St Nicholas CE Primary Academy

Curriculum Summary Statement Mathematics

Mission statement

St Nicholas CE Primary Academy believes that all pupils, their families and the wider community should be given every opportunity to fulfil their potential through education. We recognise that everyone is unique. By respecting and encouraging the individual we aim to produce confident, independent thinkers and learners able to respond positively to an ever-changing world.

Christian values underpin all aspects of the school.

Date published	Policy review date	Noted by	Date agreed
February 2019	January 2021	LGB	11/02/19

This policy is a statement of the principles, aims and strategies for the teaching of mathematics at St Nicholas CE Primary Academy.

Vision:
Mathematics is a beautiful subject which has its own unique place in the curriculum. It provides pupils with powerful ways to describe, analyse and change the world. Pupils can experience a sense of awe and wonder as they solve a problem for the first time, discover a more elegant solution and make links between different areas of mathematics.

Mathematics is the means of looking at the patterns that make up our world and the intricate and interesting ways in which they are constructed and realised. The language of mathematics is international. The subject transcends cultural boundaries and its importance is universally recognised.

Mathematics makes a significant contribution to modern society:

- the basic skills of mathematics are vital for the life opportunities of our children;

- mathematics develops the mind and those highly valued cognitive skills.

Pupils at St Nicholas study mathematics to become functioning adults who can think mathematically, enabling them to reason, solve problems and assess risk in a range of contexts.

"Maths teaching for mastery rejects the idea that a large proportion of people 'just can't do maths'. All pupils are encouraged by the belief that by working hard at maths they can succeed … Significant time is spent developing deep knowledge of the key ideas that are needed to underpin future learning. The structure and connections within the mathematics are emphasised, so that pupils develop deep learning that can be sustained."

(The NCETM, 2016)

Aims:
- to foster positive attitudes, fascination and excitement of discovery through the teaching and learning of mathematical concepts
- to develop a 'can do' attitude in our children

- to broaden children's knowledge and understanding of how mathematics is used in the wider world

- to enable our pupils to use and understand mathematical language and recognise its importance as a language for communication and thinking

- for all children to become fluent in the fundamentals of mathematics in order that children can develop their conceptual understanding and the ability to recall and apply knowledge rapidly and accurately

- to be able to reason mathematically

- to be able to solve problems by applying their mathematics to a variety of routine and non – routine problems

(calculation policy and other policies may be added to appendix)

Purpose of Study:
Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas. They should also apply their mathematical knowledge across other subjects in the curriculum at all opportunities.

Organisation / Expectations:
The expectation is that most pupils will move through the programme of study at broadly the same pace, with intervention and class-based support being implemented to ensure that this is achievable where possible. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Mathematics will be taught in discrete year groups, with TAs being used at the teacher's discretion to support and challenge learning.

Planning:
The White Rose scheme of learning is followed at St. Nicholas. The programmes of study for mathematics are set out year – by – year for Key Stages 1 and 2; however, there is flexibility to introduce content earlier or later but must be agreed by the Maths Lead or SLT.
Medium term planning is also based on the White Rose scheme of learning, which breaks each area of mathematics into 'small steps'. Again, there is flexibility to adapt the order in which these steps are taught, but this must be agreed by the Maths Lead or SLT.

Short Term Planning:

Maths lessons must follow the TPAE (Teach, Practice, Apply, Embed) approach.

Teach – this can be whole class, one or several small groups and is led by an adult. Children can return to this group if they have been assessed during the lesson as having difficulties. A 'pre- teach' approach should be adopted to encourage greater independence during a session.

Practice – this is fluency based and must always be completed independently. It should not be excessive (no more than 8 questions) and should include variation. Key Stage 2 children should be encouraged to self - mark.

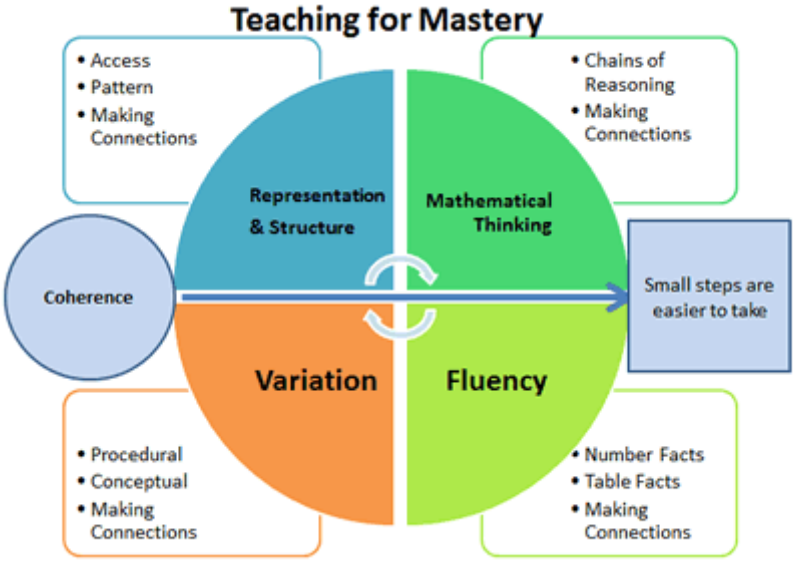
Apply – these activities should allow children to apply their understanding of concepts in a variety of ways. This may take the form of word problems and simple reasoning tasks.

Embed – these are 'greater depth' activities. These may include activities where there is more possibility (investigations), make additional links to mathematical concepts outside of

that being taught or be 'standalone' maths challenges.

A consistent approach should be adopted, particularly with the level of challenge for 'Embed' activities. Real life problem solving should be included – this could be through practical activities in Key Stage 1. There should be sufficient variation, with the Bar Model being used and encouraged.

Year 1 will refer to the 'Dienes' Principle of Learning' (constructivity, guided play, structured learning and practice), with TPAE introduced after Christmas.



A Cold Task should be carried out before the planning of each concept, with significant time planned in advance to do this. This should primarily be fluency based, with elements of reasoning and problem solving. 'Small steps' or objectives must be included on this and RAG rated according to how successful a child has been (these will take the form of targets and outline the 'Learning Journey'). This assessment will then be used to group the children into TPAE groups.

Year 1 should use practical activities as a form of Cold Task, with photos and adult annotations.

Although a 3-part lesson is no longer necessary, it is the expectation that mental arithmetic will be taught in the majority of lessons and the fluency of recall practised regularly. With the expectation being that the majority of children will broadly be moving through the programmes of study at a similar pace, differentiation will not only be by task but by the use of manipulatives, adult support and outcome. The role of the TA should be identified on the plan. There should be provision for disadvantaged, PP and SEN pupils.

Weekly planning must be uploaded to the server and annotated / adapted on a daily basis.

All maths resources must be uploaded to the TPAE folder on the server.

Times Tables must be taught and modelled. The paper version of Times Tables Rockstars should be completed at least 3 times per week – this may happen outside of maths lessons.

(Planning guidance and non – negotiables to be included in appendix)

Assessment:
- assessment should be ongoing during each lesson, with children being moved on by adults according to their needs. Planning should reflect this and be updated daily, indicating the next steps for children. An objective may be covered over several lessons; therefore, one annotated plan is sufficient.
- teachers will follow the school's marking policy (see section relating to maths)

- a Hot Task must be carried out at the end of each White Rose unit. The White Rose 'End of Block Assessments' should be used and adapted to ensure that children are being suitably challenged in comparison to the initial Cold Task.

- Maths assessment grids (on the server) must be updated on a regular basis. Each objective is to be RAG rated based on what has been assessed during lessons and from the Hot Task. Any children working below their year group should be assessed against the objectives of the level being taught.

- written assessments will be carried out termly (Years 1, 3, 4 and 5 will use the White Rose assessments in terms 1, 3 and 5; NFER in terms 2, 4 and 6. Years 2 and 6 will use past SATs papers).

- a gap analysis must be completed termly and sent to the Maths Lead. Gaps should be identified and interventions put into place to address these.

- Times Table Rockstars data must be uploaded to their website regularly.

Learning environment:
The maths working wall must be used to support teaching and learning and should be updated daily (where appropriate) – a clear learning journey should be evident. It is not intended to be a work of art but should be legible. It must contain a brief outline of the key objectives, key vocabulary, modelled examples / steps to success. It is desirable that mistakes and misconceptions are explored, with the children's reasoning being included. The working wall should demonstrate a CPA approach, including a variety of representations and, where possible, manipulatives should be included.
The maths board must be photographed and retained in an A3 folder for children to refer back to.

The successful teaching of mathematics is dependent upon children understanding the abstract concepts of number and this is best achieved by using concrete apparatus to support and develop their understanding. Manipulatives are to be used by all children in

both Key Stages as required, giving children increasing responsibility for selecting appropriate apparatus to help them solve problems. The use of manipulatives must be modelled. Children may then progress onto pictorial representation / jottings.

Spoken Language and Vocabulary:
The National Curriculum for mathematics reflects the importance of the spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof. They must be assisted in making their thinking clear to themselves as well as others and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions. Good 'maths talk' should be encouraged using talk partners.

The correct mathematical vocabulary should be taught and modelled. Where written incorrectly, this should be identified and corrected (in line with the school's marking policy).

Use of ICT:
Calculators should not be used as a substitute for good written and mental arithmetic. They should therefore only be introduced near the end of Key Stage 2 to support pupils' conceptual understanding and exploration of more complex number problems, if written and mental arithmetic are secure. Teachers should use their judgement about when these tools should be used.
The school has subscribed to Mathletics and Times Tables Rockstars. There may be times when it is appropriate to use these within the maths lesson to further support the learning. It is the responsibility of the teacher to ensure that the children are set activities suitable to their ability.

Home Learning:
When sending learning home, teachers must include advice on the method used to enable parents their child's learning. Home Learning should supplement what has been covered in class. Where Mathletics and TTRS are being set, teachers need to ensure that it is set to their ability.

Monitoring and Evaluation:
The Maths Lead will be responsible for ensuring the quality of teaching and learning in mathematics across the school. This will be done by a combination of:
- lesson observations and learning walks

- pupil voice

- scrutiny of books and data

- staff meetings and updates

- assessing the quality of planning

- ensuring that TPAE and White Rose are used

The Maths Lead will be responsible for providing support, advice and training.

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