Maths Policy

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The National Curriculum

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.

The Nature of Mathematics

Mathematics teaches us how to make sense of the world around us through developing a child's 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.

A high-quality mathematics education, therefore, provides a foundation for understanding the world, the ability to reason mathematically and a sense of enjoyment and curiosity about the subject. Mathematics is a proficiency which involves confidence and competence with numbers and measures. It requires an understanding of the number system, a repertoire of computational skills and an ability to solve number problems in a variety of ways in which information is gathered by counting and measuring and is presented in graphs, diagrams, charts and tables. Mathematics gives children a way of coming to terms with their environment. Practical tasks and real life problems can be approached from a mathematical point of view. Mathematics provides children with imaginative areas of exploration and study and gives them the materials upon which to exercise their mathematical skills. These skills are a necessary tool of everyday life. Mathematics should help children to develop an appreciation of, and enjoyment in, the subject itself; as well as a realisation of its role in other curriculum areas.

We uphold and nurture the following underlying principles for the teaching and learning of mathematics in our school, aiming to ensure that all pupils: Become **Fluent**; **Reason** and **Explain** and can **Solve Problems**

Using the new Maths Curriculum 2014, the philosophies embedded within as well as its Programmes of Study, we aim to:

- Promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion
- Create a lively, exciting and stimulating environment in which all children can learn Maths
- Ensure the delivery of Maths is filled with cross curricular opportunities
- Promote confidence and competence with numbers and the number system and to use mathematical vocabulary to reason and explain
- Develop the ability to solve problems through decision making and reasoning in a range of contexts
- Develop a practical understanding of the ways in which information is gathered and presented.
- Explore features of shape and space and develop measuring skills in a range of contexts
- For children to challenge and stretch themselves and take risks in their learning.
- Provide a range of real life opportunities for the children to apply their learning outside of the classroom and to demonstrate their knowledge and understanding through practical application.

Implementing the Maths curriculum

Our mission statement is, 'In God's love we shine together'. At St John's, our small class sizes enable us to closely monitor the progress of each and every child and recognise their individual journey of learning so that we can plan effectively for effective progress through each year group.

At St John's Catholic Primary School we use the Pearson Power Maths scheme which follows the mastery approach to learning and has been recommended by the Department for Education.

Power Maths has been designed for UK schools based on research and extensive experience of teaching and learning around the world and here in the UK. It has been designed to support and challenge all pupils, and is built on the belief that all children can achieve.

Power Maths is structured around a whole class interactive teaching model that focuses on helping all children to build a deep understanding of concepts. The philosophy behind Power Maths is that being successful is not just about rote-learning procedures and methods, but is instead about problem solving, thinking and discussing. Power Maths includes practice questions to help children develop fluent recall and develop their conceptual understanding. Power Maths uses growth mindset characters to prompt, encourage and question children. They spark curiosity, engage reasoning, secure understanding and deepen learning for all.

For each year group the curriculum strands are broken down into core concepts. These are taught in blocks of lessons giving sufficient time to develop a deep and sustainable understanding of core maths concepts. Each concept is broken down into lessons. Each lesson and concept builds on prior knowledge to help children build a robust and deep understanding of the concept before moving on.

Opportunities are provided for same day intervention if necessary and also for deepening activities if pupils master the concept.

Each lesson is divided up into:

- A **Power Up** activity designed to support fluency in all key number facts.
- **Discover and Share** activity where children can share, reason and learn. This is often a real-life example, sometimes a puzzle or a game. These are engaging and fun, and designed to get all children thinking. The class shares their ideas and compares different ways to solve the problem, explaining their reasoning with hands-on resources and drawings to make their ideas clear.
- **Think together.** In this section Power Maths takes the approach "I do, we do, you do", as children apply the knowledge they have just learned in a series of problems that continue to encourage thinking throughout.
- **Practice** where the skills learnt and used to build fluency and develop deeper understanding of concepts. Challenge questions link to other units encourage children to take their understanding to a greater level of depth.
- **Reflect** which allows children to review their learning while reasoning.

EYFS Teachers in Foundation Stage base their teaching and learning on objectives within the Framework for Foundation Stage; this ensures that they are working towards the 'Early Learning Goals For Mathematical Development'. Towards the end of the Foundation Stage, teachers aim to draw the elements of a daily mathematics lesson together so that by the time children move into Year 1 they are familiar with the structure of a Maths lesson.

Implementing the Maths curriculum

English as an Additional Language

We recognise that language should not be a barrier to learning or progress. Appropriate support is given through teachers, teaching assistants and scaffolded activities to ensure that pupils with EAL are not disadvantaged because of their language. In addition, the following strategies may be helpful:

- Make a maths dictionary to record key vocabulary and facts as they are learnt;
- Help children to learn the numbers up to 100 and have a visual copy of the numbers;
- Provide copies of the language attached to the +, -, x, ÷ symbols;
- Use practical resources, including base 10, as much as possible when learning new skills and topics;
- Provide visual resources to set a context, for example, real-life number activities and problem solving using shopping items they are familiar with;
- Use picture resources to support problem-solving, e.g. pupils choose items from a menu where they have a certain amount of money to spend;
- Provide opportunities for pupils to handle real money to become familiar with coins;
- Place pupil with able pupils for a good model of English.

Special Educational Needs

We aim to provide a broad and balanced education for all pupils. Quality First Teaching is considered an entitlement for all pupils. Effective pupil tracking enables identification of pupils who may benefit from early 'intervention' at an appropriate level.. In addition, the following strategies may be helpful to support the teaching of maths to pupils with SEN in the classroom:

- Use PIVATS to breakdown key learning objectives into smaller steps of learning for assessment;
- Use concrete apparatus particularly when learning new skills, e.g. Base 10 and tens frames with counters when learning calculation strategies;
- Provide daily opportunities to practise key skills, e.g. number bonds to 10 or 20
- Use teaching assistants to support pupils with SEN during whole class teaching – this helps pupils to focus and to access key aspects of teaching as well as boosting confidence;
- Encourage independent working as much as possible – carefully pitched and scaffolded tasks, clearly explained are essential for this;
- Make a maths dictionary to record key vocabulary and facts as they are learnt;
- Provide visual resources to set a context, for example, real-life number activities and problem solving using shopping items they are familiar with;
- Use picture resources to support problem-solving.
- Use games and puzzles which help to practise skills the pupil has been learning.

Pupil Premium

There are a number of pupils for whom we receive a pupil premium grant. We recognise the importance of using this grant to support identified pupils in order to help them overcome their barriers for learning. Where these barriers for learning are related to progress and attainment in maths, the following strategies may be employed:

- use of intervention, either teacher or teaching assistant led, to close the gap between actual and expected attainment;
- ensure identified pupils are visited by the teacher or teaching assistant during each maths lesson to check they are making progress and provide immediate intervention support if not;
- provide additional support with homework if this is not provided at home, e.g. use some afternoon intervention time;
- use rewards, praise and encouragement to motivate pupils;
- break tasks down into smaller steps if pupils give up easily (LAPS are a vital resource for this).

Implementing the Maths curriculum

High quality resources are used in conjunction with Power Maths, such as NRich and NCETM to support, stretch and challenge all children within the classroom. In addition, the school's calculation policy is used to ensure a coherent approach to teaching the operations across our school.

Our curriculum builds on the concrete, pictorial, abstract approach. By using all three, the children can explore and demonstrate their mathematical learning. Together, these elements help to cement knowledge so children truly understand what they have learnt. All children have access to a wide range of concrete Mathematical resources to help them build on their concrete understanding of Mathematical concepts.

All children when introduced to a new concept for the first time are encouraged to physically represent mathematical concepts. Objects and pictures are used to demonstrate and visualise abstract ideas, alongside numbers and symbols. Throughout St John's, you will see these three methods being used:

Concrete – children have the opportunity to use concrete objects and manipulatives to help them understand and explain what they are doing.

Pictorial – children then build on this concrete approach by using these pictorial representations, which can then be used to reason and solve problems.

Abstract – with the foundations firmly laid by using the concrete and pictorial methods the children can move onto an abstract approach using numbers and key concepts with confidence.

Teachers teach Maths using the online interactive tool, enabling them to model pictorial and abstract concepts which children can replicate and apply to their own learning.

In addition to the weekly Maths planning that takes place, we have additional time scheduled for the delivery of Mathematics activities.

<u>Times Tables Rockstars</u>

We are committed to raising the standard of Mathematics across the whole school and develop a rapid recall of times tables facts. We have a whole school subscription to TTRockstars and children from year 1- year 6 have user accounts. Children have a 10 minute slot three times a week in school to focus on improving their recall as well as the opportunity to access the resources at home as well. There is a whole school display in the hall and we celebrate the achievement of pupils in our Friday assembly in which certificates are awarded and league tables monitored.

<u>Working wall and Resources</u>

Maths working walls are a place to support current and future learning in maths and also celebrate excellent examples of pupil's work. The working wall should be purposeful, helpful, relevant and above all useful. In the classrooms there should be, either on display or easily accessible to children, appropriate resources, particularly concrete and pictorial apparatus to support children to grasp concepts. Mathematical vocabulary should be displayed so that children use this in the communication of their understanding.

Resources for the delivery of the maths curriculum are mainly stored in the classroom, shared resources for Measures and Geometry are stored in the hall cupboards. The mathematic Co-coordinator should be informed when equipment needs replacing or supplementing. The children are shown how to take care of equipment and resources and progressively encouraged to select materials suitable for the task in which they are engaged.

<u>Calculations Policy</u>

At St John's we have adopted the Power Maths policies for both written and mental calculations. The calculation policy shows the Power Maths progression in calculation (addition, subtraction, multiplication and division) and how this works in line with the National Curriculum. This policy shows how the consistent use of the CPA (concrete, pictorial, abstract) approach across Power Maths helps children develop mastery in both written and mental methods across all the operations in an efficient and reliable way.

Adapting the curriculum for children with SEN

Teaching and learning

To make mathematics lessons inclusive, teachers need to anticipate what barriers to taking part and learning particular activities, lessons or a series of lessons may pose for pupils with particular SEN and/or disabilities. In some activities, pupils with SEN and/or disabilities will be able to take part in the same way as their peers. In others, some modifications or adjustments will need to be made to include everyone. For some activities, we may need to provide a 'parallel' activity for pupils with SEN and/or disabilities, so that they can work towards the same lesson objectives as their peers, but in a different way − eg using tactile equipment for work relating to shape, space and measures rather than visual information. Occasionally, pupils with SEN and/or disabilities will have to work on different activities, or towards different objectives, from their peers.

Resources

Use systems such as racks so that maths equipment can be checked out and checked back in. Some pupils may need modified maths equipment. In particular, some may need access to tactile and other specialist equipment for work relating to shape, space and measures, to overcome difficulties in managing visual information.

Additional adults

Support from additional adults is planned to scaffold pupils' learning, allowing them, increasingly, to work independently.

Planning should identify:

- which individuals/groups will receive support
- where in the lesson pupils will need support
- the type of support pupils should receive, and
- when pupils should be allowed to work independently.

Additional adults:

- are clear about the lesson objectives
- know the sequence of the lesson
- understand the lesson content, know how to break tasks into more manageable chunks
- are provided with key questions to encourage formative assessment, and
- where appropriate, are familiar with any ICT used to support pupils.

Planning

All planning should be readily available in planning folders. Power Maths plans should be dated, printed and annotated, planning specifically for pupils in the class. Annotations should include evaluations of lessons to inform assessment.

Power Maths interactive tool and resources should be used throughout all lessons to ensure high quality delivery.

Monitoring and Assessment

Teachers work within each year group to plan and deliver lessons that suit the particular learning styles of the children within the year group. Teachers continuously assess the children informally (formative assessment) through their marking and interactions with the pupils during lessons, this provides valuable feedback to indicate where support is needed and what the next steps for learning are. At the end of each Power Maths unit taught there is an End of Unit check. The outcome of this is used by the teacher to ensure that any identified gaps in understanding can be addressed before the next unit is taught.

Teachers administer a half termly Power Maths progress test which tests arithmetic, reasoning and problem-solving which specifically links to the coverage for that term. The results of these papers are used to identify children's ongoing target areas, which are communicated to the children, as well as to parents and carers at Parents Evening. They are also used alongside the end of unit assessments and outcomes of work, to inform the whole school tracking of attainment and progress for each child

Across a range of lessons children should be allowed to engage in mathematical discussion (talk partner or group work), investigations, problem solving, practical experiences and written methods, as well as allowing for time to demonstrate their understanding through gap tasks. In EYFS children's attainment and progress is tracked on a daily and weekly basis. As part of our formative assessment year's 3, 4, 5 and 6 conduct Testbase assessments in the autumn and spring terms, and then finally in the summer term to identify progress and inform attainment standards and future target setting

Marking and presentation

Teachers are expected to adhere to the schools marking policy when marking books and presentation policy when guiding children as to how to present their work. See separate policy.

Reporting

We hold parents evenings in the Autumn and Spring terms to give general feedback regarding children's academic and social welfare. In the summer term, parents receive an annual written report on which there is a summary of their child's effort and progress in mathematics over the year.

At the end of Key Stage 1 and Key Stage 2 each pupil's level of achievement against national standards is included as part of their annual written report.

The role of the subject leader

- To provide a strategic lead and direction for the subject
- To support and offer advice to colleagues on issues related to the subject;
- To monitor pupil progress in that subject area;
- To provide efficient resource management for the subject.

It is the role of the Maths subject leader to keep up to date with developments in Maths, at both national and local level. They review the way the subject is taught in the school and plan for improvement. This development planning links to whole-school objectives. Each subject leader reviews the curriculum plans for their subject, ensures that there is full coverage of the National Curriculum and that progression is planned. They must then monitor and review this on a regular basis, by conducting book scrutiny, learning walks and through discussion with both pupils and staff. This will then inform future action plans and reviews of the subject and will form a part of the annual review to governors.