*Inspiring All to Excellence*

*Pride in myself; Pride in my work;*
*Pride in my school; Pride in my community*

**Glascote Academy**

# Mathematics Policy

## (See also separate calculation policy)

# Document Control

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# Version Control

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# 1) Introduction

1.1 At Glascote Academy, we believe in securing conceptual understanding, building numerical fluency, developing problem-solving skills, reasoning mathematically and building mathematical confidence in all pupils. Mathematics pervades all aspects of our lives and helps us to make sense of our world. With this in mind, this policy promotes the basic and wider understanding of mathematics.

'Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.' (National Curriculum for Mathematics, 2014)

# 2) Intent

2.1 Our intent is to provide children with a mathematics curriculum that will allow them to become confident individuals through developing their mathematical skills to their full potential. We also aim to present maths as a challenging, exciting, creative and relevant subject in order to promote a positive and confident attitude.

2.2 The key to successful mathematics lessons based on the National Curriculum 2014 is high quality preparation and effective planning. The National Curriculum 2014 is followed. The framework has six main areas of study:

1. Number (including place value, addition, subtraction, fractions, decimals and percentages)
2. Ratio and Proportion
3. Algebra
4. Measurement
5. Geometry
6. Statistics

In line with the National Curriculum (2014), our overall intent focuses on all pupils being able to:

-use and understand a wide range of appropriate mathematical language to discuss, explain and justify their mathematical thinking and reasoning.

-explore and deepen their mathematical understanding through a C-P-A approach, allowing exploration, acquisition of fluency skills and application of skills to a range of problems and lines of enquiry.
-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.

- move fluently between different representations of mathematical ideas.

- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.

-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.

- make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.

-apply mathematical knowledge across the curriculum in science and other subjects relating mathematical knowledge and skills to real life situations.

- access challenges of rich and sophisticated problems when they grasp fluency concepts rapidly rather than progressing to new content.

-consolidate learning and concepts through repetition and intervention to acquire sound foundations for fluency of mathematics.

# 3) Implementation

3.1 All teachers follow a termly overview plan using the White Rose Maths Scheme of Learning from the White Rose Maths Hub. Teachers in key stage 1 adapt lessons appropriately to the needs to the children, children's work is evidenced in maths books. In key stage 2, a more rigid approach is taken and planning is followed prescriptively. Children work methodically through a White Rose Maths workbook, alongside this children have a maths text book to gather arithmetic.

A typical maths lesson provides the opportunity for all children, regardless of their ability, to become confident and capable learners. We are committed to building on prior learning and enabling our children to demonstrate a deep, conceptual understanding of each topic that they can develop over time. They are encouraged to develop fluency in their recall of key facts and a whole school approach to the teaching of calculation strategies is deployed across the school. This ensures a consistent and progressive approach and prepares our children for the upper key stage 2 curriculum.

Reasoning and problem-solving skills are explicitly taught to enable children to become independent learners who are prepared to take risks. To make the learning relevant, cross-curricular links are made wherever possible and children are encouraged to apply skills from all areas to complete real-life challenges and give learning a sense of purpose.

Additional time is allocated to the practise of multiplication facts using Times Tables Rockstars Rolling Numbers songs and the Times Tables Rockstars app. Children in key stage 2 have one session per week practising times tables using the Times Tables Rockstars app and three sessions per week completing paper speed and accuracy tests.

3.2 In Reception we follow the EYFS framework. Teachers ensure the children learn through a mixture of adult led activities and child-initiated activities both inside and outside of the classroom. Mathematics is taught using material from White Rose Maths. Mathematical skills and knowledge are taught through 'In the Moment' opportunities, linked to 'Number', 'Patterns & Connections' and 'Spatial Reasoning'

3.3 Children in year 1 and 2 will continue their learning journey through adult-led group work and math s opportunities within the continuous provision learning areas. All maths opportunities within the classroom will be linked to current learning following the school long term plan. In years 1 and 2, the focus of Maths is to ensure the children develop confidence and fluency with whole numbers, counting and place value. This often involves working with numerals, words and the four operations (+ - x ÷). The children should be precise in using and understanding place value and know number bonds within 10, 20 and 100. The children also develop their ability to recognise, describe, draw, compare and sort 2D and 3D shapes. The children will use a range of measures to describe and compare different quantities (such as length, mass, capacity/volume, time and money).

3.4 Maths in lower Key Stage 2 (Years 3 and 4) provides a focus on ensuring the children become increasingly fluent with whole numbers and the four operations(including number facts and place value). Pupils begin to develop efficient written and mental calculations with increasingly large whole numbers. They begin to develop their ability to solve a range of problems, including simple fractions and decimal place value. The children develop mathematical reasoning to help them analyse shapes and their properties and confidently describe their relationships. By the end of year 4, children should have memorised their multiplication tables up to and including the 12 times table and be able to show precision and fluency in their work.

4.5 Maths in upper Key Stage 2 (Years 5 and 6) provides a focus on ensuring that children extend their understanding of the number system and place value to include larger integers. Pupils should be able to make connections between multiplication and division with fractions, decimals, percentages and ratio. Children should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems that demand the use of efficient written and mental methods of calculation. Children are introduced to algebra as a means for solving a variety of problems. The children's understanding and knowledge in geometry and measures consolidates and extends the knowledge they have developed in number; children should be able to classify shapes with increasingly complex geometric properties, using the vocabulary they need to describe them with accuracy and confidence.

# 4) Impact

4.1 By demonstrating fidelity to White Rose Maths and the use of Times Tables Rockstars for multiplication, we aim for our children to:

- demonstrate a quick recall of facts and procedures. This includes the recollection of the times table.
- show confidence in Believing that they will achieve and resilience when problems are encountered.
- achieve objectives (expected standard) for year group.
- have flexibility and fluidity to move between different contexts and representations of maths.
- have the chance to develop the ability to recognise relationships and make connections in maths lessons.

- master mathematical concepts or skills are mastered when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations.
- show a high level of pride in the presentation and understanding of the work.

# 5) Assessment

5.1 Assessment in mathematics is both formative and summative. In KS1 and KS2, children's work is marked and feedback given with next steps when appropriate, in line with the whole school marking and feedback policy. Informal assessments are made continually by questioning and observing the children throughout maths lessons.

5.2 After every maths unit is taught in year groups 1-6, children will complete a White Rose Maths end of unit assessment to check progress and combined with observations of work in lessons provide appropriate judgements on progress and understanding of content covered.

5.3 Children in KS1 and KS2 evaluate their learning at three key assessment steps in autumn, spring, and summer known as 'Showcase Week'. At Glascote Academy we use the Rising Stars PUMA assessments. Statutory Assessment Test (SATs) are used for children in 6 and the optional year 2 SATs will be used to support judgements. Children in year 4 are also required to take a multiplication tables check (MTC) in the summer term. The purpose of the check is to determine whether pupils can fluently recall their times tables up to 12, which is essential for future success in mathematics. Early years assessment is captured through initial baseline assessments and observations using the online learning journey – Tapestry.

5.4 Assessment information is used to inform future learning opportunities/planning: through the use of Flashback Four, success criteria, self and peer assessment, questioning, prior knowledge assessment as well as subject specific assessment procedures.

# 6) The Role of the Maths Leader

6.1 The role of the Mathematics Leader should:

- Ensure the Intent, Implementation and Impact is clear and is measured;
- Ensure the National Curriculum (KS1 and 2) and EYFS Framework (EYFS) is followed for each child;
- Promote the integration of mathematics within appropriate teaching and learning activities;
- Manage the provision and deployment of resources and give guidance on class organisation and support for learning;
- Lead staff meetings within the school and investigate suitable CPD
- Analyse data to identify strengths and weaknesses in outcomes; planning for improvement accordingly;
- Write, monitor and evaluate an action plan for mathematics;

- Co-ordinate the evaluation and review of the school's mathematics policy;
- Monitor and review mathematics provision within the school;
- Ensure continuity and progression throughout the curriculum.

# 7) Inclusion

7.1 At Glascote Academy we are passionate and committed to ensuring that we are an inclusive school. We support children with a variety of special needs and we value the individuality and uniqueness of all of our children. We are committed to giving all our children every opportunity to achieve their full potential through the highest of standards and expectations. Throughout the mathematics curriculum, we have high expectations for ALL learners, including children with additional needs. All children will be exposed to the curriculum and learning objectives for their year group with reasonable adjustments made to ensure personalised provision where appropriate. We differentiate through a 'scaffolding up' approach, ensuring that all learners access a broad and balanced curriculum. Where applicable, children's learning plans will incorporate suitable objectives from the National Curriculum or the EYFS curriculum and teachers keep these objectives in mind when planning work.

We are innovative in using the outdoor areas to learn and embed mathematic skills through a holistic approach. This includes using real life experiences, working cooperatively with others and encompassing the spiritual, moral, social and cultural ethos of our school.

Mathematic lessons are not restricted to the classroom; we use all areas of our school environment to ensure a rich and varied learning approach is accessible to all. Through this approach, children have the opportunity to explore mathematics in a variety of ways. These include, utilising the Farm and Forest areas, Fierte Festival, school trips and regular outdoor learning experiences utilising the school grounds or local community.

Problem solving skills and teamwork are fundamental to mathematics through creative thinking, discussion, explaining and presenting ideas. Students are always encouraged to explain concepts to each other and support each other in their learning. In this manner, students realise their own strengths and feel a sense of achievement which often boosts confidence. Over time they become more independent and resilient learners; leaving us equipped with the life skills needed to become well-balanced and respectful citizens.