



St John with St Augustine CE Primary School

Mathematics Policy

Our School's Vision

'With God's help, together, we aspire, achieve and believe.'

Purpose

This policy reflects the school values and philosophy in relation to the teaching and learning of mathematics. This policy outlines what we are aiming to achieve in respect of pupils' mathematical education. It also describes our agreed approach to the planning, delivery and assessment of the mathematics' curriculum.

Intent

We believe that every child can master an understanding and love of maths with the right kind of teaching and support (Maths No Problem).

At St John with St Augustine's we recognise that mathematics is essential to everyday life and provides a foundation for understanding the world. We will provide our children with engaging lessons, mathematical opportunities and experiences to create a sense of enjoyment and curiosity about the subject.

The fundamental idea is that all children develop a deep understanding of the mathematics they are learning. Learning is carefully planned and sequenced, taking into account what has been taught before, and what knowledge and skills are needed for the next stage of our children's mathematical development.

We have adopted a mastery approach in maths, so we have high expectations for all of our children. At the core of our maths curriculum is the concrete, pictorial and abstract approach. The children are taught and encouraged to explain their choice of methods and develop their mathematical reasoning skills whilst recognising that mathematics underpins much of our daily lives.

Our ambitious curriculum allows all learners to explore maths in depth, using mathematical vocabulary to reason and explain their workings and make sense of the world around them by making connections between mathematics and everyday life. We encourage resilience, perseverance and an acceptance that struggle is often a necessary step in learning. We give each pupil a chance to believe in themselves as mathematicians.

Our aim is for all learners to:

Become fluent in the fundamentals of mathematics

Reason mathematically

Solve problems by applying their mathematics

By achieving these aims, our children will leave as knowledgeable, skilful and confident mathematicians ready for the next phase of their learning and future employment.

Introduction

At St John with St Augustine, we believe that mathematics is central to the curriculum of all pupils. Mathematics is important in everyday life. It is integral to all aspects of life and with this in mind we endeavour to ensure that children develop a healthy and enthusiastic attitude towards mathematics that will stay with them. It is important because:

- it provides a powerful means of communicating information or ideas;
- it is a search for patterns and relationships;
- it is a creative activity, involving intuition and discovery;
- it is a way of solving problems;
- it is a way of making sense of the world around us;
- it is important and useful in other fields of knowledge.

Aims

The aims of our maths teaching at St John with St Augustine CE Primary School are aligned with the aims of the National Curriculum: fluency, reasoning and problem solving – both in the mathematics lesson and across the curriculum. We recognise that pupils need to learn basic number facts and acquire fluency in procedures, alongside developing conceptual understanding if they are to be able to solve increasingly complex problems in life and later in the workplace.

At St John with St Augustine CE Primary School we aim to:

- prepare our children for the next stage of their education, but also to lay the foundations for successful lives after school;
- develop a positive attitude to mathematics as an interesting and attractive subject in which all children gain success and pleasure;
- develop mathematical understanding through systematic direct teaching of appropriate learning objectives;
- encourage the effective use of mathematics as a tool in a wide range of activities within school and, subsequently, adult life;
- develop an ability in the children to express themselves fluently, to talk about the subject with assurance, using correct mathematical language and vocabulary;
- develop an appreciation of relationships within mathematics;

What is mathematics and why is it important?

Mathematics is the most creative subject and one all children should enjoy. Mathematics helps children to make sense of the world around them through developing their ability to calculate, to reason and to solve problems. 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 appreciate the contribution made by many cultures to the development and application of mathematics.

It is a powerful, universal language used to explain, predict and represent events and tackle everyday problems. Mathematics is of central importance to our modern society. It is an essential part of everyone's daily life and critical to science, technology, finance and engineering. Mathematics is necessary for any employment or independent life.

A mastery approach to the teaching of mathematics has been adopted, so we have high expectations of all our pupils. We endeavour to make the mathematics curriculum accessible to all pupils; moving them through the programme of study at broadly the same pace. All children need a deep understanding of the mathematics they are learning in order that future learning is built upon firm foundations. As we pursue this mastery approach we are moving away from separate intervention groups, instead introducing pre- teaching, same day 'catch up' sessions and additional practice to prevent children falling behind.

There are aspects of mathematics teaching which will be seen in every classroom at St John with St Augustine CE Primary School:

- A positive attitude toward and sense of excitement about mathematics
- Children learn through active enquiry and experiment using concrete materials, represent their mathematical ideas through images and follow a clear progression towards recording abstractly
- Children learn to use multiple representations
- Mathematical skills are practised and applied across the curriculum
- A mathematically rich environment supports learning
- Communication, using precise mathematical language is supported
- Independence is encouraged
- Fluency and flexibility features strongly in every lesson
- Adults use skilful questioning to reveal, probe and address misconceptions
- Children who grasp concepts rapidly are challenged through rich and sophisticated problems
- Scaffolding is provided for children when required
- Skilful assessment identifies children who are struggling, where feedback will be given in the lesson and on the day intervention will be given if further support is needed

Mathematics Curriculum Planning

Mathematics is a core subject in the National Curriculum. At St John with St Augustine Primary School, we follow Maths No Problem. This is recommended by the DfE for schools on the Teaching for Mastery Programme and is fully aligned with the 2014 English national curriculum. The Maths No Problem textbooks and workbooks are designed to ensure a deep, secure understanding of maths in learners of every attainment level.

Maths No Problem is an approach to teaching Maths developed in Singapore. The reason we chose Maths No Problem is because problem solving is at the heart of the mathematics. The focus is not on rote learning but on relational understanding. Pupils are encouraged to think mathematically and are introduced to new concepts using the Concrete, Pictorial and Abstract (CPA) approach. Lessons are typically broken down into three parts and can last one or more days. Pupils master topics before moving on.

The three parts are:

The anchor task – all the class spends time on a question, thinking of all the possible ways to solve it. The children are encouraged to talk about their maths and explore ideas fully (working with talk partners).

Guided practice – practice new ideas in groups, pairs or individually, guided by the teacher.

Independent practice – children practice on their own (maths workbooks and maths journals). Our maths books are now journals!

In our Maths journals we communicate our learning in different ways:

Investigating when we solve problems and find possibilities.

Creative when we create our own stories and problems.

Descriptive.... when we explain how we have done something or what we have learned.

Evaluative when we make judgements about which method is best.

Once children have mastered a concept, they use their reasoning and problem solving skills to develop their depth of learning.

Assessment

Assessment for Learning (AfL)

Assessment for learning, commonly referred to as formative assessment, occurs during, rather than at the end, of the teaching and learning process to help clarify pupil understanding of maths. As teachers we work alongside children on a day-to-day basis to really delve deep into what they know and don't know so we can be flexible with our teaching to accommodate misunderstandings or to stretch those who have already demonstrated a sufficient grasp of a concept.

To use AfL effectively we want to provide 'active assessment' feedback that is inclusive of all learners and reflects a belief that everyone can improve. It involves teachers, pupils and parents reflecting on evidence and encourages self-assessment and peer assessment. And, ultimately, we use assessment to help pupils learn better, rather than just getting a better mark, grade or level.

Assessment as Learning (AaL)

Assessment as learning is when pupils actively monitor their own maths learning, ask questions and use a variety of strategies to decide what they know, what they don't know and what they partly know. They are their own assessors for new learning.

AaL is the process of developing and supporting pupil metacognition. It encourages pupils to be self-reflective, to ask questions about and take responsibility for their learning. This involves teachers and pupils co-creating learning goals to feed growth and development and provides ways for pupils to use formal and informal feedback and self-assessment to power their next steps encouraging peer assessment, self-assessment and reflection.

For instance, maths journaling can play a major part of children becoming actively involved in AaL giving them an opportunity to focus on their learning journey and articulate understanding. It enables them to embrace mistake making and to critically think in order to adjust.

Assessment of Learning (AoL)

Assessment of learning (often known as summative assessment) is the process of testing individuals in order to determine their understanding of maths. The information is used to plan future learning goals and learning pathways for pupils.

At St John with St Augustine Primary School we recognise that AfL lies at the heart of promoting learning and in raising standards of attainment. We further recognise that effective AfL depends crucially on actually using the information gained.

The assessment procedures within our school encompass:

- Making ongoing assessments and responding appropriately to pupils during 'day-to-day' teaching. These 'immediate' responses are mainly verbal and are not normally recorded;
- Using knowledge of pupils drawn from ongoing pupil tracking records to inform 'prior learning' at the beginning of each unit of work to guide our planning and teaching;
- Adjusting planning and teaching within units in response to pupils' performance;

- Use of ongoing teacher assessment in order to identify gaps in attainment and at the end of each full term using this information to judge each child's attainment against year group expectations;
- Use of information gained from statutory and internal school tests. Analysis is done at both a quantitative and qualitative level. Information gained is used to identify the group's and individual's strengths and areas for improvement and also to determine which strategies or methods are particularly effective in respect of specific areas of mathematics (the how and why).

The Mathematics Curriculum

Early Years Foundation Stage

Work undertaken within the Early Years Foundation Stage is guided by the requirements and recommendations set out in the Revised Statutory Framework for the EYFS, the Development Matters in the EYFS and the Foundations Maths No Problem Programme. Foundations is a full-year Reception programme from Maths — No Problem! that encourages learning through play and helps children in the Early Years begin to develop a deep understanding of the world of mathematics. We give all the children ample opportunity to develop their understanding of mathematics. We aim to do this through varied activities that allow them to use, enjoy, explore, practise and talk confidently about mathematics. Plans are adapted regularly to support the changing learning need, styles and interests of the children. These plans are then broken down into a daily plan. 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, including indoor and outdoor continuous provision.

Key Stages 1 and 2

Lessons are structured around the concrete – pictorial –abstract approach providing opportunities throughout for using mathematical vocabulary, developing mathematical thinking and using multiple representations. There should be opportunities to record in every lesson (in different ways). The main teaching activity should be whole-class based with everyone covering the same content. Children are generally taught in classes, not setting groups in line with the mastery approach. Pre-teaching, guided groups and catch up sessions take part to provide targeted support for those who need it. Lessons are structured with assessment opportunities throughout; these may be referred to as mini plenaries. This provides opportunities to evaluate what has been learnt, review success criteria and address misconceptions. It should also provide opportunity for peer/self-assessment so children understand what they attained and where to go next. The aim of a mathematics lesson is to teach a child a skill or strategy that will provide a solution to a task. It is not simply to produce a page of correct number work, which is abstract to any real life situation.

Although maths is taught as a discrete subject, staff are encouraged to exploit any cross-curricular links and provide opportunities for children to demonstrate their mastery of concepts or skills in other subjects (eg: science, ICT, PE, topic).

It is the responsibility of teaching assistants supporting individuals or groups of children within a maths lesson to ensure they have read, and if required, discussed the planning with the class teacher and prepared any required resources. They are expected to provide feedback to the teacher on a daily basis for the children they have been working with. This feedback may be verbal or if preferred, written on their copy of the maths plan or on 'post-it' notes. Learning in books is presented and marked in accordance with the marking policy.

Five Alive

Five Alive is a prior learning warm up. Each lesson starts with five questions, looking at the learning from the previous lesson, previous weeks and previous chapters. This will help ensure essential skills are regularly revisited to strengthen retention. As we teach in block units, it is important that we are revisiting previously taught units.

These are quick fire questions as a warm-up starter for the lesson (five minutes). This will help inform whether the children are remembering more and identify any gaps. If the gaps are whole class, we will continue to plug these through warm-ups, reasoning and arithmetic sessions. However, if it is only a few children, then we will close the gaps through intervention.

Contribution in Mathematics to Teaching in Other Curriculum Areas

Teachers will seek to take advantage of opportunities to make cross-curricular links. They will plan for pupils to practise and apply the skills, knowledge and understanding acquired through mathematic lessons to other areas of the curriculum. At St John with St Augustine we create learning opportunities and outcomes for mathematics across other subjects.

Throughout the whole curriculum, opportunities to extend and promote mathematics are exploited and explored. Teachers seek to take advantage of all opportunities to advance the children's enjoyment and understanding of mathematics. We particularly promote the development of number through enterprise skills and data handling, shape and measures through the teaching of Science, Music, Design and Technology and Art. However, there are endless mathematical links to all the subjects within the curriculum.

Special Educational Needs/Gifted and Talented

We aim to provide a rich mathematical education, which will develop the potential of all pupils. Any child who is assessed to have special education needs in mathematics will have a maths target on a SEN Support Plan and be placed on the school's SEN register.

At St John with St Augustine Primary School we aim to provide a broad and balanced education to all pupils. High quality teaching is considered an entitlement for all pupils. Effective pupil tracking enables identification of pupils and will help to close specific areas/ gaps in learning to enable all pupils to make good progress. Pre-teaching will be used to close gaps to enable children to access the lessons. On-the-day intervention will be given for children who have been identified in the lesson on a need basis so that they are prepared for the next lesson.

Children who regularly grasp concepts rapidly and have been assessed as having mastered objectives from their year group may be identified by their class teacher as Gifted and Talented. Planning for these pupils will focus on enrichment prior to acceleration and the development of mathematical thinking rather than covering content more quickly. We also recognise, and aim to make provision for, pupils who have a particular ability in mathematics.

Intervention

The most effective form of intervention is when a difficulty or misconception has been identified and is addressed with immediacy. This may take the form of further teaching during the lesson or during additional time outside of the lesson, which will therefore allow the pupil to access the next lesson more effectively

The children's performance within lessons is monitored and children receive targeted intervention where gaps in understanding are found. This is as immediate as can be catered for and, ideally, delivered by the teacher.

If there are known gaps prior to learning, then pre-teaching will take place, so that the children are prepared and ready to access the next lesson.

Intended Impact:

Pupils should leave St John with St Augustine's CE Primary School with a strong level of mathematical fluency and a deep, long-term, secure and adaptable understanding of mathematics. They should be resilient in solving non-routine mathematic problems and enjoy challenging mathematics and acquiring new mathematical skills, representations and thinking.

Through the mastery approach:

Greater conceptual understanding of number and calculations, visualising and generalising more readily due to in depth learning.

Struggling learners are supported through accessing concrete equipment and use of visual models to support understanding.

Confident learners are challenged through exposure to unfamiliar problems, develop reasoning skills and exploring multiple ways to manipulate numbers and solve problems.

Resources

There are a range of resources to support the teaching of mathematics across the school. Staff are encouraged to use practical and visual models to support children's learning in mathematics. All classrooms have a wide range of appropriate practical apparatus.

Classroom Environment

The classroom environment should be mathematically rich and support current learning. Maths working walls should be interactive, clearly visible and provide the children with key vocabulary, prompts and challenges appropriate to the age/stage and linked to current learning. A range of concrete materials should be available for every child.

Parental Involvement

Parents are encouraged to support their pupil with the learning of instant recall facts and the completion of other mathematics homework which may be set. There are also some opportunities for parents to join pupils in school with mathematics focused learning sessions.

Equal Opportunities

The provision of maths teaching is regardless of race or gender and should allow all children to reach their full potential. In order to achieve this, activities should be set in a familiar context where possible. Children with special educational needs should be taught on an individual/small group basis when applicable (as guided by SENCO).

Record Keeping/ Assessment

Maths workbooks and journals provide evidence of progress, along with annotated planning. Learning should be recorded in as many ways as possible to provide the child with a range of experiences. Assessment is an ongoing process in the classroom which forms the basis of future action. Formal and informal teacher assessments are based upon the practical, written and oral work completed by the children. Summative assessments take place at the end of each chapter, mid-term and at the end of the year. These tests are analysed in order to support end of year assessment judgements. Each child should be involved in the review of his/her progress and be able to contribute to discussions about different aspects of his/her work.

We recognise the importance of responding to children's work, whether orally or in writing. We seek to encourage children by acknowledging positive achievements. This could include praise for use of a viable method even if the

end results were incorrect. Children are supported and enhance their understanding and make links between previous and future learning. Children are given opportunities, and actively encouraged, to explain their work to others and to display their work when it seems appropriate. They are encouraged to value and respect the work of others.

Monitoring and Review

Monitoring of the standards of children's work and of quality of teaching in mathematics is the responsibility of the subject leader through:

- Pupil discussions
- Staff discussions
- Drop in sessions
- Learning walk
- Book monitoring (journals and workbooks)

The Subject Leader will be responsible for improving the standards of teaching and learning in mathematics through the monitoring and evaluation of the subject through:

- Moderation of teacher assessments
- Reviewing pupil progress data
- Reporting to SLT and Governing Body
- Identification of pupils for intervention
- Monitoring the provision of mathematics (including Intervention and Support programmes)
- Monitoring the quality of the Learning Environment and the deployment and provision of support staff

The Governing Body

Termly reports are made to the governors and to our Mathematics Governor. These focus on the attainment and progress of Mathematics provision, including the effectiveness of interventions.

Continuous Professional Development

The work of the subject leader also involves supporting colleagues in the teaching of mathematics, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school. Staff will be provided with a wide range of relevant training courses and professional development opportunities. These are delivered in various forms, including:

- Staff Meeting led by the Subject Leader
- Mathematics Surgeries led by the Subject Leader
- Peer support opportunities, such as within Staff Meeting or additional sessions
- Subject Leader Network Meetings (Lancashire)

This policy should be read in conjunction with:

Teaching and Learning Policy

Marking and Feedback Policy

Special Educational Needs Policy

Maths Calculations Policy (provides detail of the skills, strategies and formal written methods taught at different stages).

