



MATHEMATICS POLICY DOCUMENT

This policy is overarched and subject to the agreed contents and conditions of the Safeguarding Children and E-Safety Policies.

Intent

At Tynsel Parkes CE Primary Academy we support children 'to be all they can be', we aim to provide high quality learning that challenges and inspires, whilst embracing Christian Values in our daily lives. Our curriculum is designed not only to fulfil statutory requirements but to enthuse all children with a love of learning. This will be achieved through a mixture of; exploration, discovery, creativity and a variety of learning opportunities that broaden children's knowledge and understanding. Children will develop enquiring minds and a love of learning encapsulating the school motto 'Loving and Learning together'.

At Tynsel Parkes Church of England Primary Academy we follow the National Curriculum to structure and shape our teaching of mathematics. We believe that, and ensure through our teaching, mathematics is a rich and creative subject in which all children can succeed and experience success. As such, we hold the aims of the National Curriculum as our overarching guiding principles for shaping the provision of mathematics.

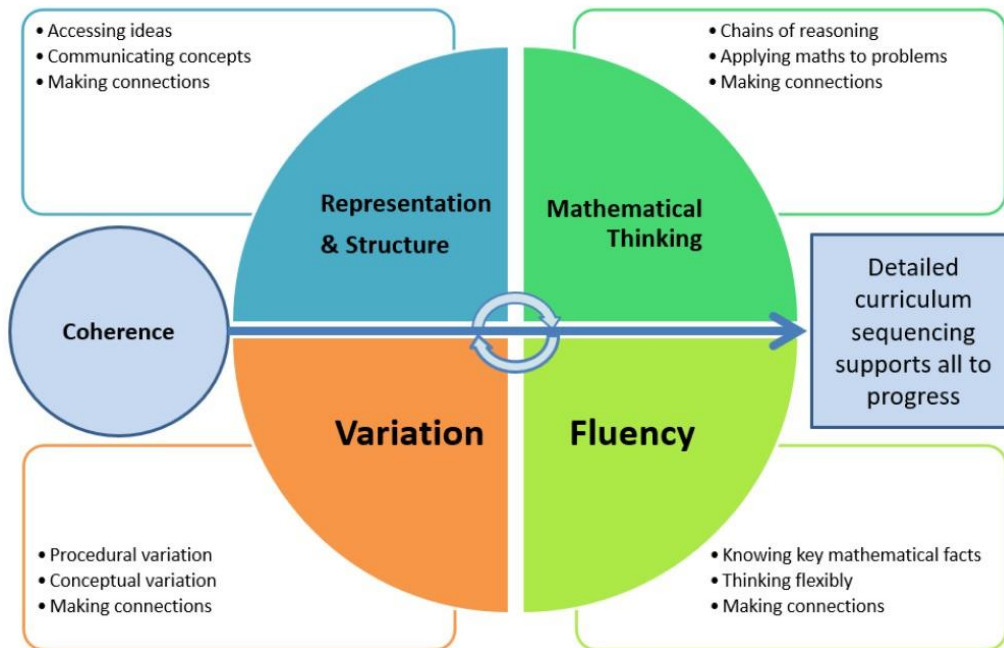
The National Curriculum for mathematics aims to ensure that all children:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that children develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **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.

Implementation

Research and development by the NCETM (National Centre for Excellence in the Teaching of Mathematics) has been influential in our development of pedagogy surrounding the teaching of mathematics and has shaped our understanding of 'Teaching for Mastery'. The NCETM produced '5 Big Ideas' for Teaching for Mastery:

Teaching for Mastery



Coherence

Teaching is designed to enable a coherent learning progression through the curriculum, providing access for all children to develop a deep and connected understanding of mathematics that they can apply in a range of contexts.

Representation and Structure

Teachers carefully select representations of mathematics to expose mathematical structure. The intention is to support children in 'seeing' the mathematics, rather than using the representation as a tool to 'do' the mathematics. These representations become mental images that students can use to think about mathematics, supporting them to achieve a deep understanding of mathematical structures and connections.

Mathematical Thinking

Mathematical thinking is central to how children learn mathematics and includes looking for patterns and relationships, making connections, conjecturing, reasoning, and generalising. Children should actively engage in mathematical thinking in all lessons, communicating their ideas using precise mathematical language.

Fluency

Efficient, accurate recall of key number facts and procedures is essential for fluency, freeing children's minds to think deeply about concepts and problems, but fluency demands more than this. It requires children to have the flexibility to move between different contexts and representations of mathematics, to recognise relationships and make connections, and to choose appropriate methods and strategies to solve problems.

Variation

The purpose of variation is to draw closer attention to a key feature of a mathematical concept or structure through varying some elements while keeping others constant.

- Conceptual variation involves varying how a concept is represented to draw attention to critical features. Often more than one representation is required to look at the concept from different perspectives and gain comprehensive knowledge.
- Procedural variation considers how the student will 'proceed' through a learning sequence. Purposeful changes are made in order that children's attention is drawn to key features of the mathematics, scaffolding students' thinking to enable them to reason logically and make connections.

To embed these '5 Big Ideas' in our classroom practice, with the benefit of deep and sustained learning by all children, we consult the high quality **White Rose Maths** resources as a starting point when shaping a lesson. These are based on the NCETM Teaching for Mastery model above, as well as supporting the aims and objectives of the National Curriculum.

Maths is taught every day using the White Rose maths scheme from **Year 1 to Year 4**. White Rose follows a small steps approach that keeps all learners together. It is designed to support mathematicians who require more time and visual representation to grasp fundamental concepts as well as those who require challenging further to achieve Greater Depth.

In using the White Rose Maths resources, teachers are able to spend greater amounts of time considering the experiences and journey for children through a single lesson or sequence, rather than time spent creating resources. This shift enables teachers to consider, in greater detail, how key concepts will be introduced, challenged and generalised. We follow the White Maths resources with thought and adapt practice based on our children's needs. Each lesson will be carefully considered when planning with representations, concrete resources, teacher examples and children's worksheets adapted as appropriate.

EYFS

We follow the EYFS curriculum guidance for mathematics. Teachers of the EYFS ensure the children learn through a mixture of adult led activities and child initiated activities both inside and outside of the classroom.

In our Nursery, Development Matters provide the long term planning for mathematics. Maths learning is encouraged through a range of planned and structured play situations, both independent and supported by teachers. It is also taught through stories, songs, games, imaginative and outdoor play. The nursery environment includes visual images, models and resources to stimulate interest. Numicon and Number Blocks play a part in understanding the recognition of early numbers and in developing an awareness of the relationship between numbers and amounts.

In Reception, maths is taught based on the **Early Years Number Sense programme** which teaches a deep understanding of quantity and of numbers to 10. It covers all the number elements of the 2021 statutory framework except counting, and it supports assessment of the Early Learning Goals for Number and Numerical Patterns. The programme develops subitising, manipulating, and partitioning of numbers to 10, and supports children to see their different properties. The programme animations provide mathematically rich images that are a stimulus for regular whole class number sense discussions. Discussion support is provided for each animation, along with associated pedagogical subject knowledge and prompts for wider provision. It is designed for Reception, but some animations are also able to be used in Nursery.

Vocabulary

Developing children’s mathematical language and vocabulary is essential to teaching and learning. In all maths lessons at Tynsel Parkes Church of England Primary Academy:

- key vocabulary is drawn out and displayed during lessons on working walls
- sentence-stems that embed key-concepts are planned into lessons where appropriate and these are modelled and repeated by adults and children
- adults encourage more sophisticated and appropriate vocabulary from the children. For example, the child says, ‘you have to times the numbers’, adult says, ‘do you mean you have to multiply the numbers?’
- children are encouraged to answer in full sentences.
- adults mirror alternative words for the same meaning to enrich children’s range of vocabulary. For example, the child says ‘3 times 5 is 15’, teacher says, ‘yes, the product of 3 and 5 is 15’ or ‘3 multiplied by 5 equals 15’.
- children are required to provide justification and reasoning for their answers. For example, ‘I know the shape is a square because....’

Number Sense

Daily, whole class arithmetic sessions take place separate from maths lessons in Year 1 – Year 4. These are approximately 15-20 minutes long and are invaluable in enabling children to gain ‘number sense’ and be proficient, competent and confident with numbers, number relationships and calculations.

Years 1 and 2 follow the **Number Sense Number Facts Fluency Programme**. The systematic and structured programme ensures children develop visual models of number, a deep understanding of number and number relationships, and fluency in addition and subtraction facts. At the core of the programme are the Addition and Subtraction Facts which are taught alongside 12 calculation strategies (see below).

Addition Grid Facts

+	0	1	2	3	4	5	6	7	8	9	10
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9	0+10
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9	2+10
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9	3+10
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9	4+10
5	5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9	5+10
6	6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9	6+10
7	7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9	7+10
8	8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9	8+10
9	9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9	9+10
10	10+0	10+1	10+2	10+3	10+4	10+5	10+6	10+7	10+8	10+9	10+10

Subtraction Grid Facts

-	0	1	2	3	4	5	6	7	8	9	10
0	0-0										
1	1-0	1-1									
2	2-0	2-1	2-2								
3	3-0	3-1	3-2	3-3							
4	4-0	4-1	4-2	4-3	4-4						
5	5-0	5-1	5-2	5-3	5-4	5-5					
6	6-0	6-1	6-2	6-3	6-4	6-5	6-6				
7	7-0	7-1	7-2	7-3	7-4	7-5	7-6	7-7			
8	8-0	8-1	8-2	8-3	8-4	8-5	8-6	8-7	8-8		
9	9-0	9-1	9-2	9-3	9-4	9-5	9-6	9-7	9-8	9-9	
10	10-0	10-1	10-2	10-3	10-4	10-5	10-6	10-7	10-8	10-9	10-10
11		11-1	11-2	11-3	11-4	11-5	11-6	11-7	11-8	11-9	11-10
12			12-2	12-3	12-4	12-5	12-6	12-7	12-8	12-9	12-10
13				13-3	13-4	13-5	13-6	13-7	13-8	13-9	13-10
14					14-4	14-5	14-6	14-7	14-8	14-9	14-10
15						15-5	15-6	15-7	15-8	15-9	15-10
16							16-6	16-7	16-8	16-9	16-10
17								17-7	17-8	17-9	17-10
18									18-8	18-9	18-10
19										19-9	19-10
20											20-10

Calculation Strategies

One More, One Less

Two More, Two Less: Think Odds and Evens

Number 10 Fact Families

Five and A Bit

Know About Zero

Doubles and Near Doubles

Number Neighbours: Spot the Difference

7 Tree 9 Square

Ten and A Bit

Make 10 and Then

Adjusting

Swap It

1 + 6

Summative assessment

Maths is formally assessed three times a year using the White Rose termly assessments. These assessments provide evidence to show the progress of each child through the year. The scores are recorded on INSIGHT and used to inform teacher assessment.

Both formative and summative assessment should be used to plan interventions to close the gap in attainment (this will likely involve Teachers/Teaching Assistants/HLTA's/SEN base).

Monitoring and Evaluation

The mathematics subject leader and Senior Leadership Team will routinely monitor the overall quality of teaching and the impact this has on progress for all pupils.

The mathematics subject leader and Senior Leadership Team will routinely monitor the impact of CPD on the quality of teaching and learning.

The monitoring and evaluation of maths will be undertaken in line with the Action Plan and Academy Development Plan, linking it to quality of teaching, learning and achievement.

Updated: 4th September 2023

Signed: _____

Date: _____