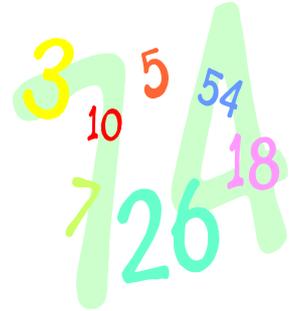
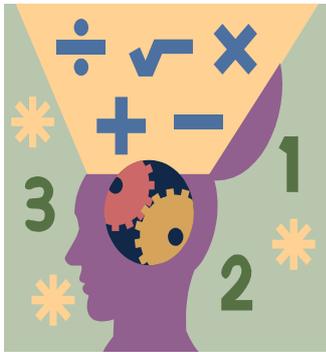


Mathematics Policy



"Learning to make the world a better place"

Reviewed	Spring 2016
Next Review	Autumn 2018

Teaching and Learning – Mathematics Policy.

Mission Statement

“Learning to make the world a better place”

We aim to achieve our mission statement by:

- Reflecting the teachings of Jesus Christ in our daily lives
- Providing a warm and welcoming environment for our school and the wider community
- Fostering a lasting love of learning
- Encouraging and celebrating achievement
- Expecting the highest standards of work and behaviour
- Effective teaching which develops independence and inspires creativity in a broad and balanced curriculum
- Addressing individual needs and diversity within an inclusive ethos

Legal Requirements

The statutory requirements are found in the Primary National Curriculum 2013. A copy of this can be found on our website and at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/335158/PRIMARY_national_curriculum_-_Mathematics_220714.pdf

Rationale

This policy outlines the teaching, organisation and management of mathematics taught at the school from Reception to Year 6. The implementation of this policy is the responsibility of all the stakeholders of the school.

At St. John's C of E School we are committed to teaching Mathematics because it:

- is underpinned by the principles of our motto 'Making the World a better place' and the Christian ethos distinctive to our school.
- is not just a collection of skills; it is a way of thinking. It lies at the core of scientific understanding and of rational and logical argument.

- plays a central role in the school curriculum as one of the core subjects taught in primary schools. We give the teaching and learning of Mathematics the importance it requires.
- is fostered through an inclusive broad-based, practical curriculum, appropriate to the different needs of all our pupils.
- will give children the confidence and motivation to continue to further develop their skills into the next stage of education and into adulthood.
- equips pupils with a uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem solving skills and the ability to think in abstract ways across the curriculum and in real life problem solving situations and is developed through the experience of practical activities such as exploring number patterns, constructing 3D models, collecting and handling data.
- is important to use technology to develop and consolidate children's understanding of Mathematical skills, concepts and knowledge.
- allows pupils to have the opportunity to learn mathematics through auditory, kinaesthetic and visual means.
- allows children to learn in a nurturing emotional climate, whereby they can self assess their understanding via personal targets and be confident enough to obtain assistance from their teacher and peers in order to be successful.
- is important in every day life – used as a basis in many forms of employment (science and technology, medicine, the economy, the environment and the development in public decision making.)
- is a creative discipline that can stimulate moments of awe and wonder.

Policy Aims:

Following the guidelines of the New Primary National Curriculum of England: framework for key stages 1 to 4 (September 2014) we aim to:

- introduce pupils to Mathematics in the Early Years through positive play, group games and stimulating practical activities. This approach in the Early Years Foundation Stage (EYFS) is mirrored in the Year 1 curriculum to provide a smooth transition through continuity and progression of approach.

- foster a positive attitude to problem solving using a team collaborative approach by encouraging all pupils to learn from each other ensuring the whole group succeeds.
- provide a broad, balanced, progressive and challenging Mathematics curriculum. This gives all pupils full access, positive attitude and fosters high expectation and outcomes. This is tracked and monitored through rigorous assessment for learning procedures. This will in turn inform future planning.
- give opportunities to apply computing skills, independent learning and to use ipads, computers, beebots & probots, coding programmes and calculators where appropriate.
- provide a varied approach towards teaching & learning, including practical, written, verbal and mental tasks and through games including the 'talking curriculum' approaches. Lessons are carefully thought out, interesting and practical.
- provide a developmental curriculum which is rich in first-hand experiences and relevant to everyday life, including problem solving skills through a cross curricular approach and the independent use of a range of resources to solve problems.
- foster positive attitudes towards Mathematics by developing all children's confidence in their own ability through use of awards, applied practical maths and exciting group games.
- use appropriate Language, Information Technology, practical resources, ipads, tables and graphical modes to communicate Mathematical information.
- provide equality of opportunity for all our children, whatever their gender, abilities or background, and give them opportunities to demonstrate what they know, understand and can do.
- provide a challenging differentiated curriculum to extend all children via extending the most able, target setting, boosting of borderline pupils through quality intervention and the nurturing of SEND pupils through personalised learning approaches.
- provide an entire range of learning styles to engage different types of learners e.g. via the use of physical objects, pictorial patterns and informative, practical displays.

- set worthwhile homework at an appropriate level, which should both consolidate and extend learning and practise key concepts or assessment techniques.
- create detailed teacher short and medium term planning that not only incorporates a learning objective aimed at the appropriate level, but also a set of success criteria for the children to achieve.
- emphasise a strong belief in calculating mentally and knowing key features, like times tables, off by heart.
- create personal and appropriately levelled targets for the pupils to aim to achieve.
- allow children to think and solve problems mathematically by using the appropriate skills, concepts, strategies and knowledge. They should be provided with a rich and enjoyable experience both related to their individual needs and to the wider requirements of society.

Teaching and Learning

The teachers plan and assess frequently and moderate the teaching of mathematics in order to ensure that expectations are high, the children are enjoying their learning and achieve the best to their ability. The Primary National Curriculum of England: framework for key stages 1 to 4 (September 2013) is used as the basis for planning throughout the school. Cross-curricular and multi-cultural links are used to enrich and support the teaching and learning. Links are also made within other subjects so pupils can develop and apply their maths skills.

Teaching Time

To provide adequate time for developing mathematical skills each class teacher will deliver a daily mathematics lesson. This will typically last about 1 hour with other 'top ups' of mental maths skills, problem solving and key skills throughout the day or week. Within lessons there will be a good balance of mental maths skill development, whole class work, group teaching, mini plenaries to assess and personalise learning. In Nursery and Reception, and key stage 1, this may be shorter and integrated within other subject areas or play.

A Typical Lesson

A typical lesson lasts approximately 1 hour . Timings and structure may vary as children progress through the school from KS1 to KS2. A maths lesson may not necessarily incorporate all six part with on teaching session. There is flexibility in terms of the number of aspects a teacher may need to deliver the next learning tep.

1. Part 1 -Mental Maths/ Arithmetic **Starter** (10 Min)
2. Part 2- **Teaching** input (10min) Teachers to ensure they have L.O. and Success Criteria
3. Part 3 - **Task** . Children work on the skills taught–Teacher Assesses to see that the children understand the concept(10min)
4. Part 4 - (15 min) **Assess, consolidate and extend** via mini-plenary or further teaching input.
Teacher to re-teach the concept to the children who did not grasp the concept
Set another short task for the children who did grasp the concept. This could be:
 - a challenge
 - a critical thinking activity linked to the topic taught
 - clearing up errors and misconceptions (This can be used as Peer Evaluations)
 - anonymous work (This can be used as Peer Evaluations)
5. Part 5 - Teacher to clear up any misconceptions/extend learning via **Plenary** – (10 min)
6. Part 6 - **Self/peer evaluations** and writing the teacher a note (5 mins)

With this type of structure the teacher is able to clear misconceptions, assess using mini plenaries, identify progress, summarise facts, make links with other work, discuss next steps to move the learning forward, teach skills to answer using and applying questions, check that all success criteria have been met.

- ❖ In Nursery and Reception, the class will be organised to promote social skills and the development of mathematical language and understanding. Teaching will be based on the objectives in the current Foundation Stage documents through hands on play based methods which may be incorporated in other areas of the curriculum. There are occasions when it is both quick and convenient to carry out written calculations. It is important to record aspects of mathematical investigations. Children are encouraged to use mental strategies before resorting to written methods.

- ❖ In Key Stage 1 and 2 pupils are taught in ability and mixed groups within the classroom or in personalised groups outside the class. The teacher plans lessons that are differentiated. In all lessons quality TA support is used to facilitate tasks and activities. All teachers are expected to demonstrate good practice in their mathematics teaching. This incorporates the use of a variety of teaching strategies such as:
 - Discussion, group and individual activities
 - Questioning techniques
 - Investigation work
 - Problem solving
 - Consolidation
 - Practical activities and mathematical games
 - Open and closed tasks
 - AFL (Assessment for Learning) opportunities
 - A range of methods of calculation -mental, pencil, whiteboard and calculator.
 - Using the technology as a mathematical tool and to aid independent learning.

Planning

Long Term and Medium planning is structured following guidance set out in the Primary National Curriculum of England (September 2013) and is used to plan the lesson.

Planning should include: learning objectives, success criteria, assessment for learning opportunities, vocabulary, support provided, planning and personalised learning, intervention groups which will be informed by assessments.

Talk for Maths

Talk for maths is an integral part to the teaching of mathematics at St John's. Children are taught to explain and reason in order to deepen their understanding of mathematic principles. Talk partners, paired and group work is undertaken in lessons and there are opportunities for maths talk in all lessons. Children are taught to explain both orally and in written feedback to re-enforce their learning and as a way of identifying misconceptions. During mental maths and problem solving sessions children are given the opportunity to try out a variety of ways of working out an answer.

Maths Meetings

Each class will have a short maths meeting sessions regulary throughout the week. This may be as part of a maths lesson or at a different time during the day. During these sessions maths meeting walls are used and children have the opportunity to

practise key skills such as speed in the four operations, mental maths, using and applying and problem solving. These are a verbal activities in which children sing maths songs, chant and work together to use and apply the maths they learn in lessons. Each class has a maths meeting wall display to use in these sessions.

Early Years Foundation Stage (nursery and reception)

In Nursery children learn within a play-based environment and are encouraged to explore number and shape in a range of contexts such as construction and role-play. Staff work one to one and in small groups to support children to develop one to one correspondence when counting. Many songs are also used to support children to develop an understanding of early mathematical concepts such as amounts increasing and decreasing by one (e.g. Monkeys Jumping on the Bed.)

In Reception children are taught Maths lessons in mixed ability groups and through differentiated teaching using a range of strategies. Children are then given opportunities to test out their skills through planned linked planned activities using lots of concrete and visual resources as well as being encouraged to explore and make discoveries of their own through open ended mathematical play based activities. Children in Reception work towards the end of year Early Learning Goals in Number and Shape Space and Measure, covering early addition and subtraction through counting on and back, doubling, halving, sharing and also learning appropriate everyday and mathematical language for a range of measures and 2D and 3D shapes. It is not necessary for children to solve written problems or calculations or to formally record numbers to achieve their end of year goals. However children are encouraged to develop holistic mathematical thinking and early mark-making in number supports mathematical and systematic thinking. Children are therefore encouraged to make marks to record their thinking and work with formal calculations where appropriate to the child.

Key Stage 1 (years one and two)

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations with a focus on using practical resources and pictorial representation (e.g. concrete objects and measuring tools).

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Lower Key Stage 2 (years three and four)

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 and related inverse division facts up to and including the 12 times and dividing by 12 and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Upper Key Stage 2 (years five and six)

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.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

School and Class Organisation

Inclusion Teaching (Most able, EAL & SEND)

The maths curriculum must be available to all children and take into account personal, social, cultural and educational needs. It should recognise the abilities of

EAL children who access maths concepts through an additional language. In the daily maths lesson children with English as an additional language should be taught in a variety of ways e.g. repeating instructions, speaking clearly, emphasising key words, using concrete and pictorial representations, playing mathematical games, chanting, finger games, rhymes etc. Work will be appropriately differentiated to enable all children to be challenged. Booster classes, 1:1 tuition, intervention programmes and intervention groups will be provided where needed.

How do we cater for pupils who are more able?

Where possible more able pupils will be taught in their classes and stretched through differentiated group, individual work, independent activities as well as extra challenges. Teachers will differentiate open ended questions to challenge pupils. Very occasionally a “gifted pupil” will have special arrangements to be taught with children from a higher age range or may follow a more personalised learning programme. Extra-curricular activities will also be used to challenge the most able pupils such as taking part in the maths olympiad competition and away days within the Brixton Learning Collaborative.

How do we cater for pupils with Special Educational Needs(SEND)?

Pupils with special education needs have equal access to learning opportunities. Teachers will involve all children by using differentiation and match learning opportunities to the needs of the children. We provide a range of strategies and interventions like speaking and listening, talk partners and oral based strategies. Using and applying skills lessons will play a fundamental role in catering for the broad and wide ranging needs of pupils. Targets are set in Health Education Plans. Where appropriate, specific help is given to further aid pupils progress with SEND and EAL by extra teacher or teaching assistant input. This is particularly important for the development of EAL pupils which are significant in number within the school. Children may be given additional scaffolding in the way of concrete mathematical resources in order for them to access the curriculum.

How do we cater for pupils with English as an Additional Language (EAL)?

Pupils with EAL have equal access to learning opportunities. Teachers will involve children using differentiation and match learning opportunities to the needs of the children. We provide a range of strategies and interventions such as talk partners, collaborative work and computer programmes. We also provide pictorial representations and use more concrete based resources, as well as a focus on talk in maths in order to scaffold the learning of children with EAL. With those children who are new to English additional support via a teaching assistant will be provided.

Assessments

Assessments will take place in 3 stages: Short Term, Medium Term and Long Term.

- **Short Term**
These assessments will be used to inform teaching and planning as well as personalise learning and set targets. These are informal and part of the lesson to check understanding and monitor progress. Children also make regular self or peer assessments of their work using the success criteria as a guide.
- **Medium Term**
These assessments will take place regularly (bi-weekly recommended) and will assess key objectives taught during the term. The teacher assessments will be recorded on School Pupil Tracker (via the detailed tracking tool) and analysed where attainment and progress will be monitored. These results will inform the termly pupil progress meetings and be reported to parents/carers at Target setting days.
- **Long Term**
Children's understanding of yearly objectives will be assessed at the end of each academic year. Alongside this a child's ability to master subject areas will also be assessed, to find out their depth of understanding of each of the yearly objectives. This will enable smooth transitions from one year to the next and enable the child's next teacher to accurately extend and plan learning .

Children are assessed according to the year group *objectives* to which they are working within. Therefore a child may be assessed to be at a different year group to which they are working in. For example, a child in year 5 may be assessed to be at a year 4 mid.

Year group objectives	Covering 15-30% of the objectives	Covering 31-66% of the objectives	Covering 67-100% of the objectives	
EYFS 40-60 and early learning goals (reception)	40-60low	40-60 mid	ELG nearly met	40-60 high ELG met
Year 1	Year 1 working towards	Year 1 mostly achieved	Year 1 achieved	
Year 2	Year 2 working towards	Year 2 mostly achieved	Year 2 achieved	
Year 3	Year 3 working towards	Year 3 mostly achieved	Year 3 achieved	
Year 4	Year 4 lworking towards	Year 4 mostly achieved	Year 4 achieved	

Year 5	Year 5 working towards	Year 5 mostly achieved	Year 5 achieved
Year 6	Year 6 working towards	Year 6 mostly achieved	Year 6 achieved

Target Setting

Target Setting is used in the short term and medium term. During a lesson or over a series of lessons a teacher may set a target to personalise learning for a child. In addition to this, each term targets are set based on the information gathered from monitoring and evaluation. Targets are shared with the pupils, parents/carers and are considered during the planning process.

Monitoring and Evaluation

The Mathematics leader is released regularly from his/her class in order to work alongside other teachers. This time is used to monitor and evaluate the quality and standards of mathematics throughout the school and enables the maths leader to support teachers in their classrooms, observe lessons across the school and do regular learning walks looking at maths meeting sessions, mini-plenaries, displays and talking to children about their targets. Opportunities for teachers to review schemes, policy and published materials are discussed on a regular basis during staff meetings. The mathematics governor meets with the subject leader termly to review progress and targets of pupils as well as teaching and learning in maths. Annual reports are given to the Head teacher and Governors.

Marking

Each piece of work including self and peer assessments and notes to the teacher are acknowledged by the teacher or TA as this values the efforts the child has made with recorded work. Success criteria provide prompts or reference for marking learning. Every third piece of work needs to be marked thoroughly with quality comments which aim to correct or show a next step or advice. For further information please see the guidelines as set out in the marking policy of the school

This can also be done using:

- Reminders about the success criteria or other methods that can be used as a question.
- Scaffolding which will provide more support than a reminder using steps to follow.
- Example prompts by giving a choice of words or phrases to try alternative methods.

- Next steps in the form of a challenge or prompt of how to use the strategy in another context to embed it or an extension activity or using and applying question can be given to move the learning along.

Guided Group Feedback

Children are also encouraged to keep a regular dialogue with the teacher by making a statement or asking a question after some pieces of work. This will be good practice for self-evaluation and evidence towards teacher assessment. This is built up gradually from year 1 to 6.

Self and Peer Assessment

Can take place in different forms

- Traffic Lights
- Smiley Faces
- Dialogue –using the success criteria to evaluate learning
- Peer Assessment
- Clearing up misconceptions and errors.

Resources

Classes are resourced with a large amount of equipment with some resources allocated to particular year groups. Each class will have access to concrete resources to aid mathematics learning.

Displays and Learning Walls

Displays and Learning Walls value childrens' achievements and are used as a valuable resource during lessons and reflect work in progress. They can be used to stimulate thought processes and reinforce mathematical concepts and vocabulary. These displays can be seen in classes and around the school. To enhance mental maths strategies each class has a Maths Meeting Wall which is to enhance mental maths and problem solving skills.

Homework

Homework from years R to 6 will be set regularly to consolidate and reinforce work covered in class and build on mental maths. This can take the form of games, practical activities or written work. Parental support is encouraged for any homework carried out. Homework is also set on Education City and and monitored.

Renewal:

This Policy will be reviewed every two years.

Agreed/ Ratified by Governors: **Summer 2016**

Signed by: *Cannon Reverend Rosemarie*

Designation: **Chair of Governors**

Next Review: **Summer 2018**