



HIPPINGS METHODIST PRIMARY SCHOOL



Mathematics Policy

'As a family we do our best with God in our hearts'

I can do all things through Christ who strengthens me: Philippians 4 verse 13

Our loving school endeavours to provide the best possible all-round education in a Christian setting.

We will be a family that does our best with God in our hearts understanding that we are all His children. We aim for all within our school to develop spiritually, morally, academically and culturally.

The 2014 National Curriculum states that, "Mathematics is a creative and highly interconnected discipline that has 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."

This policy details how Hippings Methodist Primary School achieves the aims of the National Curriculum.

Aims - Intent

At Hippings Methodist Primary School, we endeavour to make maths exciting, enjoyable and stimulating by providing high quality teaching that is engaging, interactive and builds upon children's prior learning.

Our aim is for children to use their knowledge and understanding of mathematics confidently in day-to-day life. We work hard to foster children's mathematical understanding and help all pupils develop a confident, skilled and resilient approach to all aspects of mathematics. By offering flexible groupings, providing engaging activities and an environment that embraces mistakes as opportunities for further learning we enable children to succeed as mathematicians.

We strive to:

- promote a positive attitude towards mathematics in all pupils
- ensure all pupils are engaged in and enjoying exploring mathematics
- enable all pupils to find links between mathematics and other areas of the curriculum, including Science
- ensure all pupils progress in mathematics and are challenged appropriately through an in depth understanding
- use a wide range of concrete, pictorial and abstract representations to develop all pupils' relational understanding of mathematics
- ensure all pupils are confident using mathematical vocabulary when reasoning about mathematics
- promote a growth mindset in all pupils, particularly when problem solving

Through the teaching of key mathematics skills we will enable our children to:

- Be **fluent** in the fundamentals of mathematics
- **Reason** mathematically by following a line of enquiry
- **Solve** problems by applying their mathematical understanding and knowledge

Curriculum - Implementation

At Hippings Methodist Primary School, we seek to provide our children with engaging lessons, mathematical opportunities and experiences to create a sense of enjoyment and curiosity about the subject.

We understand that our pupils come from a wide variety of backgrounds with different experiences and exposure to mathematical concepts. This means that they require robust and clear progression, in small steps, to become confident mathematicians.



As a school we have invested in the **White Rose Maths** scheme.

Every resource has been carefully designed to ensure it addresses the three key aims of fluency, reasoning and problem solving and follows the principles of teaching for mastery. The fundamental idea is that all children develop a deep understanding of the mathematics they are learning. Lessons are carefully planned and sequenced, taking into account what has been taught before, and what knowledge and skills are needed for the next stage of our children's mathematical development. The White Rose Maths scheme uses a concrete, pictorial and abstract approach to underpin understanding. The children are encouraged to explain their choice of methods and develop their mathematical reasoning skills whilst recognising that mathematics underpins much of our daily lives. It allows all learners to explore maths in depth, using mathematical vocabulary to reason and explain their workings and make sense of the world around them by making connections between mathematics and everyday life. Teachers use their expertise and knowledge to adapt and develop lessons according to the needs of their class and may supplement the White Rose Maths scheme using resources from other sources. We encourage resilience, perseverance and an acceptance that struggle is often a necessary step in learning. We give each pupil a chance to believe in themselves as mathematicians.

Alongside the White Rose Maths scheme of learning, we are also taking part in the National Centre for Excellence in the Teaching of Mathematics (NCETM) 'Mastering Number' programme to support the teaching of basic maths skills in our school.



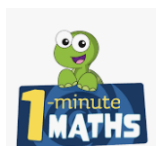
This project aims to secure firm foundations in the development of good number sense (a deep understanding of number) for all children from Reception through to Year 1 and Year 2. The aim over time is that children will leave KS1 and begin KS2 with fluency in calculation and a confidence and flexibility with number. Research shows that children with secure 'number sense' early on will make more progress later on in Maths and across the curriculum. Please refer to the [Hippings Mathematics Overview 2023](#) and separate [Mastering Number](#) documents for EYFS, Year 1 and Year 2.

To further develop fluency and mental maths skills, we have introduced KIRFs (Key Instant Recall Facts) throughout school as a way of helping children learn by heart, key facts and information which they need to have instant recall of. Instant recall of facts helps enormously with mental agility in maths lessons and is particularly useful when calculating, adding, subtracting, multiplying or dividing. Number facts such as number bonds and times tables need constant practise and rehearsal, so children can recall them quickly and accurately. Each half term, children focus on a Key Instant Recall Fact (KIRF) to practise and learn at home as a means to support the development of mental maths skills being taught in school. Please refer to the [KIRFs](#) documents for each year group.

As a school, we provide each child with a log-in to NumBots/Times Table Rockstars. In EYFS and Key Stage 1, NumBots focuses on improving children’s understanding and automaticity of key number facts. In Key Stage 2, children access TTRS to support their fluency and recall in multiplication and division.



We also promote the use of the White Rose 1-minute maths APP where pupils can practise subitising and all 4 mathematical operations.



Early Years Foundation Stage

Mathematics in the EYFS is guided by the requirements and recommendations set out in the Statutory Framework for the Early Years Foundation Stage, the non-statutory Development Matters document, the NCETM Mastering Number programme and the White Rose Maths scheme of learning. Maths is developed through purposeful, play based experiences which are both adult led and child initiated, throughout indoor and outdoor provision, enabling all children to use, enjoy, explore, practise and talk confidently about maths. Mathematical understanding is also developed through stories, songs, rhymes, games and imaginative play. The children are given regular opportunities to practise their counting and subitising skills and revisit prior learning. Mathematics is taught both as a discrete subject and across the whole curriculum to give EYFS children opportunities to use their numeracy skills in real life situations. For example, using ten frames containing the children’s photographs to notice how many pupils are in class each day or exchanging ten cubes for one stick of ten in order to count the team points more efficiently. Staff also provide incidental learning opportunities through quality interactions with children. For example, encouraging children to count aloud during their play or to sort objects and explain their reasoning.

Key Stages 1 and 2

The White Rose Maths Scheme of Work is used to support mathematical learning in Years 1 to 6. A yearly overview provides a long term plan for each year group and is arranged into ‘blocks’.

Year 2 example:

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value			Number Addition and subtraction					Geometry Shape			
Spring	Measurement Money	Number Multiplication and division					Measurement Length and height		Measurement Mass, capacity and temperature			
Summer	Number Fractions			Measurement Time		Statistics		Geometry Position and direction		Consolidation		

Each block has its own scheme of learning containing 'small steps to progression' plans. These small steps are a series of learning objectives that children need to understand in order to progress onto more challenging lessons. The steps follow a logical, coherent path for children to follow in order to prevent gaps in knowledge, whilst also helping them to make connections between maths topics.

Autumn Block 3

Shape

Year 2 | Autumn term | Block 3 – Shape

Small steps

- Step 1 Recognise 2-D and 3-D shapes
- Step 2 Count sides on 2-D shapes
- Step 3 Count vertices on 2-D shapes
- Step 4 Draw 2-D shapes
- Step 5 Lines of symmetry on shapes
- Step 6 Use lines of symmetry to complete shapes
- Step 7 Sort 2-D shapes
- Step 8 Count faces on 3-D shapes

Year 2 | Autumn term | Block 3 – Shape

Small steps

- Step 9 Count edges on 3-D shapes
- Step 10 Count vertices on 3-D shapes
- Step 11 Sort 3-D shapes
- Step 12 Make patterns with 2-D and 3-D shapes

Each small step contains teacher guidance that provides an overview of the step, key learning activities and questions, possible misconceptions and stem sentences alongside reasoning and problem solving opportunities.

Year 2 | Autumn term | Block 3 – Shape | Step 1

Recognise 2-D and 3-D shapes

Notes and guidance

Children begin this block by recapping their understanding of shape from Year 1.

Before learning about the properties of shapes, children need to recognise and name both 2-D and 3-D shapes and differentiate between them.

It is important that children have the chance to see and feel the shapes. They should begin to understand that 2-D shapes are flat and that the manipulatives they handle in class are representations of the shapes.

Children should be able to recognise both standard and non-standard representations of 2-D and 3-D shapes. For example, they should notice that there is no such thing as an 'upside down triangle'; instead, it is just a triangle in a different orientation.

Key questions

- What is the difference between a 2-D and a 3-D shape?
- What is the name of this shape? How do you know?
- Does a _____ always look the same? Can you think of some examples?

Year 2 | Autumn term | Block 3 – Shape | Step 1

Recognise 2-D and 3-D shapes

Key learning

- Here are some shapes.

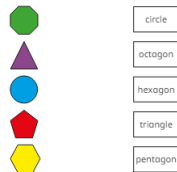


Which of the shapes are 2-D?

Which of the shapes are 3-D?

Can you find any other 2-D and 3-D shapes in your classroom?

- Match the 2-D shapes to the names.



- Match the 3-D shapes to the names.



Send child to ask them Questions: "How many sides?" "How many vertices?" "What shape is it?"

Year 2 | Autumn term | Block 3 – Shape | Step 1

Recognise 2-D and 3-D shapes

Reasoning and problem solving

Which shape is the odd one out in each set?

How do you know?

square
arrow shape

Do you agree with Tiny? Why?

These shapes are all triangles.

No

There is also an end of block assessment.

Shape A

Name _____

1 Match each shape to its name.

cube cylinder pyramid cone

2 Draw the next two shapes in each pattern.

3 Tick the shapes with a correct line of symmetry.

4 Complete the sentences.

This is a triangle
It has ____ sides.
It has 3 vertices.

This is a _____
It has ____ sides.
It has ____ vertices.

5 Complete the table.

Shape	Faces	Edges	Vertices
Cube	6		8
Square-based pyramid		8	5

6 Rosie is holding a 3-D shape. She is counting the number of 2-D faces she can see.

I can see 4 rectangles and 2 squares.

What shape is Rosie holding?

7 Amir has sorted some 3-D shapes.

Choose one correct label for each group from the labels below.

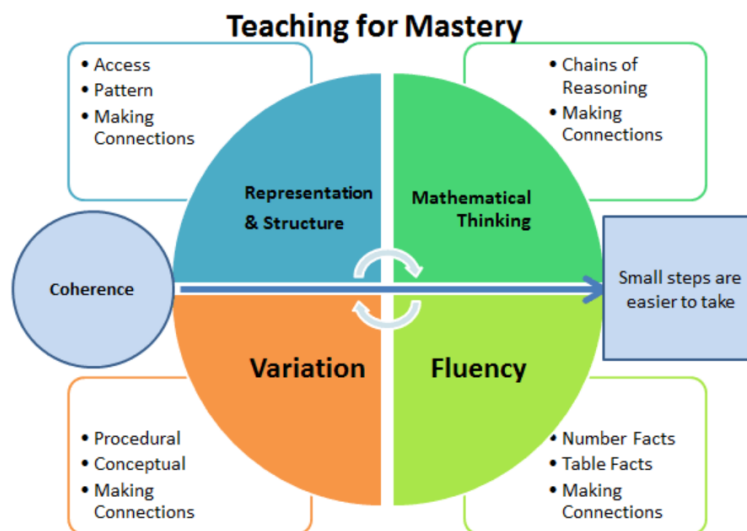
Cylinders Cuboids
Cubes Curved surfaces

In Years 1 and 2, teachers deliver a daily NCETM ‘Mastering Number’ session of 10 to 15 minutes in addition to their daily White Rose Maths lesson.

Teaching and Learning - A ‘Mastery’ Approach

The mastery-learning model means spending greater time going into depth when learning a concept or procedure and not racing through the curriculum. A mastery approach means that we are taking learning at a steadier and deeper pace, trying to ensure that children are not left behind; as well as providing deeper and richer experiences for children who are above the national expectation for their age. Effective teaching for mastery is underpinned by five big ideas.

Five Big Ideas



‘The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. 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. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.’ (National Curriculum)

What is Fluency?

Fluency comes from deep knowledge and practice. This is the first stage of pupils' understanding.

Fluency includes:

Accuracy – Pupils carefully completing calculations with no or few careless errors.

Pace – Pupils are able to quickly recall the appropriate strategy to solve the calculation and progress through a number of questions at an age appropriate pace.

Retention – Pupils will be able to retain their knowledge and understanding on a separate occasion to when the concept was first introduced.

What is Reasoning?

Verbal reasoning demonstrates that pupils understand the mathematics. Talk is an integral part of mastery as it encourages students to reason, justify and explain their thinking.

What is Problem Solving?

Mathematical problem solving is at the heart of the Mastery Approach. Pupils are encouraged to identify, understand and apply relevant mathematical principles and make connections between different ideas. This builds the skills needed to tackle new problems, rather than simply repeating routines without a secure understanding.

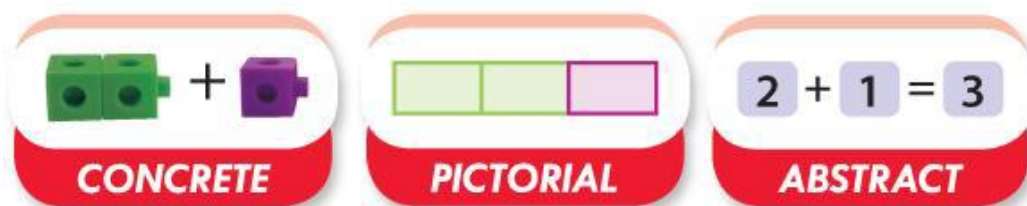
Mathematical concepts are explored in a variety of representations and problem-solving contexts to give pupils a richer and deeper learning experience. Pupils combine different concepts to solve complex problems, and apply knowledge to real-life situations. Through problem solving, pupils are required to select their mathematical knowledge and apply this to a new concept.

Problem solving is more than just word problems but the RUCSAC approach can be applied to this style of question:

- 1) Read / look at the problem
- 2) Understand the problem by underlining or discussing: What is the problem about?
- 3) Choose – Choose the operation required, the number facts or the approach.
- 4) Solve – Solve the problem by completing jottings on the page
- 5) Answer – complete the answer to the problem
- 6) Check – have I correctly answered the given problem or is there another step?

The CPA approach

The teaching and learning of mathematics at Hippings Methodist Primary School includes aspects of the following Mastery approach strategies in every lesson and/or over a series of lessons:



'Concrete, pictorial, abstract (CPA) is a highly effective approach to teaching that develops a deep and sustainable understanding of maths.' (Maths - no problem!)

Concrete

Concrete is the 'doing' stage, using concrete objects to model problems. Instead of the traditional method of mathematics teaching, where a teacher demonstrates how to solve a problem, the CPA approach brings concepts to life by allowing pupils to experience and handle physical objects themselves. Every new abstract concept is learned first with a 'concrete' or physical experience.

Pictorial

Pictorial is the 'seeing' stage, using representations of the objects to model problems. This stage encourages pupils to make a mental connection between the physical object and abstract levels of understanding by drawing or looking at pictures, circles, diagrams or models which represent the objects in the problem.

Abstract

Abstract is the "symbolic" stage, where children use abstract symbols to model problems. Students will not progress to this stage until they have demonstrated that they have a solid understanding of the concrete and pictorial stages of the problem.

Mathematical Talk

A mastery classroom should never be a quiet classroom! The way pupils speak and write about mathematics transforms their learning. Mastery approaches use a carefully sequenced, structured approach to introduce and reinforce mathematical vocabulary.

To encourage talk in mathematics, teachers may introduce concepts by including sentence structures (stem sentences). Pupils should be able to say not just what the answer is, but how they know it's right. This is key to building mathematical language and reasoning skills. This gives pupils the confidence to communicate their ideas clearly, before writing them down.

Example Stem Sentences:

The denominator is 5 because the whole has been divided into 5 equal parts.

The numerator is 3 because 3 equal parts have been shaded/circled.

Teachers then maintain a high expectation upon pupils to repeat and use the correct mathematical vocabulary to explain their understanding verbally and in their reflection comments. By also displaying the vocabulary during the lesson, pupils will be able to use this independently.

When questioning and encouraging mathematical talk, teachers should provide regular, purposeful opportunities. For example:

- Show me how to complete the calculation
- Teach your friend how to complete the calculation
- How do you know which operation to use?
- Why have you chosen this method?
- How else can you represent this number?
- What have you learnt today?
- True or False
- Prove it!
- Odd one out
- Sometimes, Always, Never

Resources

We have a range of practical resources to support learning including Numicon, Base10 and counters which are stored in individual classrooms where they are easily accessible to all children. These are used on a regular basis to ensure a solid understanding of the fundamentals of Mathematics. Additional resources are stored centrally in the Mathematics resources cupboards.

Classroom Environment

Classroom environments are mathematically rich and support current learning. Each class has a clearly visible and interactive 'working wall' featuring examples of the current topic and with an interchangeable display of mathematical symbols, numbers, times tables and vocabulary appropriate to the age range. Working walls are used throughout school to reinforce and consolidate children's knowledge and understanding of mathematical concepts.

Marking and feedback

It is recognised by the school that high quality next steps marking of maths is an essential tool to enhance children's learning. Marking should be both diagnostic and summative and school policy believes that it is best done through conversation with the child but acknowledges that constraints of time do not always allow this. All teachers employ a policy of next steps marking regularly in each child's book at an appropriate level for the child's understanding. For younger children this will more often be in the form of verbal feedback. In the older year groups children are expected to respond to the marking themselves. Please refer to the school's [Marking and Feedback Policy](#)

Homework

Maths homework tasks, either written or online, are regularly set to enhance and support the work that is taking place in class and parents are encouraged to be involved in their child's learning. Children are also encouraged to access the TTRockstars/NumBots app at least twice a week.

Assessment

There is no formal assessment for EYFS within the White Rose Maths schemes of learning. On-going assessment is formative, based on observations, photographs, video, things that children have made or drawn and information from parents. The Development Matters document is used as a guide to making best-fit judgements about a child's progress and attainment throughout the year. At the end of EYFS, children are assessed against the Early Learning Goals for Mathematics.

In Years 1- 6 the children are assessed on a termly basis and at the end of each block in the White Rose Maths scheme. Results are analysed and children are given an age related expectation from teacher assessment. This information is monitored by the Maths Subject Leader and Senior Leadership Team. Regular arithmetic and times table tests are also carried out and results recorded by individual teachers.

Formative Assessment:

Short term assessment is a feature of each lesson. Observations and careful questioning enable teachers to adjust lessons and brief other adults in the class if necessary.

At the end of each blocked unit of work, the children complete the carefully aligned White Rose Maths 'End of Unit Assessment'. The outcome of this is used by the teacher to ensure that any identified gaps in understanding can be addressed before the next unit is taught. Each child's scores are input on a class spreadsheet, which provides an overview of achievement in each specific area within the programme of study.

Summative Assessment:

Teachers administer a termly arithmetic paper and reasoning and problem-solving paper which specifically links to the coverage for that term. The results of these papers are used to identify children's ongoing target areas, which are communicated to the children, as well as to parents and carers at Parents Evening. They are also used alongside the end of unit assessments and outcomes of work, to inform the whole school tracking of attainment and progress of each child.

There are no official grade boundaries for the end of term White Rose Assessments. However, in line with the KS1 and KS2 SATs, the following is used as a guideline:

- KS1 – Year 1 - a consistent score of approximately 60% (15/25) would indicate 'Expected' and 85% (21/25) would indicate 'Greater Depth'.
- Year 2 - a consistent score of approximately 60% (21/35) would indicate 'Expected' and 85% (30/35) would indicate 'Greater Depth'.
- KS2 - a consistent score of approximately 55% (28/50) would indicate 'Expected' and 86% (43/50) would indicate 'Greater Depth'.

These tests should be used to inform teacher assessment.

At the end of each term, all teachers attend a Pupil Progress meeting to share data and to discuss pupils who are 'off target' on Sims. These pupils should be placed into an Intervention/Booster group with a SMART target.

End of year data is used to measure the extent to which attainment gaps for individuals and identified groups of learners are being closed. This data is used to inform whole school and subject development priorities for the next school year.

Home/school links

Parents are encouraged to support their children with the learning of KIRFS (Key Instant Recall Facts) and the completion of other mathematics homework which may be set. There are also sessions held occasionally to inform parents about how to enhance their child's learning in Maths and to inform them of some of the alternative methods of calculation.

Parents are given a formal opportunity to discuss their child's progress on two separate occasions throughout the year. Written reports are distributed at the end of the Summer term.

Teachers use the information gathered from their half-termly assessments to help them comment on the progress of individual children.

Inclusion and Equal Opportunities

The provision of maths teaching is regardless of race, gender or special educational needs and should allow all children to reach their full potential. We incorporate Mathematics into a wide range of cross-curricular subjects and teachers plan for pupils to practise and apply the skills, knowledge and understanding acquired through mathematic lessons to other areas of the curriculum.

Effective pupil tracking allows for the identification of students with additional needs and helps to close specific gaps in learning to enable all children to make good progress. Any child who is deemed to have special education needs in mathematics will have a maths target on a SEN Support Plan and be placed on the school's SEN register. They will be taught within the whole class daily Mathematics lesson and be encouraged to take part when and where possible. Pre-teaching will be used to close gaps to enable pupils to access lessons. On-the-day intervention will be given, where possible, for those children whose misconceptions have been identified within a session so that they are prepared for the next lesson.

Within the daily Mathematics lesson teachers will provide appropriate challenges for children who are high achievers in Mathematics. Children who regularly grasp concepts rapidly and have been assessed as having mastered objectives from their year group may be identified by their class teacher as Gifted and Talented. Planning for these pupils will focus on enrichment and the development of mathematical thinking rather than covering content more quickly.

IMPACT

At Hippings Methodist Primary School, our pupils will be aware of the relevance and importance of what they are learning in relation to real world concepts and be able to use their knowledge and understanding of mathematics confidently in day-to-day life. Children will demonstrate a positive attitude towards mathematics due to studying in an environment where maths is promoted as being exciting and enjoyable; a subject in which they can investigate and ask questions, in an atmosphere that embraces mistakes as opportunities for further learning. Our pupils will be fluent, competent and efficient mathematicians with the ability to recall facts and procedures, including the recollection of times tables. They will recognise relationships and make connections in maths. Pupils will be able to clearly explain their reasoning and justify their thought processes, having the flexibility to move between different contexts and representations of maths. Pupils will leave Hippings Methodist Primary School as confident, resilient, knowledgeable and skilful mathematicians ready for the next phase of their learning and future employment.

Monitoring and Evaluation

The Mathematics Subject Leader follows an annual action plan which has been prepared in line with the whole school development plan.

The Mathematics Subject Leader is released regularly from the classroom in order to monitor standards of teaching and learning, analyse data, carry out scrutinies of children's work and interview pupils. Findings from any monitoring are discussed initially with the Senior Leadership Team and also shared with teaching staff as appropriate.

The Governing Body

A governor responsible for Mathematics is identified from the governing body, currently Mrs A.M. Allonby, who often observes maths lessons throughout the school and routinely meets with the Subject Leader. Governors are invited to attend any Maths workshops or training days. The Subject Leader regularly reports to meetings of the curriculum committee of the governing body.

Subject Lead: Mrs K O'Hare

Policy reviewed: June 2024

