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| **St. Matthew's** C of E Primary School Policies |



**Approval Date:** September 2022 **Review Date:** September 2023

**Our Policy:**

Mathematics

**MATHEMATICS**

“I am with you always” Matthew 28:20

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**MATHEMATICS**

**INTRODUCTION**

This policy outlines the purposes, nature, teaching, organisation and management of the mathematics taught and learnt at St Matthew’s C.E. Primary School. The school’s policy for Mathematics is based on the programmes of study from the National Curriculum 2014 and the Mathematics guidance: key stages 1 and 2 Non-statutory guidance for the national curriculum in England 2022. The policy has been drawn up as result of staff discussion and has full agreement of the Governing Body. The implementation of this policy is the responsibility of all the teaching staff, in particular the Headteacher and the Mathematics Subject Leaders.

**The Nature of Mathematics**

Mathematics is an essential 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.

Using the Programmes of Study from the National Curriculum 2014 and the Mathematics guidance: key stages 1 and 2 Non-statutory guidance for the national curriculum in England 2022, it is our aim that children will develop:

* A positive attitude towards mathematics and an awareness of the fascination of mathematics;
* Competence and confidence in mathematical knowledge, concepts and skills;
* An ability to solve problems, to reason, to think logically and to work systematically and accurately;
* Initiative and an ability to work both independently and in cooperation with others;
* An ability to communicate mathematics;
* An ability to use and apply mathematics across the curriculum and in real life;
* An understanding of mathematics through a process of enquiry, experiment, discovery and practical work.

By the end of Key Stage 2, our children should:

* Be fluent in written methods for all four operations, including long multiplication and division;
* Understand place value and have a sense of the size of a number and where it fits into the number system;
* know by heart number facts such as number bonds, multiplication tables, doubles and halves;
* use what they know by heart to calculate accurately and efficiently;
* make connections between multiplication and division with fractions, decimals, percentages and ratio;
* read, spell and pronounce mathematical vocabulary correctly;
* make sense of number and arithmetic problems, including non-routine problems, and recognise the effective methods of calculation needed to solve them;
* explain their methods and reasoning using correct mathematical terms;
* judge whether their answers are reasonable and have strategies for checking them where necessary;
* suggest suitable units for measuring and make sensible estimates of measurements;
* explain and make predictions from the numbers in graphs, diagrams, charts and tables;
* develop spatial awareness and an ability to classify shapes with increasingly complex geometric properties;
* use algebra as a means for solving a variety of problems;

**MASTERY APPROACH**

At St Matthew’s we follow a mastery approach to teaching mathematics.

Mastering maths means pupils acquiring a deep, long-term, secure and adaptable understanding of the subject.

The phrase ‘teaching for mastery’ describes the elements of classroom practice and school organisation that combine to give pupils the best chance of mastering maths.

Achieving mastery means acquiring a solid enough understanding of the maths that’s been taught to enable pupils to move on to more advanced material.

**5 big ideas:**

* **Coherence**

Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all children and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts.

* **Representation and Structure**

Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the maths without recourse to the representation

* **Mathematical Thinking**

## If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, reasoned with and discussed with others

* **Fluency**

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics

* **Variation**

Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

**MATHEMATICS: INTENT, IMPLEMENTATION AND IMPACT**

This information has been produced after consultation with all teaching staff at St. Matthew’s.

**Intent**

The national curriculum for mathematics aims 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.

At St. Matthew’s we want to ensure all pupils:

* are confidently working at, at least, expected level.
* have a good understanding of mathematical concepts.
* can apply mathematics in a variety of situations.
* enjoy mathematics and are enthusiastic.
* have a positive mindset for mathematics.
* be confident using a mastery approach to mathematics.
* can answer questions confidently.
* can explain their methods, approaches and reason.
* develop skills to be able to cope in the big wide world. E.g. Telling the time, handling money, measurements…

**Implementation**

To achieve our intent, we will:

* use Power Maths textbooks and workbooks predominately used in 5 Power Maths lessons weekly.
* adapt lessons if needed, spending longer on objectives with certain groups of children.
* have clear, pacey lessons.
* introduce a variety of strategies/ methods to the children.
* use streamed groups so work can be pitched appropriately.
* use the environment- resources available and working walls updated regularly.
* be good role models and have a positive attitude to mathematics.
* use talk for maths- children sharing ideas with peers and supporting each other- coaching.
* have focused interventions with high quality teaching for children with misconceptions or working at below expected level.
* use of concrete manipulatives, moving on to pictorial representations and finally using abstract mathematics.
* Use Times tables regularly chanted and practised. Times table Rockstars being used at home and school.
* set homework to support learning at home.
* have strong subject knowledge from staff and children.
* use Basic Skills/ Arithmetic tests used weekly to support distance learning.
* use cross- curricular opportunities.
* in Early Years, have inviting rich maths areas in provision, indoor/outdoor, giving opportunities to develop/ consolidate.

**Impact:**

**What you will see at St. Matthew’s :**

* Children excited and engaged, trying hard and answering questions.
* Pupil led reasoning/ explaining. Children asking questions and explaining how they found their answers.
* Children working independently using their own strategies.
* Children being stretched and challenged.
* Children consolidating their learning.
* Children answering reasoning questions in every lesson confidently.
* Assessment for learning within each lesson.
* Completed end of unit checks, marking, self-assessment, assessment test scores.
* Results of termly tests- used to inform future lessons.
* Effective use of support staff/ intervention teachers/ SEN support.
* Maths happening in the wider curriculum. E.g. in Theme lessons, Number Day.
* Maths vocabulary displayed in classrooms and children using the vocabulary when they talk to each other.
* Bright, stimulating working walls related to the topic.
* Lots of resources out, accessible for children to use if needed.
* Small focus groups of children.
* Marking policy being followed.
* Misconceptions addressed and clarified in the lesson.
* Fix it times/ same day interventions used where possible.
* Daily chanting for oral/ mental starter.
* Celebrating Timestable Rockstars Achievement in assembly.
* Parent Meetings to share methods of mathematics used at our school.
* CPD used effectively to support and enhance teachers’ teaching of mathematics.
* Planning- evaluated and next steps identified.
* In Early years maths is in all areas. Staff will find opportunities to do maths. E.g. snack time, lining up, registration…. Maths in provision, using exciting opportunities, following interests.
* As many children as possible reaching ARE.

**TEACHING MATHEMATICS**

This policy has been written to provide structure for staff in their Mathematics teaching. It aims to incorporate all that is good practice at St Matthews C.E. Primary School, by using the programme of study from the National Curriculum 2014 and the Mathematics guidance: key stages 1 and 2 Non-statutory guidance for the national curriculum in England 2022. This work is supplemented by a variety of resources as to enrich and enhance the children’s learning at levels appropriate to their development.

Teaching time

To provide adequate time for developing numeracy skills each class teacher will provide a **daily** mathematics lesson. This may vary in length but will usually last for about 45 to 60 minutes in Key Stage 1 and 2. Therefore Mathematics will be taught for at least 5 hours per week at Key Stage 1 and 2. These timings are subject to changes which the teaching staff may feel are relevant to meet the needs of a particular group of children.

Teachers also provide an additional 30 minutes lesson covering shape, spaces and measures to cover missed learning from previous years due to Covid. Teachers also do basic skills lessons weekly to practise basic skills and years 2, 3 and 4 teach timestables discretely weekly too.

Reception, Year 1, Year 2 and KS2 intervention groups also are participating in a Mastering Number Programme to develop fluency skills.

# Teachers of the Reception children base their teaching on objectives found in Development Matters. This ensures that they are working towards the endpoints found in the Early Years Foundation Stage (EYFS) statutory framework. Mathematics is taught daily in Reception covering Number and Numerical Patterns. The elements of a daily mathematics lesson are evident as the children sit on the carpet for an input together every day and complete 5 differentiated Mathematics activities in groups throughout the week. This can vary between whole class carpet time input or focused group. There is also lots of opportunities to develop mathematical skills in provision.

# Teachers of the Nursery children also base their teaching on objectives found in Development Matters. This ensures that they are working towards the end points found in the statutory guidelines for the EYFS profile. They complete Mathematics activities as part of their weekly topic work. There is also lots of opportunities to develop mathematical skills in provision.

Teachers will also use every relevant subject to develop pupil’s mathematical fluency. Confidence in numeracy and other mathematical skills is a precondition of success across the National Curriculum.

Class Organisation

From Year 1, all pupils will have a dedicated daily mathematics lesson. Within these lessons there will be a good balance between whole-class work, group teaching and individual practice.

A typical lesson

At St Matthew’s we follow the Power Maths mastery scheme. A typical 45 to 60 minute lesson in Year 1 to 6 will be structured like this:

* Chanting (5 mins)
* Power up activity – recapping previous learning (5 mins)
* Discover – teacher led discussion (5 mins)
* Share – modelled and then paired work (10 mins)
* Think together – whole class problem solving (5 mins)
* Record independently (25 mins)
* 5 minute reflect at the end of each lesson.

Times may vary depending on individual lessons, these are just guidelines. FIT to be done in afternoons where possible or before the next maths lesson.

Out-of-class work and homework

The daily mathematics lessons will provide opportunities for children to practice and consolidate their skills and knowledge, to develop and extend their techniques and strategies, and to prepare for their future learning. These will be extended through out-of-class activities or homework. These activities will be short and focused and will be referred to and valued in future lessons.

Links between mathematics and other subjects

Mathematics contributes to many subjects within the primary curriculum and opportunities will be sought to draw mathematical experience out of a wide range of activities. Teachers seek to take advantage of all opportunities. This will allow children to begin to use and apply mathematics in real contexts.

Approaches

Through careful planning and preparation we aim to ensure that throughout the school children are given opportunities for:

* practical activities and mathematical games;
* investigation and problem solving activities;
* individual, group and whole class discussions and activities, between teachers and pupils and pupils themselves;
* open and closed tasks;
* a range of methods of calculating eg. mental, pencil and paper and using a calculator;
* working with computers as a mathematical tool;
* consolidation and practice;
* practical application of Mathematics to everyday situations.

Streaming

Y1-6 are streamed for Maths across the cohort which allows staff to plan even more focused activities for each ability level in smaller groups with teachers, TAs and intervention teachers if needed. Intervention teachers are used in KS1, LKS2 and UKS2 to target individual groups.

**SCHOOL AND CLASS ORGANISATION**

How we cater for children who are more able

Where possible more able pupils will be taught with their own class and stretched through differentiated group work and extra challenges. When working with the whole class, teachers will direct some questions towards the more able (at their ability level) to maintain their involvement. Very occasionally special arrangements will be made for an exceptionally gifted pupil e.g. they may follow an individualised programme with more challenging problems to tackle. The Power Maths mastery programme has deepen activities which can be used to challenge the more able pupils.

How we cater for pupils with particular needs

The daily mathematics lesson is appropriate for all pupils. Teachers will involve all pupils through differentiation.

In the daily mathematics lesson we support children with English as an additional language in a variety of ways; e.g. repeating instructions, speaking clearly, emphasising key words, using picture cues, playing mathematical games, encouraging children to join in counting, chanting, finger games, rhymes etc…

Differentiation should always be incorporated into all mathematics lessons and can be done in various ways:

* Stepped Activities which become more difficult and demanding but cater for the less able in the early sections.
* Common Tasks which are open ended activities/investigations where differentiation is by outcome.
* Resourcing which provides a variety of resources depending on abilities e.g. counters, cubes, 100 squares, number lines, mirrors.
* Grouping according to ability so that the groups can be given different tasks when appropriate.

These steps are all incorporated into the Power Maths programme.

Pupils with Special Educational Needs and Individual Education Plans

Within the daily mathematics lesson teachers aim to provide activities to support children who find mathematics difficult. Children with SEN are taught within the daily mathematics lesson and are encouraged to take part when and where possible.

Where applicable children’s IEPs/ provision maps incorporate suitable objectives from the National Curriculum 2014 and the Mathematics guidance: key stages 1 and 2 Non-statutory guidance for the national curriculum in England 2022 and teachers keep these objectives in mind when planning work.

When additional support staff are available to support groups or individual children they work collaboratively with the class teacher. The support teacher feeds back to the class teacher when appropriate to inform evaluations, assessment and future planning.

When individual or groups of children are not meeting the age related expectations and when additional support staff are available short term booster groups will be set up to quickly improve Numeracy skills. Work is pitched appropriately at the correct level to children and the programme is followed for a set period of time. The support teacher feeds back to the class teacher when appropriate to inform evaluations, assessment and future planning.

Exercise Books for Recording

It is school policy that the following books are used:

* Foundation stage: Power Maths work books and plain exercise books
* KS1: Power Maths work books and maths files.
* KS2: Power Maths work books and maths files/ exercise books.

Any children who are not following Power Maths use blue exercise books with 1cm squares.

All children are encouraged to work tidily and neatly when recording their work. When using squares one square should be used for each digit. When the activity allows it, the children are encouraged to fold a page in halfcreating two columns for answers.

Folders are used to keep maths worksheets, weekly arithmetic and basic skills tests.

There are occasions when it is not necessary to record mathematics in a permanent form. Recording work may involve children working on whiteboards or making rough jottings first followed by recording actual answers for the teacher’s attention. All children are encouraged to work tidily and neatly when recording their actual answers but jottings may take any form and are important evidence for the teacher.

Teachers may photocopy the whiteboards or take photographs of children working to provide further evidence of achievement.

Marking

Work in mathematics can generate a great deal of marking. The children themselves can mark exercises which involve routine practice with support and guidance from the teacher.

The quality of marking is crucial. A simple ‘X’ is of little assistance to a child unless accompanied by an indication of where the error occurred, together with an explanation of what went wrong.

Marking should be both diagnostic and summative and school policy believes that it is best done through conversation with the child but acknowledges that constraints of time do not always allow this

In Mathematics the School use two characters to support marking which the children are rewarded with at the end of each session.

Flash – 70- 100% work correct

Fuzzy- below 70% work correct

Children are motivated and strive to be a ‘Flash’ in each session.

After the lesson groups of children who require it, are given Fix- it-time where they are able to correct their work with support. All staff should initial their marking.

(For more detail see the School Marking Policy).

Homework

See Homework Policy.

Resources

Power Maths is a resourced based scheme and encourages the use of manipulatives in all lessons. All classes at St Matthews School have the majority of the necessary mathematics equipment located within the classrooms or use the resource audit list to know where to borrow them from.

Resources should be on display or easily accessible to children, in particular concrete and pictorial apparatus to support children to grasp concepts.

Information and Communication Technology

ICT will be used in various ways to support teaching and motivate children’s learning. ICT will involve the IWB, computer, calculator, software and audio-visual aids. They will however only be used in the daily mathematics lesson when it is the most efficient and effective way of meeting the lesson objective.

Children have a login for Timestables Rockstars. This is an interactive programme, which allows children to practise their tables at home and at school. Teachers can get weekly times tables tests for the children to complete. The children get points when they complete the times table which has been set for them.

During certificate assembly, certain children will be chosen to go onto the ‘Hall of fame’. Class teachers have the facilities to check understanding and completion of games.

KS2 children have a login for Maths Flex and KS1 children have a login for School Jam. This is an interactive programme, which allows children to practise what they have been learning in their lessons at home and at school. It uses next-generation intelligent maths practice service. The AI constantly adapts to the pupil’s own strengths and weaknesses and sets work for the children and provides reports for teachers’ to use to inform future planning.

Assessment and Recording

 Assessment is regarded as an integral part of teaching and learning and is a continuous process. It is the responsibility of the class teacher to assess all pupils in their class. In our school we are continually assessing our pupils and recording their progress. We see assessment as an integral part of the teaching process and strive to make our assessment purposeful, allowing us to match the correct level of work to the needs of the pupils, thus benefiting the pupils and ensuring progress. Information for assessment will be gathered in various ways: by talking to the children, observing their work, marking their work, etc. Teachers will use these assessments to plan further work. Teachers record learning on SIMS. They will grade each child on an objective: Entering, Entering +, Emerging, Emerging +, Expected, Expected+ and Exceeding.

Short Term Assessments

Short-term assessment will be an informal part of every lesson. The teacher will share the objectives for the lesson with the children and make sure they are clear what is being expected of them to successfully achieve the objective. This is a necessary part of assessment for learning and helps the children take ownership for their own learning. The short term assessment will also involve the teacher checking the children’s understanding at the end of the session to inform future planning and lessons. Children do weekly Arithmetic and Basic Skills tests to sharpen their oral and mental skills.

Medium and Long Term Assessments

Assessments will take place in the Autumn and Spring term to review pupils’ in-year progression and attainment for Years 1 to 5. Year 6 are tested half termly. These will take the form of NFER tests, assertive mentoring tests, optional SATs, PUMA tests, past SATs papers or teacher assessments. Accurate information will then be reported to parents and used to set targets for the pupils for the next term.

Assessments will take place towards the end of the school year to assess and review pupils’ progress and attainment. These will be made through compulsory National Curriculum mathematics tests for pupils in Years 2 and 6. Pupils in Years 3, 4 and 5 are assessed using the NFER tests and teacher assessments. Year 1 pupils sit the PUMA tests and are teacher-assessed.

Teachers will also draw upon their class record of attainment against core learning and supplementary notes and knowledge about their class to produce a summative record. Teachers will also use the APP tracking grids to track some pupils’ progress. Accurate information will then be reported to parents and the child’s next teacher.

(For more information see the Assessment, Recording and Reporting policy.)

**MANAGEMENT OF MATHEMATICS**

Role of the Class Teacher:

• To ensure progression in the acquisition of mathematical skills with due regard to the National Curriculum 2014 for mathematics;

• To develop and update skills, knowledge and understanding of mathematics;

• To identify inset needs in mathematics and take advantage of training opportunities;

• To keep appropriate on-going records;

• To plan effectively for mathematics, liaising with co-ordinator when necessary;

• To inform parents of pupils’ progress, achievements and attainment.

Role of the Subject Lead:

* Ensuring continuity and progression from year group to year group;
* Teach demonstration lessons;
* Ensure teachers are familiar with programme of study from the National Curriculum 2014 and help them to plan lessons using Power Maths as a teaching tool;
* Offer support and guidance to all staff in the planning and delivery of mathematics;
* Lead by example in the way they teach in their own classroom;
* Prepare, organise and lead INSET, with the support of the Headteacher;
* Work co-operatively with the SENCO;
* Observe colleagues from time to time with a view to identifying the support they need;
* Attend INSET provided by LA numeracy consultants;
* Be aware of new initiatives and thinking and disseminate relevant information;
* Inform parents;
* Discuss regularly with the Headteacher and Numeracy Governor the progress of Mathematics in the school.
* Assisting with requisition and maintenance of resources required for the teaching of mathematics.
* Monitor, collect, scrutinise and report findings of planning, examples of work and displays.

Role of the Headteacher:

* Lead, manage and monitor the implementation of the programme of study from the National Curriculum 2014 and the Mathematics guidance: key stages 1 and 2 Non-statutory guidance for the national curriculum in England 2022, including monitoring teaching plans and the quality of teaching in classrooms;
* With the Maths Governor, keep the governing body informed about the progress of the mathematics;
* Ensure that mathematics remains a high profile in the school’s development work;
* Deploy support staff to maximise support for the mathematics.

Role of the Maths Governor:

* To visit the school regularly to talk with the teachers and when possible, observe some of the daily mathematics lessons;
* To report back to the curriculum committee on a regular basis;
* To attend any relevant inset or training.

REVIEW

This policy will be revised on an annual basis by the Headteacher and all staff. Amendments will be presented to the Governing Body.

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| **Date of Policy:** |  **September 2022** |
| **Date agreed by Governors:** | **September 2022** |
| **Next Review Date:** | **September 2022** |