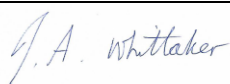




*"I have come so that they may have life and have it to the full."* John 10:10

# Mathematics Policy

## Autumn 2022

Policy Review Details	
This policy will be reviewed in line with our policy review schedule.	
Date of Issue: Autumn 2022	
	
Governor Signature	Headteacher Signature
Date of next review: Autumn 2024	

## Version Control

### Change Record

Date	Author	Version	Reason for Change
Autumn 2022	Z Leyland	1	New policy to reflect curriculum changes since Sept 2021

*“Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history’s most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.”*

**National Curriculum 2014**

### **Our Aims**

We aim that all pupils:

- Become fluent in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- Can solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios.
- Can reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.

### **Our beliefs:**

We believe that ability within Mathematics is not fixed. We are developing a “We Can” attitude towards Mathematics. We believe that through quality first teaching, intelligent practice, learning together and immediate intervention that all children have the potential to ‘go deeper’ and broaden their understanding of mathematical concepts. Mathematics at Summerseat is implemented within classroom learning environments through the use of lessons, Working Walls, resources, books and verbal and written feedback. Mathematics pervades all aspects of our lives and helps us to make sense of our world. With this in consideration, we hope to instil an enjoyment within the subject, to develop children’s wider understanding of mathematics and to support every child to engage with maths, to build upon their own understanding.

### **Planning, Teaching and Learning**

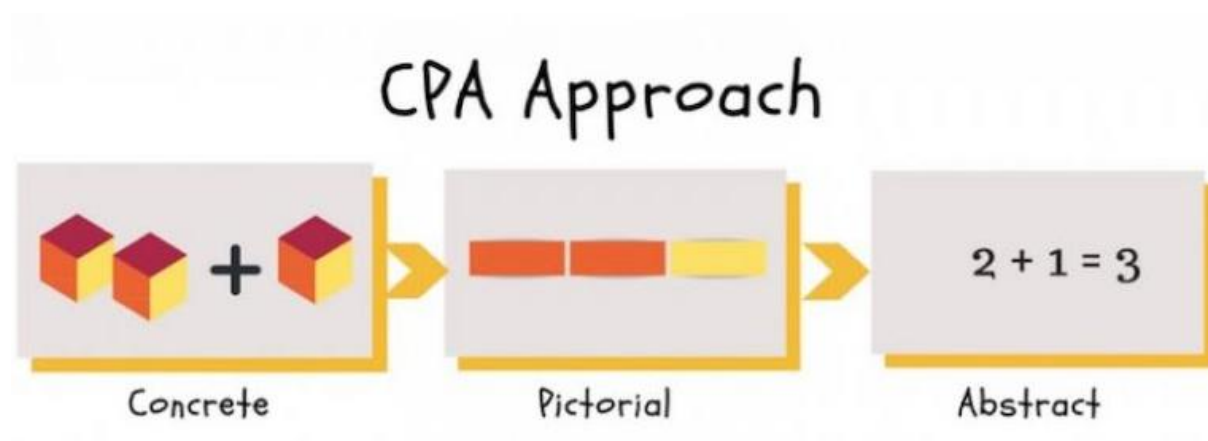
Summerseat follows the CONCRETE – PICTORIAL - ABSTRACT (based on research by Bruner) style of teaching to ensure children have a true understanding of a concept. The calculations policy follows the CPA approach and should be read alongside this document. Throughout Early Years to Year Six, we have developed our curriculum following the White Rose Hub scheme of work, to allow learners to achieve a secure and deep understanding of each mathematical concept. Embedded into the mathematical planning and teaching is the use of ‘Fluent in Five’, to recap and consolidate previous, current or new learning; based on the research of our ‘know more remember more’ strategy. We ensure that reasoning is at the core of every lesson. At Summerseat, we encourage children to learn through the five ‘Big Ideas’ of the mastery maths approach:

- Coherence - Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all children and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts.

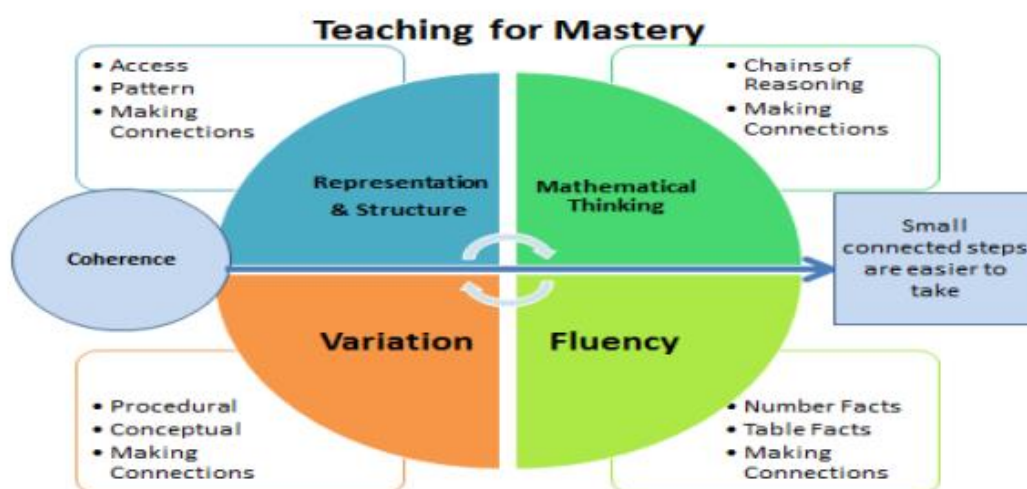
- Representation and Structure - Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the maths without recourse to the representation
- Mathematical Thinking - If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, reasoned with and discussed with others
- Fluency - Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics
- Variation - Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

The Five Big Ideas were first published by the NCETM in 2017. They can be seen below.

Lesson planning ensures that the needs of all learners are met within every lesson and that all children are appropriately challenged. In Early Years, the principles of the EYFS Framework are followed, and there is the opportunity to 'explore maths' and develop their understanding of mathematical concepts through taught sessions, structured independent activities and play. White Rose support this.



## Mastery



A key aspect to our mathematics lessons is the implementation of fluency. To ensure children are able to:

- Quickly recall facts and procedures.
- To have the flexibility and fluidity to move between different contexts and representations of mathematics.
- To have the ability to recognise relationships and connections within mathematics.

## Curriculum

At Summerseat Methodist Primary School, we follow [The Early Years Foundation Stage \(EYFS\) Statutory Framework](#) in Nursery and Reception and the [National Curriculum](#) for Key Stage One and Two. This ensures we provide a suitably challenging curriculum with continuity, progression and high expectations.

We outline / communicate our mathematics curriculum built on these two documents and supported through White Rose via:

- **'Year Group Steps in Learning'** - which provides an overview of the topics taught in the year group for all subjects and also outlines the end points for the learning for the year group. In regards mathematics, they outline the expected end points for each year group. (Available nursery through to Year Six)
- **'Subject long term overviews'** - which share the whole school sequence of topics that are covered in each year group. These are available on the individual subject pages. For Mathematics, this shares the concepts covered each half term.
- **'Subject Steps in Learning'** - which outline the progressive subject skills, knowledge and concepts. This is our key progression document for each subject. These are available on the individual subject pages. (This covers all aspects of Mathematics)
- **'Unit Plans'** - which guide staff on the learning journey a class may take to meet the end points identified for a unit of work. In Mathematics, these are taken from White Rose for mixed age groups.
- **'Knowledge Organisers'** - outlines key knowledge and vocabulary we want children to know in particular subject areas. In mathematics, these are focused on providing parents and

children with a 'snap-shot' of the coverage for the year. Working Walls provide a breakdown for each unit to carefully support children in their learning.

### **EYFS Mathematics**

In Early Years, we encourage children to develop a secure understanding in number, to provide them with the necessary building blocks to 'shine mathematically'. We have a clear focus on ensuring children are able to count confidently, to develop a deep understanding of numbers to 10 and to be able to identify patterns within those numbers. We provide have a range of concrete resources, that enable the children to have frequent and varied opportunities to build and apply this understanding of number. The children develop the skill of subitising numbers up to 5 and through the implementation of number sense, the children develop the skill of automatic recall of numbers and some number bonds to 10. Throughout the school day, the children have opportunities to develop their spatial reasoning skills, focusing on shape, space and measures. The use of the wide variety of areas within the EYFS classroom enable children to independently explore to build and secure their knowledge on a range of shapes, measures and space through concrete practical activities.

### **KS1 Mathematics**

The principle focus of mathematics teaching in Key Stage 1 is to ensure pupils develop confidence and mental fluency. The key idea behind the mastery approach is that all children have a deep and secure understanding foundation of number knowledge to build on in the future. By the subject being represented using concrete materials, pictorial representations and abstract symbols; this allows the children to visualise maths in a variety of ways, make connections and to independently explore and investigate a topic. The implementation of practical activities and resources provide the children with the means to scaffold their learning, before developing a deeper mathematical understanding of complex concepts. In Key Stage 1, it is essential that children develop a secure knowledge of number and place value, to become confident when using the four operations and approaching problem solving questions. In addition, children start to identify fractions using shapes, objects and quantities, making those valuable connections throughout their mathematical journey. Pupils are then taught to count to ten in fractions, recognise equivalent fractions and develop their understanding of fractions on a number line. Alongside this, children will also develop their ability to recognise, describe, draw, compare and sort different shapes. Pupils have the opportunity to use a range of measures to describe and compare different quantities (length, mass, capacity/volume, time and money). There may be opportunities to have strong, meaningful, cross-curricular links to some maths topics, allowing cross-curricular learning; through measurement in science and coordinates in geography. This provide the children with a holistic approach, which maximises learning opportunities for all pupils across the curriculum.

### **KS2 Mathematics**

Lower Key Stage 2 – Years 3-4. 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 more complex 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 up to and including the 12-multiplication table and show precision and fluency in their work. This is assessed by the Statutory Multiplication Check that the children complete towards the end of year 4. Throughout the year the children have a focus on their times tables; the teacher will track the children's progress throughout the year and complete 'practice multiplication checks' to develop knowledge, understanding and speed. The children have access to Times Tables Rock Stars to access in school and at home to embed their multiplication knowledge.

## **USK2 Mathematics**

Upper Key Stage 2 – Years 5-6 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, with increasing speed. 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 more independently, 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. Alongside the above objectives runs a desire to implement key reasoning and problem-solving skills within lessons and also throughout the wider life of school. At Summerseat, we aim to develop children's resilience to help them to Shine, we value mistakes and encourage children to be determined to overcome any obstacle.

### **Number Fact Knowledge**

We believe that secure, fluent knowledge of number facts (addition, subtraction, multiplication and division) is fundamental to being able to succeed in mathematics; therefore, this is a high priority at Summerseat. We have a clear progression in number fact knowledge that is followed and number facts are practised daily. TT Rock Stars is implemented within school and at home, through contact with parents to embed learning of times tables. Throughout Key Stage 1 and Lower Key Stage 2, the use of the Number Sense Programme is used to develop systematic and structured teaching of number, to improve children's confidence and understanding of number and fluency with addition and subtraction facts.

### **Resources**

Concrete resources are available in every classroom for every child to use to support their learning and understanding within Mathematics. Each classroom has a designated maths resource area that is made known to the children. In Key Stage 1 classrooms, the use of an 'Enable Table' is used to encourage children to use a range of resources independently.

### **Display**

All classrooms have a 'Maths Working Wall', this is positioned in the classroom for the children to use to further develop their understanding. It is used to support the children and demonstrates the use of the CPA and mastery approaches. The Working Wall displays current learning and previous learning to support the children when remembering their maths learning journey.

## **Assessment**

At the end of each lesson, the teacher makes a judgment as to whether each child has achieved the learning objective and uses this to inform future planning and intervention needs. *At the end of each unit, a short assessment is carried out to enable the children to demonstrate what they have learnt and so that gaps in learning can be quickly identified.* Termly summative assessments are carried out and the results of these are records on FFT. The aim of these is to understand what children have learnt and what they need to know next. This informs future planning for cohorts, groups and individuals. Depending on the presenting need, some children with SEND will be assessed using: short practical tasks, observations, quiz style approaches. Some children with high level needs, may be identified for BSquared assessment. This is small steps tracking. We will ensure we are clear on the purpose and style of this assessment to enable us to identify gaps and move learning on effectively. All staff attend termly Pupil Progress Meetings where the progress of all children is discussed with members of the senior leadership team. Attainment and progress data are analysed and compared to children's predictions based on prior attainment. From this, further actions are identified. Assessments are analysed by the subject leader and the senior leadership team and these feed into the subject action plan, school SEF and School Improvement Plan.

## **Feedback**

Children's work is marked daily and verbal feedback is given within lessons or after lessons and lessons adapted as required. Time is allocated during lessons for children to review the previous days learning, to check for corrections or improvements that are needed to be made to their work.

## **Parental Involvement**

At Summerseat, we encourage parents to be involved by:

- Inviting them into school twice/three times yearly to discuss the progress of their child.
- Providing parents with a booklet with current targets, an interim report and a yearly report outlining their child's achievements.
- Holding workshops for parents.
- Sending homework activities weekly to be completed by or with their child (Online and written activities)
- Knowledge organisers

## **Special Educational Needs**

The needs of children with identified Special Educational Needs are unique and varied. Staff select the most appropriate route for the child. On the whole, children with SEND are taught within the daily mathematics lesson. They work at a level which is appropriate to meet their needs. When additional staff are available to support groups or individual children, they may do so in class or may withdraw small groups to use intervention materials. Children work on a progression of objectives taken from the EYFS framework and the KS1 ready-to-progress guidance. Working on this progression of objectives to support the children to build a strong foundation on which to build their mathematical skills and understanding. In addition to this, the children have precision teaching of the number facts which they need to learn. They use concrete resources throughout their learning to support and embed understanding; before, using the pictorial and abstract approaches. The use of the Number



Sense programmes supports the children to develop a concrete understanding of number. For some pupils with identified high level needs in mathematics, the children's progress is tracked on BSquared to ensure teachers, parents and pupils are aware of development and next steps progression within mathematics.

### **Equal Opportunities**

Within the daily mathematics lesson teachers provide activities to support children who find mathematics difficult, as well as activities that provide appropriate challenges for children who are high achievers in mathematics.

### **Link to Other Policies**

This policy should be read in conjunction with:

- Calculations policy (CPA approach)
- Teaching and Learning Policy
- Assessment Policy
- Marking and Feedback Policy
- SEND Policy
- Early Years Foundation Stage Policy
- Equalities Policy & Objectives

### **Monitoring**

We will monitor teaching and learning of mathematics in our school to make sure that all of our pupils make the best possible progress from their starting points.

School leaders / the mathematics lead will monitor and evaluate the impact of teaching on pupils' learning in line with the annual monitoring schedule through:

- Conducting learning walks
- Reviewing marking and feedback
- Termly pupil progress meetings
- Pupil voice
- Planning scrutiny
- Book scrutiny

This will feed into staff appraisal and CPD.

### **Review**

This policy will be reviewed every three years by the subject leader in line with the policy review schedule. At every review, the policy will be shared with the Local Advisory Board.