

Mathematics Policy



Date of Amendment: March 2024

Review Date: March 2027

Mathematics Policy

Introduction

The National Curriculum states 'Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas.' Therefore, the intention for mathematics is to ensure that all pupils become fluent, reason mathematically and solve problems. 'Pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.'

Intent

Each child should be able to think and solve problems mathematically by using the appropriate skills, concepts and knowledge. All children should become fluent in the fundamentals of mathematics, be able to reason mathematically and solve problems.

They should be provided with rich and enjoyable experiences related both to their individual needs and to the wider requirements of society.

We aim for each child to:

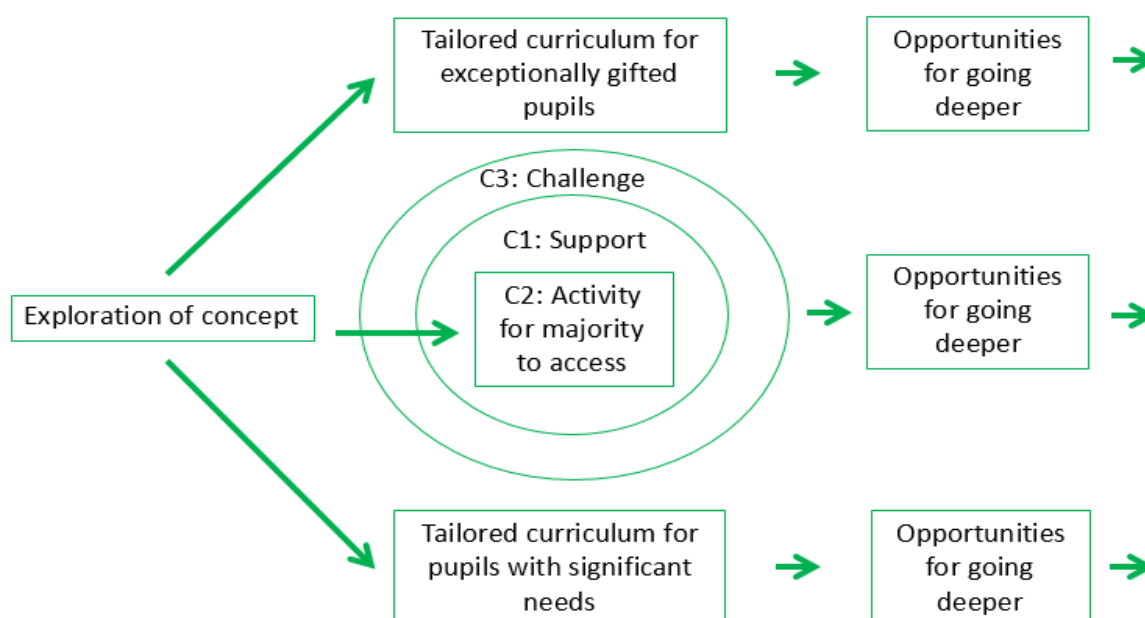
- have a positive attitude towards mathematics;
- challenge themselves at their level;
- think and solve problems mathematically by using the appropriate skills, concepts and knowledge;
- be provided with rich and enjoyable experiences related to their individual needs and to the wider requirements of society;
- understand the importance of mathematics in everyday life;
- develop confidence in using a range of methods to add, subtract, multiply and divide, so that they are able to choose the method that best suits the problem they are trying to solve, and their individual ability;
- work systematically, co-operatively and with perseverance;
- be able to think logically and independently;
- experience a sense of achievement, regardless of age or ability;
- be able to apply previously acquired concepts, skills, knowledge and understanding to new situations both in and out of school;
- understand and appreciate pattern and relationship in mathematics;
- make cross-curricular links with our termly topics where appropriate;
- be able to communicate with peers and adults, ideas, experiences, questions, clearly and fluently, using the appropriate mathematical language.

Curriculum

At St Thomas' we follow the objectives outlined in the National Curriculum 2014 set out under the following strands:

- Number – Number and Place Value;
- Number – Addition and Subtraction;
- Number – Multiplication and Division;
- Number – Fractions (including decimals and percentages);
- Measurement;
- Geometry – Properties of Shapes;
- Geometry – Position and Direction;
- Statistics;
- Ratio and Proportion;
- Algebra.

The majority of the children should be working towards the same outcome with the lower ability being provided with scaffolding to support them and the higher ability being challenged within the objective. Adaptive learning is achieved through: levels of challenge, deepening understanding and access arrangements (manipulatives, models, support). The pitch of learning is maintained for the majority, while access and challenge forms the basis of adaptive learning (see diagram below).



EYFS

Teachers in the EYFS ensure the children learn through a mixture of adult-led activities and child-initiated activities both inside and outside of the classroom. Areas of provision within the classroom support maths, ensuring children are able to access throughout the day to practise and develop skills being taught. In addition, consistent daily maths inputs are delivered and take the form of direct teaching, this is followed up by enhanced activities placed in areas of provision in the classroom which may be accessed independently or supported by an adult.

EYFS mainly record informally within the setting. For example: on the playground, on whiteboards, using jigsaws, physically ordering numbers and using a range of physical resources in the

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environment. Staff in the Foundation Stage use photographs (uploaded onto Seesaw and stuck into their Learning Journey books) to ensure records of each child's achievements are maintained.

KS1

KS1 is split into two Year 1 classes, two Year 2 classes and one mixed Year 1 and 2 class. Because of this mixed-age class, the topic areas have been aligned across the key stage on the medium term plan to outline the curriculum areas to be covered. KS1 teachers have then looked at the content and matched up the objectives where possible. These classes then use challenges from C1 to C5 to adapt the learning with the majority of Year 1 accessing C1 to C3 and the majority of Year 2 accessing C3 to C5.

Teachers may make use of guided groups - setting one group off on a consolidation task while teaching the other group then swapping over. Some elements are appropriate to be covered together with both year groups depending on the content.

Mathematics across the curriculum

We recognise the importance of mathematical skills and techniques being applied to other curriculum subjects. We value chances for the pupils to make connections between subjects and to put into practice in one subject the skills base that they are learning in another subject.

Opportunities for this arise in a variety of subjects such as Science (e.g. graph work and averaging of results), D&T (e.g. construction of nets and measuring), P.E. (e.g. measuring of distances and timing) and Computing (e.g. graphing and spreadsheet work).

Individual curriculum leaders have a responsibility to ensure that mathematics is planned for within specific areas of the curriculum (e.g. mathematical links in geography, history etc).

Implementation

Organisation

At St. Thomas', pupils are taught mathematics within their class groups using the model for adaptive learning outlined previously. In cases where the learning needs to be differentiated for specific children, this is discussed with the maths curriculum leader.

A 'double teach' approach is utilised in most lessons to ensure that groups of children can be supported or extended quickly without having to wait for the rest of the class.

Daily mathematics lessons usually follow registration or morning worship and span one hour.

Special Educational Needs

Planning activities for the classroom will take into account differentiation and meeting the needs of individual children where needed. Children with special educational needs may need to use manipulatives, models and other forms of scaffolding to support and extend their learning.

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Children with an EHCP are placed into the class which can best meet their needs and the class teacher works alongside their named learning support assistant (LSA) to support and extend their learning. Further details can be found in the latest SEND policy.

Mastery in Mathematics

At St Thomas', mastery applies to all children, as we believe that all children can attain this. Mastery is the ability to show fluency in all areas of mathematics, to reason as to what they have done and finally to problem solve by applying their fluency and reasoning skills. This is not just limited to more able children; all children have the opportunity to attain mastery in any area of mathematics.

Some of the key questions to consider when planning for a mastery curriculum are:

- Where are the children coming from?
- What do the children need to learn?
- What do I want them to be able to do?
- How will I know what they have learnt?
- What do I want to see them doing?
- What do children need to be shown and introduced to in order to grasp the concept?
- What is my safety net?
- When the children grasp this, what will they do to make sure that they are stretched?

Most able children

At St Thomas' we are aware of the disadvantages which can be associated with children being labelled as 'high attainers' or being pushed forward too quickly and missing out on a completely rounded mathematics curriculum. Therefore, we ensure that we have high expectations of all pupils and provide opportunities to stretch and challenge higher attaining children by:

- providing opportunities to investigate new areas in depth;
- having higher expectations of independent work;
- promoting a culture of growth mind-set;
- using searching and engaging questions;
- asking the children to model complex ideas, giving explanations and demonstrations that heighten their understanding;
- integrating more open-ended learning, problem solving and enquiry;
- giving time for reflection;
- asking them to explore diverse viewpoints;
- inviting them to make connections between past and present learning;
- regularly allowing them to make use of higher order thinking skills.

Planning

Mathematics planning operates at three levels: whole school planning (long-term); year group planning (medium-term) and individual teacher's planning (short-term). Planning follows the National Curriculum objectives and the key prioritisation 'ready to progress' objectives set out

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within our own personalised curriculum overview. Lessons are sequenced so that new knowledge builds on what has been taught before. Year group teams work together to consider the most logical order to teach skills and how best to create links between them where appropriate.

Teachers discuss planning for the following week at weekly planning meetings in year groups where they set out the objectives being covered and how to adapt these successfully. This collaboration ensures that expectations are high across the year group, adaptive learning is strong and the use of practical apparatus/scaffolding tools is considered. The CPA (Concrete, Pictorial, and Abstract) is considered when planning as well as how to incorporate elements of the school's Calculation Policy and Bar Modelling Progression document as well as daily arithmetic work through use of resources such as Fluent in 5 or Rapid Reasoning.

Teaching staff will also use Rosenshine's Principles, where appropriate, to help guide their planning process:

1. Begin the lesson with a review of previous learning.
2. Present new material in small steps.
3. Ask a large number of questions (and to all children).
4. Provide models and worked examples.
5. Practise using the new material /Guide children's practice.
6. Check for understanding frequently and correct errors.
7. Obtain a high success rate.
8. Provide scaffolds for difficult tasks.
9. Independent practice.
10. Monthly and weekly reviews.

Below is a copy of the school's mathematics planning pro forma which year group teams may use to assist their weekly planning:

Weekly Plan – Maths Upper School: Y6 Support Group Year 6 Term:1 Week:1


| | Arithmetic | Objective | Concepts/Steps to Success | Teaching/Whole Class Activity | Pupil Activity | Anticipated Session (Safety Net/Mastery) |
|-----------|------------|-----------|---------------------------|-------------------------------|-------------------|--|
| Monday | | | | | C1: C2: C3: | |
| Tuesday | | | | | C1: C2: C3: | |
| Wednesday | | | | | C1: C2: C3: | |
| Thursday | | | | | C1: C2: C3: | |
| Friday | | | | | C1: C2: C3: | |

Effective Learning Objectives

Learning objectives should be brief, clear, specific statements of what learners will be able to do at the end of a lesson as a result of the activities, teaching and learning that has taken place.

A learning objective must not include the phrases 'to know' or 'to understand' but instead use active verbs such as: compare, order, measure, solve, estimate, explain, show, add, subtract, multiply, divide, interpret, round, identify, represent, describe and draw.

Calculation Policy

The school's Calculation Policy outlines how addition, subtraction, multiplication and division will be taught at St. Thomas'. The policy is to be used by teaching staff when planning and delivering lessons with a calculation focus or element to them.

Teachers are to have clear instruction on which methods should be taught and when, and the reasons behind not jumping straight in to formal written methods for the four operations. The models and images included in the policy should be used in the classroom in order to enhance the children's learning.

The policy is available for everyone in the school community on the website clearly showing the stages needed to undertake each method. The mathematics curriculum leader regularly provides training for staff and parents/carers in the use of this policy.

Bar Modelling Progression Document

Bar modelling is a way of developing mathematical diagrams that bridge the gap between concrete mathematical experiences and abstract representations. It can be used to represent problems involving the four operations, ratio and proportion, fractions and percentages. It is also useful for representing unknowns in a problem and as such can be a pre-cursor to more symbolic algebra.

The school's bar modelling progression document sets out how the use of bar models can be incorporated into each stage of a child's development in mathematics.

Recording and expectations

Blue A4 exercise books are used in maths lessons, with larger squares for KS1 and lower KS2 and smaller squares for upper school. Pencil is used for writing and drawing in most cases and children use purple pen to indicate where they have made corrections or completed 'Flashback 4' tasks (see feedback section).

Objectives at the start of each lesson are SMART and child friendly. They all begin in the form of a 'Can I?' statement. Stickers are used to show the objective for each lesson in KS1 books. The majority of children in KS2 write the objectives themselves with rulers being used to underline objectives (in upper KS2) and to draw diagrams, graphs and charts. Teachers should make

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expectations for presentation very clear at the start of the school year, building in time to demonstrate this and referring back to this constantly during the course of the year.

Clear and obvious challenge activities are planned and delivered expecting the children to be working at their best; these are clearly identifiable through the use of whole school C1, C2 and C3 labels written somewhere prominent on the page for example in the margin. KS1 and Year 6 classes use challenges from C1 to C5 (see KS1 section).

In the majority of cases, children will be using the 'Rule of 6' strategy to ensure that they do not just do more of the same but move on to access higher order thinking skills.

Children are asked to self-assess their learning using a traffic light system at the end of the lesson.

Feedback

Maths work will have formal feedback at least once a week, using spaced retrieval practice (Flashback Four). In maths, the flashback focus will be identified by class teachers for stage one of the 'Flashback Four' and discussed within year groups to develop stages two to four each week. Stage 1 is last lesson, stage 2 is last week, stage 3 is last month and stage 4 is last term/half term.

The class teacher will give daily feedback to pupils which may be verbal to individuals, groups or whole class (VF) in addition to written feedback in the form of symbols (see Feedback Policy). The amount of feedback will be based on a class teacher's professional judgement of need for learners, age appropriateness and impact on learning. The class teacher will also tick against the learning objective daily (two ticks ✓✓ = understood, one tick ✓ = part way there or a dot ● = needs to recap) to demonstrate how the pupil has performed against the learning outcome.

Please refer to the school's feedback policy for full details and other codes which may be used.

Computing

Class teachers have the opportunity to sign up to use the Computing Suite for mathematics with their class whenever this is appropriate. Class laptops and whole school iPads can also be used to support learning in addition to the interactive display screen for whole class teaching. The school holds subscriptions to Espresso, Purple Mash, Numbots and Times Table Rock Stars, where teachers can choose activities to directly support the children within their class.

Display

Mathematics work and resources should be displayed to inform children and celebrate their achievements. Each classroom must have a working wall, which should be current and evolving constantly. Examples of models and images, children's work, key questions and vocabulary should

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be present at all times on the working walls as these are used to directly support the children's learning.

Partnership with Parents/Carers

At St. Thomas' we believe in the importance of working together with parents/carers in all aspects of school life. In mathematics, one important way parents/carers can help their children is by supporting the completion of the weekly set homework. Homework is set to practise or reinforce a topic previously taught but sometimes learning by heart or investigating and problem-solving may be given.

In EYFS and KS1, number bonds rehearsal or weekly times table practice is encouraged as appropriate.

In Years 3 and 4, homework will take on the form of practising times tables (making use of Times Table Rock Stars where appropriate) and another simple, relevant task may be given relating to arithmetic rehearsal.

In Years 5 and 6, more formal homework is set, with an expectation for it to be completed by a set date. This helps children prepare for expectations at secondary school.

Parents/carers are updated on their child's progress in mathematics as well as the other curricular areas in the form of written reports in July of each year. The written report contains details of a child's efforts and attainment in mathematics over the year. Parent-teacher consultations also take place twice in the academic year.

Parents/carers have access to the school's calculation policy online via the website. These include clear models and images outlining the stages involved in the school's approach to the teaching of calculations. Parent/carer sessions are run every two years so that the policy can be described and explained in more detail.

The School expects parents/carers to:

- be actively involved in their children's mathematical learning both in school and at home;
- understand and support the school's mathematics and homework policy and scheme of work.

Impact

Assessment and accountability

Short-term assessments will be an informal part of every lesson to check understanding and give the teacher information, which will help to adjust day-to-day lesson plans. Weekly arithmetic tests are completed in KS2 to aid rapid recall of key number facts and calculation strategies.

Ongoing medium-term assessment will take place throughout the course of the year using Insight to highlight individual children's progress against the National Curriculum objectives.

Long-term assessments will take place half way through the year and towards the end of the school year to assess and review pupils' progress and attainment. These will be made through compulsory National Curriculum mathematics tests for pupils in Years 6 and supplemented by optional tests for Years 3-5. KS1 may choose to complete less formal assessments at this time using group work or individual assessments as appropriate.

Children in Year 4 will also take the statutory multiplication tables check (MTC) where the purpose is to determine whether pupils can fluently recall their times tables up to 12 x 12, which is essential for future success in mathematics. It will also help the school to identify pupils who may need additional support.

Just before each half term (October, February and May), staff input the band and step which each pupil is working at onto Insight. Staff are also given the opportunity to update the band/step on Insight at the end of each term (December, March/April and July).

Monitoring and Evaluation

The curriculum leader and other members of the SLT regularly monitor and evaluate the mathematics curriculum throughout the year.

Feedback is monitored to ensure that the policy is being carried out in each class across the school. This particularly focuses upon the use of the spaced retrieval practice through the weekly Flashback 4 tasks.

Various other areas are monitored including: the quality of teaching; the learning environment; the implementation of the mathematics calculation policy; planning, recording and reporting; analysis of assessment; progression in learning; evidence of a mastery curriculum; continuity; perceptions of children and the standards of achievement and the use of resources.

Role of the Curriculum Leader

The curriculum leader co-ordinates the monitoring of the teaching and learning of mathematics within the school. Evidence used to inform such evaluations includes:

- teachers' plans;
- lesson visits – include formal observations and informal drop-ins;
- interviews with children and staff;
- sampling of work;
- teacher assessments;
- Insight data;
- optional tests/SATs/Year Multiplication Check results;
- discussion with individual staff (with assistance as needed).

The curriculum leader will conduct regular discussions with staff on their needs in mathematics. Issues that occur as a whole-school issue will be targeted for development through professional

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development meetings and INSET days. These will take place in a negotiated programme alongside other curriculum priorities.

The needs of ECTs and new members of staff will be assessed by the curriculum leader as they join the school. The mathematics curriculum leader will introduce the new member of staff to the policy, calculations policy, bar modelling progression document, resource materials as well as assessment and recording systems.

Support staff will be given guidance by the SENCo, mathematics curriculum leader or class teacher on the teaching and assessment of activities for the groups or children that they manage. The support staff will attend relevant INSET days or sessions when necessary.

The curriculum leader controls the budget for resourcing mathematics. The amount allocated is decided on a yearly basis and is dependent on the priorities in the School Development Plan.

Disability Equality Scheme

At St Thomas of Canterbury Church of England Primary School we recognise our duties and responsibilities under the Disability Discrimination Act as outlined in our Disability Equality Scheme and Action Plan. (December 2007)

It is our aim that through specific and accurate planning, resource allocation, adapted or differentiated learning and use of adult intervention and support (where necessary), that every child, irrespective of disability, will have full access to the curriculum and feel and be enabled to participate actively in developing to their full potential their skills, knowledge and understanding. We will ensure that all 'reasonable adjustments' are made to help both children and adults with identified special needs and disabilities to participate in the mathematics curriculum.

Role of the governing body

Every governor takes a special interest in at least one curriculum area or focus in the school. At present there is a named governor for mathematics who supports the curriculum leader and keeps up to date with policies, strategies, procedures, etc. through regular visits.

These visits are used to become familiar with and monitor mathematics teaching, visit lessons first hand and to promote levels of accountability, challenge and support. Following a governor visit, a written report is submitted to the mathematics curriculum Leader/Headteacher and discussed at a full governing body meeting.

Review

The policy will be reviewed at least every 3 years, or as new guidance becomes available to schools from the Local Authority (LA) or Department of Education (DfE).