St Joseph's Catholic Primary School

Inspiring everyone to **REACH** through Faith, Hope, Love

At St Joseph's, we strive for academic excellence through encouraging resilience, empathy, aspiration and challenge. We have high expectations for ALL so that we can be 'The best we can be.' With Faith, Hope and Love at the heart of our school family, our children feel safe, secure and supported.

Policy for Mathematics

Subject Leader:	Natalie Guoite
Link Governor:	Nicola Connolly
Approved by:	
Review Cycle:	Every 2 years
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THE NATURE OF MATHEMATICS

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. (National Curriculum 2014).

As can be seen from the above introduction, 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, and hopes to instil and enjoyment in the subject by supporting children to engage with it and build upon their own understanding and promote further learning.

Learning skills are an important aspect of mathematics but such skills are only a means to an end, and should be taught and learned in a context that provides purpose and meaning.

ST JOSEPH'S VISION

St Joseph's policy has been developed on the basis of the Development Matters Framework (EYFS) and the National Curriculum (Year 1 to Year 6). Such documents provide a framework for mathematics but the school is aware of the need for flexibility and creativity in response to the needs of individual children. We have been working with GLOW Maths as part of a sustaining mastery work group which aims to work with a mastery lead and other maths leads across numerous school to help support and develop Maths provision within school.

The purpose of mathematics in our school is to develop:

- a positive attitude towards mathematics and an awareness of the relevance of mathematics in the real world.

- competence, fluency 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 and experiment.

NATIONAL CURRICULUM

The programmes of study for mathematics are set out year-by-year for Key Stages 1 and 2. Schools are however only required to teach the relevant programme of study by the end of the key stage. Within each Key Stage, schools therefore have the flexibility to introduce content earlier or later than set out in the programme of study. In addition, schools can introduce key stage content during an earlier key stage, if appropriate. All schools are also required to set out their school curriculum for mathematics on a year-by-year basis and make this information available online.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should be based on the security of the pupils' understanding.

EARLY YEARS FOUNDATION STAGE

Mathematics within the EYFS is developed through purposeful, play based experiences and will be represented throughout the indoor and outdoor provision. Mathematical understanding can be developed through stories, songs, games, imaginative play, child initiated learning and structured teaching. As pupils progress, they will be encouraged to record their mathematical thinking in a more formal way.

"Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes." – Statutory framework for the Early Years Foundation Stage.

KEY STAGE 1 MATHS

The principal focus of mathematics teaching in Key Stage 1 is to ensure pupils develop confidence and mental fluency. The essential idea behind the mastery approach is that all children have a deep understanding so that future learning continues to build on solid foundations. If the subject is represented using concrete materials, pictorial representations and abstract symbols, it will allow children to visualise maths in varied ways, see connections and to independently explore and investigate a topic. Practical activities and resources offer the children a deeper mathematical understanding of more complex concepts. Providing children with visual representations also offers a scaffold when developing a more robust understanding of maths. Throughout Key Stage 1, it is important that children gain a secure knowledge of number and place value and become confident when using the four operations in both formal methods as well as problem solving where often the approach is not immediately evident. Alongside number work, pupils begin to identify fractions using shapes, objects and quantities and make connections to equal sharing and grouping. Pupils are taught to count to ten in fractions, recognise equivalent fractions and develop their understanding of fractions on a number line. At this stage, pupils will also develop their ability to recognise, describe, draw, compare and sort different shapes. Pupils have the opportunity to use a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money and are expected to use related vocabulary for all topics. Other subjects may have strong links to some maths topics allowing cross-curricular teaching. For example, shape through art or computing, measures through science or coordinates in geography. This is to ensure we continually maximise learning opportunities for all pupils across an entire curriculum.

KEY STAGE 2 MATHS

Lower Key Stage 2 – Years 3-4. The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number. By the end of Year 4, pupils should have memorised

their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Upper Key Stage 2 – Years 5-6. The principal focus of mathematics teaching in upper Key Stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio. At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Alongside the above objectives runs a desire to implement key reasoning and problem solving skills within lessons and also throughout the wider life of school.

TEACHERS PLANNING AND ORGANISATION

Each class teacher is responsible for the mathematics in their class in consultation with and with guidance from the mathematics subject leader and Senior Leadership Team. The approach to the teaching of mathematics within the school is based on clear principles:

Two mathematics lessons every day – a maths KITE lesson and an MOT (maths on track) session.

Maths lessons and MOT sessions are a range of activities provided from GLOW maths and picking up of misconceptions linked to KITE lessons. A clear lesson objective for the KITE lesson is provided. All KITE lessons follow the same framework of: Do it, Secure it, Deepen it. The Do it activities enable children to practise skills (fluency), the Secure it activities enable children to deepen understanding (reasoning) and the Deepen it activities enable children to apply skills (problem solve).

Each class organises two daily lessons of for mathematics. The KITE lesson lasts 45 minutes and the MOT lesson 20 minutes. They are taught at different times as they teach different concepts. Teachers of the EYFS ensure the children learn through a mixture of adult led activities and child initiated activities both inside and outside of the classroom.

Across the school, lessons are taught in a similar format. Children are encouraged to take responsibility for their own learning and ask for help and guidance when they need it. Teachers begin the lesson with all children working as a class. Children in EYFS and KS1 will start on the carpet, KS2 will start at their tables. Teacher completes class input and uses ‘Assessment for Learning’ to see if any children need support. These children will either remain with the teacher of work with the class Teaching Assistant. Whole class teaching is adapted and where possible, children work in mixed ability groups. We believe that all children should have the same standard of teaching and to ensure this, we aim not to group children based on their ability but also accept that at times, this may be necessary. Every classroom has practical apparatus to support children’s learning, with additional resources stored centrally. This is reviewed and added to each year.

Long term planning

The National Curriculum for Mathematics 2014, Development Matters and the Early Learning Goals (Number, Numerical patterns) provide the long term planning for mathematics taught in the school.

Medium term planning

The curriculum documents have been put into smaller steps and objectives by GLOW maths. Teachers use the maths club and 'CanDo' Maths to obtain objectives for each lesson. Teachers follow them in the order provided.

Short term planning

Lessons are planned and delivered using the weekly planning format. This contains the lesson objective, a 'hook', stem sentence, key vocabulary, the teaching input and the activities the children will complete during the lesson.

SPECIAL EDUCATIONAL NEEDS

Teaching maths for mastery is different because it offers all pupils access to the full maths curriculum. This inclusive approach, and its emphasis on promoting multiple methods of solving a problem, builds self-confidence and resilience in pupils. Though the whole class goes through the same content at the same pace, there is still plenty of opportunity for adaptation. Taking a mastery approach, adaptation occurs in the support and intervention provided to different pupils, not in the topics taught, particularly at earlier stages. Questioning and scaffolding individual pupils receive in class as they work through problems will differ, with higher attaining children, or those pupils who grasp concepts quickly, challenged through more demanding problems which deepen their knowledge of the same content. Those children who are not sufficiently fluent are provided additional support to consolidate their understanding before moving on. Pupils' difficulties and misconceptions are identified through immediate formative assessment and addressed where possible with intervention or through regular consolidation activities. Where children make less than expected progress efforts are made to ensure relevant support is put in place to help support the child. No child will be denied a full curriculum however and concepts will be revisited throughout the year during challenge times or intervention times to help with long term understanding.

The daily mathematics lessons are inclusive to pupils with special educational needs. Where required, children's 'My Plans' incorporate suitable objectives from the different year groups for Mathematics or Development Matters and teachers keep these objectives in mind when planning work. These targets may be worked upon within the lesson as well during an intervention outside the Mathematics lesson. Maths focused intervention are planned by teachers based on the need of the children to help children with gaps in their learning and mathematical understanding. These are delivered on a by trained support staff, overseen by the class teacher and monitored by the school SENCO.

EQUAL OPPORTUNITIES

We incorporate mathematics into a wide range of cross-curricular subjects and seek to take advantage of multi-cultural aspects of mathematics. We ensure that all children are able to fulfil their potential regardless of race, religion, disability or gender.

PUPILS' RECORDS OF WORK

Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and convenient method of recording. All children are encouraged to work tidily and neatly when recording their work. Children's books must include the following:

- Each lesson will start with a ladder, which clearly identifies the KITE for the session.

- This ladder must be filled out to say where the child finished the lesson.

- One digit per square.

- Work in two columns with the page folded to identified these.

- Every KITE lesson starts with the short date and the title corrections underlined (Key Stage 2).

- Corrections from the previous lesson must follow this.

- Children must label each section of the maths lesson (do it, secure it, deepen it) and number questions clearly.

- All underlining must be done with a ruler.

- Additional activities must be labelled in books.

In Year 1, 1cm square exercise books are to be used. This changes to 7mm square exercise books in Year 2 through to Year 6.

EYFS record formally and informally within the setting. Informal records would be:

- On whiteboards.

- Using jigsaws/games.

- Using natural resources in the environment.

- Physically ordering numbers.

- Using a floor book.

Books are also used to record work formally. These don't have squares but have plain pages. Staff in Foundation Stage use photos to ensure records of each child's achievements are maintained.

MARKING

Marking of children's work is essential to ensure they make further progress. All work is marked, in line with the school marking policy. Work is to be marked daily to ensure misconceptions are picked up and planned for either in the next lesson or in the MOT sessions that week in accordance with the school marking policy.

Children can self-assess their own work using calculators or answer sheets [this is more appropriate in Year 6 and children will need guidance about how to do this]. Children should be given time to read teachers' comments and make corrections.

Most maths should be 'live marked' during the maths lessons by teachers and TA's who pick up misconceptions at the same time whist moving children's learning on. When this is not achieved, it is recognised that it can be helpful for a TA to help with marking. If this is done, it is vital that the TA feedback either verbally or through writing to the teacher about where each child is and where they need to start in the next lesson.

The quality of marking is crucial. Just seeing pink 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. This could be verbally or through written feedback. It must be obvious that there has been adult intervention to correct children's errors. This could be done through putting a (V) or (S) next to the child's work or an additional activity which reinforces the skill or recaps the previous step to help the children move on.

Some children may find aspects of the journey easier than others and it important children are challenged and moved on if they understand a concept. This could be within a lesson or through marking. Teachers must recognise this in a child's book through the use of a (V).

ASSESSMENT AND RECORD KEEPING

Teachers make regular assessments of each child's progress and record these systematically. A record of each child's attainment against the key objectives for the appropriate year group is recorded using our Insight tracker.

Short term

Children's class work is assessed frequently through:

- Live marking
- Analysing errors
- Questioning
- Discussion
- Daily marking

This is used to inform future planning and teaching. Based on AfL both in lessons and through marking, activities and lessons are adapted and planned on a daily basis. This could be through additional activities, moving children on or a focused teaching group with a TA or teacher.

Medium term

At the end of each journey planning alongside judgements from class work will be used to inform the teacher of whether the child has grasped the concept and consequently used to fill in the schools tracking system [Insight tracker]. Children from Year 1 (Summer Term) will also complete termly 'Remember It's' to ensure they are comfortable in this type of questioning and also to inform teachers overall judgements on insight.

Long term

EYFS to achieve the Early Learning Goal.

Y2 to complete assessments every May.

Y4 to complete the times table check in June.

Y6 to complete SATs assessments every May.

REPORTING TO PARENTS AND PARENTAL INVOLVEMENT

Reports are completed before the end of the summer term and parents are given opportunity to formally discuss their child's progress at two parents' evenings in the autumn and spring terms. Parents can make an informal appointment to discuss their child's progress at any time over the school year. Parents are encouraged and offered support and guidance to support their children's learning of mathematics. Furthermore, each term staff send out 'knowledge organisers' which outline the key methods and learning points from that term. This allows parents to use the same methods when supporting their children at home. These are also uploaded on to the school website.

MONITORING AND EVALUATION

The mathematics subject leader along with the Head Teacher monitors and evaluates the teaching of mathematics. Book looks, learning walks and lesson observations are all used to monitor and evaluate the teaching of maths across the school. Any observations are undertaken in line with the school improvement plan. Opportunities for teachers to review the scheme, policy and published materials are given during staff meetings.

STAFF RESPONSIBILITIES

Head Teacher

- Lead, manage and monitor the development of mathematics in the school.

- Support the mathematics subject leader in taking mathematics forward.

- Carry out annual audits, set targets, review the action plan and monitor its progress.

- Ensure that arrangements are made to meet the training needs of teachers and other adults involved.

- Manage the school's allocation of resource funding, including leadership time.

- Ensure parents are informed and involved.

Mathematics Subject Leader

- Assist the Head Teacher in carrying out the audit, reviewing and amending of the action plan.

- Prepare, organise and provide school based INSET meetings, workshops and staff meetings.

- Assist with the monitoring of teaching and planning and the analysis of SATs results.

- Preparation, review and implementation of school policy documents and guidelines taking into account the recommendations of the National Curriculum and EYFSP.

- Liaison with staff in school.

– Working alongside them giving guidance and support.

- Introduce, organise and maintain the school's mathematics resources.

- Take responsibility for own professional development by attending courses and keeping up-to-date with current developments within mathematics education.

- Liaison with mathematics subject leaders in other schools where necessary.

- To provide an example to the school by taking a lead in teaching mathematics and classroom organisation.

- Maintaining contacts beyond school with numeracy consultants, advisory staff and other outside agencies.

- Ensuring equality of opportunity for all pupils.

SENCO

- Supporting and working co-operatively with the mathematics subject leader to implement and develop mathematics throughout school.

- Organising and providing INSET for staff special needs mathematics issues.

- Advising staff how best to support children with varying needs during mathematics lessons so that they meet the expectations of the yearly teaching programmes where possible.

- Advising staff on the inclusion of mathematical objectives in my plans for children with SEN in mathematics.

- Helping to ensure that children who are capable of catching up their peer group do so as quickly as possible.

- Advising staff on the effective use of teaching assistants and helping support staff to develop their role.

Class Teachers

Class teachers are responsible for the planning, teaching and assessment of the daily mathematics lesson and the organisation of additional adults in the classroom. They are also responsible for implementing the contents of this policy within their classroom.

Support Staff

HLTAs and TAs that work with the children support the teaching of mathematics under the direction of the class teacher.

Governing Body

There is an identified maths governor. Our Maths governor is Mrs Nicola Connolly. She is invited to attend relevant school INSETs. The maths governor visits school to talk with the subject leader and when possible, observes some daily maths lessons. The maths governor reports back to the curriculum committee on a regular basis.

STAFF DEVELOPMENT

All staff are encouraged to develop, assess and improve their teaching of mathematics. Whenever possible we:

- Encourage staff to attend mathematics courses.

- Make provision for the mathematics subject leader to work alongside colleagues in the classroom or shared areas.

- Provide school based training.

- Involve staff with policy and decision making.

- Provide the opportunity to learn from colleagues expertise.

- Encourage parental involvement at home and in school

RESOURCES

All teachers should organise an area within the classroom dedicated to mathematics resources. This area is easily accessible to all children and allows them to become familiar with all resources. There should also be a working wall area (for KITE lessons and MOT sessions) within every classroom that the children can access. This needs to be updated daily in accordance with the area of maths being taught at the time. It

shows working examples of what children are doing in class at the time. It should also provide children with the vocabulary they will be using for that journey. It could include key and useful facts which are relevant to the journey. Children should be confident with using the working wall to help their learning if they are stuck. Resources which are not used or required regularly are stored away as not to clutter the classroom of confuse children.

HOMEWORK

It is important to provide parents and carers with opportunities to work with their children at home. These activities may only be brief, but are valuable in promoting children's learning in mathematics. Activities as part of homework are sent home to all children, once a fortnight. The activities should reinforce and support what is happening during lessons in school and thus may be different for each child. These can take the form of games, activities or quick written tasks.