



St Paul's Church of England Primary School

Mathematics Policy

Adopted by: Curriculum and Achievement Committee

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Review: Spring 2022

St Paul's Vision for Mathematics

These vision statements were drawn up by the staff of St Paul's School.

Pupils must master the basics before moving on. The real core mathematical ideas must be properly understood. Maths is a subject that builds on itself, if the foundations are not firm then that leads to problems later.

Children are taught to use mental methods as a first resort when faced with a calculation.

Informal written methods are developed from mental methods. Formal written methods are developed from informal written methods. Teachers continue to develop children's mental methods and informal written methods even when formal written methods are established.

A whole school calculation policy supports consistency, continuity and progression in the teaching of calculation.

Visual models and images, together with practical hands-on resources, are used to support mathematical learning in ALL year groups.

The main strands of mathematics are joined up. Links are established in ways that aid recall and enable children to develop a 'big picture' of how mathematics works as a subject.

Children regularly have to make decisions about what mathematics to use when solving problems. They are required to think, reason and find solutions. Problem solving should form a regular and frequent part of planning.

Children can talk about maths. They can explain strategies and describe their thinking and learning.

Children use jottings to support their thinking. Jottings are understood as an opportunity to take risks, explore different solutions, make mistakes and try something else. Jottings may be untidy.

The use and application of mathematics is incorporated in all phases of teaching: to assess and review at the start of a unit; to secure knowledge, skills and understanding during a unit; and to check for learning at the end of a unit.

Meaningful real life contexts are used whenever possible to engage children in learning mathematics.

We promote the pleasure that children can derive from pure mathematics, e.g. counting, solving puzzles, and playing mathematical games. These are used to engage them in their learning.

Children understand that you learn mathematics by making mistakes and resolving them. That being stuck is the beginning and not the end of learning. They understand that this might mean a need to change thinking in order to sort out misconceptions.

Resilience and confidence are cultivated in every lesson.

Contributions from parents are valued and encouraged through regular parent workshops.

Mathematics Policy

1 Aims and objectives

1.1 Mathematics is a core subject and teaches children how to make sense of the world around them through developing their ability to calculate, reason and solve problems. It enables children to understand relationships and patterns 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.

1.2 Our objectives in the teaching of mathematics are:

To become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

To **reason** mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.

To **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

2 Teaching and learning

2.1 The school uses a variety of teaching and learning styles in mathematics. Our principal aim is to develop children's knowledge, skills and understanding. During our daily lessons, we encourage children to ask as well as answer mathematical questions. They have the opportunity to use a wide range of resources, such as number lines, Diennes, number squares, digit cards and small apparatus to support their work. ICT is used in mathematics lessons for modelling ideas and methods. Wherever possible, we encourage the children to apply their learning to everyday situations.

2.2 In all classes, children have a wide range of mathematical abilities. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies – in some lessons through differentiated group work and, in other lessons, by organising the children to work in pairs on open-ended problems or games. We use teaching assistants to support some children, and to ensure that work is matched to the needs of individuals.

2.3 Year 5 and 6 children are grouped across the year groups according to ability.

2.4 Imbedded in Mathematics teaching, is the use of visual models and manipulatives to help pupils gain a comprehension of the abstract concepts of mathematics.

3 Mathematics curriculum planning

3.1 Mathematics is a core subject in the National Curriculum. We use the National Curriculum programmes of study as the basis for our curriculum planning in order to implement the statutory requirements of the programme of study for mathematics.

3.2 We carry out the curriculum planning in mathematics in three phases (long-term, medium-term and short-term). *The National curriculum Mathematics programmes of study* give a detailed outline of what we teach in the long term, while our yearly teaching programme identifies the key objectives we teach to in each year.

3.3 Our medium-term mathematics plans define what we teach giving details of the main teaching objectives for each term. They ensure an appropriate balance and distribution of work across each term. These plans are reviewed by SLT and the subject leader.

3.4 It is the class teacher who completes the weekly plans for the teaching of mathematics. These weekly plans list the specific learning objectives and expected outcomes for each lesson, and give details of how the

lessons are to be taught. The class teacher keeps these individual plans, and the class teacher and subject leader often discuss them on an informal basis.

3.5 We plan the activities in mathematics so that they build on the children's prior learning. While we give children of all abilities the opportunity to develop their skills, knowledge and understanding, we also plan progression into the scheme of work, so that there is an increasing challenge for the children as they move up through the school.

3.6 A copy of the Medium Term and Long Term Planning is accessible to all staff. It is saved in the shared area and published on the school website. The mathematics leader is responsible for updating Long Term and Medium Term Planning and class teacher are responsible for their own Short Term Planning.

3.7 Teachers plan problem solving and investigational activities on a regular and frequent basis to ensure that pupils develop the skills of mathematical thinking and enquiry.

4 The Early Years Foundation Stage

4.1 We teach mathematics in our nursery and reception classes using the Mathematical Development aspects of the EYFS curriculum as the basis of our planning. We relate the mathematical aspects of the children's work to the objectives set out in the Early Learning Goals, which underpin the curriculum planning for children aged three to five. We give all the children ample opportunity to develop their understanding of number, measurement, pattern, geometry, through varied activities that allow them to enjoy, explore, practise and talk confidently about mathematics.

5 Contribution of mathematics to teaching in other curriculum areas

5.1 English

The teaching of mathematics contributes significantly to children's understanding of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, in mathematics lessons, we expect children to read and interpret problems, in order to identify the mathematics involved. They are also improving their command of English when they explain and present their work to others during plenary sessions. In English lessons, too, maths can contribute: younger children enjoy stories and rhyme that rely on counting and sequencing, while older children encounter mathematical vocabulary, graphs and charts when reading non-fiction texts.

5.2 Personal, social and health education (PSHE) and citizenship

Mathematics contributes to the teaching of PSHE and citizenship. The work that children do outside their normal lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each other's views. We present older children with real-life situations in their mathematics work on the spending of money.

5.3 Spiritual, moral, social and cultural development

The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We group children so that they work together, and we give them the chance to discuss their ideas and results. The study of famous mathematicians around the world contributes to the cultural development of our children.

6 Mathematics and ICT

6.1 Information and communication technology enhances the teaching of mathematics significantly, because ICT is particularly useful for mathematical tasks. It also offers ways of impacting on learning which are not possible with conventional methods. Teachers can use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. Younger children use ICT to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables when explaining their results, or when creating repeating patterns, such as tessellations. When working

on control, children can use both standard and non-standard measures for distance and angle. They can also use simulations to identify patterns and relationships. E-mail permits collaborative problem-solving.

7 Mathematics and inclusion

7.1 At our school, we teach mathematics to all children, whatever their ability and individual needs. Mathematics forms part of the school curriculum contributing to the provision of a broad and balanced education to all children. Through our mathematics teaching, we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents and those learning English as an additional language, and we take all reasonable steps to achieve this.

7.2 When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs.

7.3 Mathematical targets are set for all pupils. Teachers will pay regard to such targets when designing lessons or setting individual tasks in mathematics.

7.4 We enable all pupils to have access to the full range of activities involved in learning mathematics. Where children are to participate in activities outside the classroom (e.g. a "maths trail"), we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

8 Assessment

8.1 Teachers will assess children's work in mathematics from three aspects (long-term, medium-term and short-term). We use short-term assessments to help us adjust our daily plans. These short-term assessments are closely matched to the teaching objectives.

8.2 We make medium-term assessments to measure progress against the Key Performance Indicators, and to help us plan the next unit of work. In Years 2 and 6 we use the end of key stage frameworks to plan children's individual progress and stages of achievement throughout the year.

8.3 We make long-term assessments towards the end of the school year, and we use these to assess progress against each stage of attainment using the national curriculum statements and the NAHT Key Performance Indicators. We can then set targets for the next school year and make a summary of each child's progress before discussing it with parents and carers. We pass this information on to the next teacher at the end of the year, so that the new school year can be planned. We make the long-term assessments informed by end-of-year tests and ongoing teacher assessments. We also make annual assessments of children's progress measured against the National Curriculum statements, using the NAHT Key Performance Indicators.

8.4 Teachers regularly use the Teaching for Mastery assessments published by the NCETM.

8.5 Older children are encouraged to make judgements about how they can improve their own and each other's work.

8.6 In preparation for the Multiplication tables check in Year 4, beginning in May 2020, a new number facts scheme is currently being planned.

8.7 Marking should be both diagnostic, summative and take place daily. The children themselves can mark exercises which involve routine practice with support and guidance from the teacher. Where appropriate children in Years 5 and 6 are encouraged to explain what their mistakes were. Misconceptions are addressed by the marker.

9 Resources

9.1 All teachers have mathematics resources stored in their classrooms which are easily accessible to children. Resources which are not used or required regularly are stored centrally. On St Paul's site the Maths resource cupboard is located in the corridor outside RR. On Alexandra House site, the Maths resource cupboard is located in the Crane room.

9.2 Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate method of recording. Children are encouraged to use mental strategies before resorting to a written algorithm. (See St Paul's CE School Calculations Policy- paper and pencil procedures.)

9.3 Calculators are introduced in Year 4 however children in Years 1 to 3 are given opportunities to become familiar with calculators and to use them to support other areas of mathematics, e.g. number recognition, place value and problem solving.

Exercise books for recording: It is school policy that the following pattern is used:

FS:	plain paper or large squared paper
KS1:	1 cm squares
Year 3:	1cm squares
Year 4:	7 mm squares
Year 5:	7mm squares
Year 6:	7mm squares

10 Monitoring and review

10.1 The leadership and planning of the mathematics curriculum are the responsibility of the subject leader who also:

supports colleagues in their teaching, by keeping informed about current developments in mathematics, and by providing a strategic lead and direction for this subject;

gives the SLT and Headteacher an annual summary report from which the strengths and weaknesses in mathematics can be evaluated, and areas for further improvement identified;

uses specially allocated regular leadership time to review evidence of pupil's work.

10.2 The quality of teaching and learning in mathematics is monitored and evaluated by the headteacher as part of the school's agreed cycle of monitoring and evaluation.

10.3 A named member of the school's governing body is briefed to oversee the teaching of mathematics. The mathematics governor meets regularly with the subject leader to review progress.

11 Supporting and Informing Parents

11.1 Class teachers prepare a half termly curriculum plan and newsletter, including details of the mathematics that will be taught over the half term. This is distributed to parents in the first week of each new half term. The newsletter and curriculum overview is then published on the school website.

11.2 There is a Mathematics section on the school website, within the curriculum section. This provides further details to parents on how mathematics is taught at the school. There are a number of support documents for parents, showing how key mathematical concepts are developed and the progression in algorithms.

11.3 The school holds parent workshops regularly. These are led by subject leaders. Mathematics is often a subject of these workshops.

11.4 The school holds termly parents' evenings at which attainment, progress and information about mathematics is discussed with parents.

11.5 The school has an 'open-door' policy which facilitates short meetings with parents at any time of the school year. Parents can request a meeting with their child's teacher through the school office. Where a teacher has a specific concern, which could include mathematics, they too can arrange a short meeting with parents.

11.6 Mathematics is reported in the end of year annual report to all parents.

12 Homework

12.1 It is school policy to provide parents and carers with opportunities to work with their children at home. These activities reflect and reinforce what is being taught within the classroom. Activities are sent home on a weekly basis, as part of on-going mathematics tasks with a big emphasis on number facts.

KS1: CPG Mental Maths Books

LKS2: Activity from TeeJay homework book or worksheet

UKS2: Activity from TeeJay homework book or worksheet