'Primary Stars' scheme of work which provides long term, medium and short term plans based on the National curriculum objectives. This mastery scheme develops a deeper understanding of the concepts taught by following a **CPA** (Concrete, Pictorial, Abstract) approach to ensure all children can access learning without the need of memorising mathematical procedures. All of the resources are aligned with the 2014 English **National Curriculum** for maths and can be taught in any order to suit each individual class. The order of lesson plans and teaching slides are aligned to the White Rose Maths Scheme of Learning but are provided in **editable format** allowing teachers to tailor them to the children's needs.

In KS2, teachers have access to 'Target your Maths plus Mastery' books. This series covers the entire National Curriculum for KS2. The KS2 Framework has been organised into domains, such as Number, Measurement and Geometry. There is no set path through either the KS2 POS or Target Your Maths. However, in the Teacher's Answer Book for each year group, one possible approach is given to the planning of the curriculum for that year. The work to be covered



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within each domain is organised into a three term year and the work for each term is then arranged into 12 blocks, each corresponding approximately to one week's work. This approach will enable teachers to develop concepts progressively throughout the year and provide pupils with frequent opportunities to consolidate previous learning.

Both Key stages have access to NRich and NCETM as well as other online resources to access problem solving and reasoning activities. Both Key Stages will also have long term plans as well as medium term plans for each half term's work. There are also weekly plans, which cover the daily content of each lesson.

Number

The programme of Study specifies a progression of number-based skills for children to acquire as they develop their mathematical ability. In order to facilitate this, the teaching staff in *The Grange Community Primary School* will ensure that:

- *Children will be encouraged to use mental calculations where appropriate*
- *Children will have the opportunity to discuss and develop a range of calculation strategies*
- *Teaching will encourage flexibility of thinking and utilisation of connections within mathematics*
- *Children's computational skills will be developed and consolidated using a balance between practice and application in meaningful contexts*
- *Opportunities will be provided for children to develop their estimation skills, and will be encouraged to estimate answers before completing calculations*
- *Teaching will place a strong emphasis on ensuring children gain a sound understanding of the Place Value basis of the number system*

Shape and Space

The Programme of Study specifies a progression of skills in Shape and Space for children to acquire as they develop their mathematical ability. In order to facilitate this, the teaching staff in *The Grange Community Primary School* will ensure that:



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- *Teaching will place emphasis on observing and understanding the properties of 2-D and 3-D shapes*
- *Opportunities will be provided for the practical construction and investigation of shapes*
- *Children will be given opportunities to explore position and movement in real-life contexts, utilising ICT.*

Measures

The programme of study specifies a progression of skills in measures for children to acquire as they develop their mathematical ability. In order to facilitate this, the teaching staff in *The Grange Community Primary School* will ensure that:

- *Children will use a range of measuring equipment in meaningful contexts, and be encouraged to make choices regarding the most suitable equipment*
- *Children will follow a progression beginning with direct comparison, through measuring with non-standard units, to measuring with standard units with increasing accuracy*
- *Children will be given opportunities to develop estimation skills in all measures*
- *Teaching will place strong emphasis on ensuring that children understand that all measurement is approximate, and that they can make sensible decisions on the accuracy necessary in different situations.*

Handling Data

The programme of study specifies a progression of skills in handling data for children to acquire as they develop their mathematical ability. In order to facilitate this, the teaching staff in *The Grange Community Primary School* will ensure that:

- *Teaching will be designed to ensure that children understand that the collection, representation and interpretation of data is a means through which real-life decisions can be made*



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- *Handling data skills are used as a means of solving problems, through a four-point process: Pose a question; Collect data; organise, display & interpret data; Answer original question*
- *Children will be given opportunities to make decisions regarding what information is collected, how it is collected, how information is processed and how it is displayed*
- *Children will be given opportunities to apply data handling skills in a range of contexts, across subject areas*

Teaching Methods and Approaches

At *The Grange Community Primary School* most lessons should follow this format:

1. Maths Play
2. Revisiting of learning through a Hotchpotch starter,
3. Modelling of the new skill or concept (I do, we do, you do)
4. Developing fluency of the skill
5. Problem solving/ reasoning (to be modelled by teacher first)
6. Reflection/plenary.

In reception, the aim is to have prepared the children by the end of the year for a daily 45-minute Maths lesson.

The teaching of maths at provides opportunities for:

- *Group work*
- *Paired work*
- *Whole class teaching*
- *Individual work*

Children engage in:

- *The development of mental strategies*
- *Written methods*
- *Practical work*
- *Investigational work*
- *Problem- solving*
- *Mathematical discussion*
- *Consolidation of basic skills and routines*



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At *The Grange Community Primary School* we recognise the importance of establishing a secure foundation in mental calculation and recall of number facts before standard written methods are introduced. We ensure mathematical vocabulary has been identified when planning to help determine the appropriate vocabulary to use in our teaching and children are expected to use it in their verbal and written explanations.

We endeavour to set work that is challenging, motivating and encourages the children to talk about what they have been doing.

Parental Involvement

At *The Grange Community Primary School* we recognise that parental involvement is an important factor in helping children achieve their best and actively encourage parents to become involved with their children's development in Mathematics through:

- *Parents' meetings twice a year, along with opportunities to look at children's work*
- *The school's 'open' attitude to visits from parents/carers, where teachers make themselves available whenever a discussion need is identified.*
- *Attending Maths events in and out of school.*
- *Use of the homework materials, maths games and subscription to Times Table Rockstars online learning for use at home*
- *Curriculum maps informing them of upcoming curriculum topics*

At *The Grange Community Primary School* we recognise the important role display has in the teaching and learning of mathematics by having maths work displayed in the school. Every class has a 'Maths Working Wall' which is a visual aid to support children with their work.

Resources

At *The Grange Community Primary School* resources for the delivery of the maths curriculum are stored in classrooms. Each class has access to everyday basic equipment in their classrooms. Additional equipment and topic-specific items are stored in specific classrooms which staff are made aware of.

The Grange Community Primary School uses a variety of materials to facilitate the teaching of mathematics but recognises the need for the teaching of maths to be investigative and grounded in real life circumstances wherever possible.



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Maths

There is a variety of interactive resources to help with the delivery of throughout the school and these are stored centrally on the staff network.

Contribution in Mathematics to Teaching in Other Curriculum Areas

English

At *The Grange Community Primary School* mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening.

Computing

At *The Grange Community Primary School* the effective use of computing can enhance the teaching and learning of mathematics when used appropriately. When considering its use, we take into account the following points:

- *Computing should enhance good mathematics teaching. It should be used in lessons only if it supports good practice in teaching mathematics;*
- *Any decision about using computing in a particular lesson or sequence of lessons must be directly related to the teaching and learning objectives for those lessons.*
- *Computing should be used if the teacher and/or the children can achieve something more effectively with it than without it.*

Science

At *The Grange Community Primary School* almost every scientific investigation or experiment is likely to require one or more of the mathematical skills of classifying, counting, measuring, calculating, estimating and recording in tables and graphs. In science children will for example order numbers, including decimals, calculate simple means and percentages, use negative numbers when taking temperatures, decide whether it is more appropriate to use a line graph or bar chart, and plot, interpret and predict from graphs.



Art, Design and Technology

At *The Grange Community Primary School* measurements are often needed in art and design and technology. Many patterns and constructions are based on spatial ideas and properties of shapes, including symmetry. Designs may need enlarging or reducing, introducing ideas of multiplication and ratio. When food is prepared a great deal of measurement occurs, including working out times and calculating cost; this may not be straightforward if only part of a packet of ingredients has been used.

History, Geography and Religious Education

At *The Grange Community Primary School* in history and geography children will collect data by counting and measuring and make use of measurements of many kinds. The study of maps includes the use of co-ordinates and ideas of angle, direction, position, scale and ratio. The pattern of the days of the week, the calendar and recurring annual festivals all have a mathematical basis. For older children historical ideas require understanding of the passage of time, which can be illustrated on a timeline, similar to the number line that they already know.

Physical Education and Music

At *The Grange Community Primary School* athletic activities require measurement of height, distance and time, while ideas of counting, time, symmetry, movement, position and direction are used extensively in music, dance, gymnastics and ball games.

Personal Development (PD) and Citizenship

At *The Grange Community Primary School* mathematics contributes to the teaching of personal, social and health education, and citizenship. The work that children do outside their normal lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each other's views.

Spiritual, moral, social and cultural development



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The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We often group children so that they can work together, and we give them a chance to discuss their ideas and results. The study of famous mathematicians around the world contributes to the cultural development of our children. Mathematics contributes to children's spiritual development. Children can find shapes and pattern in nature. They can see the order, logic and pattern that numbers offer

Assessment and Record Keeping

At The Grange Community Primary School we are continually assessing our children and recording their progress. We see assessment as an integral part of the teaching process and endeavour to make our assessment purposeful, allowing us to match the correct level of work to the needs of the children, thus benefiting the children and ensuring progress.

Reporting

At The Grange Community Primary School all parents receive an oral termly report of their child's progress and an annual written report on which there is a summary of their child's effort and progress in mathematics over the year. Parents also have opportunities to discuss progress at two parent's evenings and an open day. Within curriculum newsletters parents will receive information on areas of development in mathematics for their child.

Equal Opportunities

At The Grange Community Primary School as a staff we endeavour to maintain an awareness of, and to provide for equal opportunities for all our children in mathematics. We aim to take into account cultural background, gender and Special Needs, both in our teaching attitudes and in the published materials we use with our children.

Special Educational Needs

At The Grange Community Primary School wherever possible we aim to fully include SEND children 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.



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Where necessary teachers will, in consultation with the SENCO, draw up a target within an Individual Educational Plan for a child. If a child's needs are particularly severe, they will work on an individualised programme written in consultation with the appropriate staff. When planning teachers will try to address the child's needs through simplified or modified tasks or the use of support staff.

Where appropriate a group educational plan is developed with common objectives and learning targets for a group.

Role and Responsibilities of Mathematics Subject Leader

- *Monitor planning, teaching and learning in mathematics, to ensure continuity and progression.*
- *Ensure there is well sequenced and progressive curriculum map which contains the key knowledge, skills and vocabulary children need to be procedurally fluent in mathematics.*
- *Monitor standards in mathematics throughout the school, including SEND, more able, LAC, etc.*
- *Identify strengths and areas for improvement and to lead and drive improvements within the school.*
- *Keep up to date with new initiatives and train staff on these (also to facilitate in or out of school training for staff).*
- *Feed back to the Headteacher on standards in mathematics*

Monitoring and Review

At *The Grange Community Primary School* the subject leader supports colleagues in their teaching, by keeping informed about current developments in mathematics, and by providing a strategic lead and direction for this subject; gives the headteacher an annual summary report in which he evaluates the strengths and weaknesses in mathematics and indicates areas for further improvement.



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At *The Grange Community Primary School* uses allocated management time to review evidence of the children's work, and to observe mathematics lessons across the school. The quality of teaching and learning in mathematics is monitored and evaluated by the headteacher as part of the school's agreed cycle of lesson observations. A named member of

the school's governing body is briefed to oversee the teaching of mathematics. The mathematics link governor meets regularly with the subject leader to review the teaching and learning of mathematics.

This policy will be reviewed at least annually.

Disability Equality Impact Assessment

This policy has been written with reference to and in consideration of the school's Disability Equality Scheme. Assessment will include consideration of issues identified by the involvement of disabled children, staff and parents and any information the school holds on disabled children, staff and parents.