Hill Farm

Maths Policy

Local Level Policy

Date effective	October 2022
Review Cycle	Two yearly
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Date of Approval by Governors	
Headteacher	
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Introduction

At Hill Farm, we believe that every child should be excited by and talk passionately about Maths. The skills gained here will enable children to grow and develop into critical thinkers and problem solvers. We have adopted a mastery approach to the learning and teaching of mathematics to nurture wellrounded mathematicians.

Mathematics in our school is enhanced by individual classroom environments, which are teeming with rich vocabulary and supportive models, through our Times Table Rockstar competitions as well as our collaborations with external organisations where children participate in games and competitions.

The school's aims are to:

- Deliver a rich and engaging mathematical curriculum, which supports the development of children's fluency, reasoning and problem solving skills, in line with the National Curriculum 2014;

- To introduce new mathematical concepts using the concrete, pictorial, abstract (CPA) approach to learning where new skills are modelled with accessible apparatus, visual prompts and high quality resources;

- Use a child-led approach whereby pupils can take ownership of their learning and choose their own level of challenge. To encourage children to work collaboratively, prompting mathematical talk and developing rich vocabulary;

- Practice mental arithmetic daily using cross-curricular and real life links;

- Ensure problem solving is at the heart of every lesson to apply the children's knowledge of new skills and develop them into critical thinkers;

- To thread key values such as determination, cooperation and resilience throughout every Maths lesson, enabling children to feel confident enough to challenge themselves and learn from their mistakes

The National Curriculum aims in Maths are to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils 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.

Objectives

As a school, we have adopted to follow the White Rose Scheme of Learning. This curriculum is delivered across blocks of learning each with progressive steps. This ensures that each unit is covered in depth to achieve conceptual understanding as well as providing further opportunities for pupils to apply their skills across a variety of problem solving activities. The curriculum is also cumulative so that once a topic is covered it is met many times again in different contexts to embed and deepen understanding. Access to the Schemes of Learning can be found at
https://whiterosemaths.com/resources/schemes-of-learning/primary-sols/

Key Stage 1

Throughout Year 1 and Year 2, pupils will be taught about whole numbers, counting and place value, working with numbers up to 100. Pupils should begin to develop their confidence and mental fluency, using practical resources to support their understanding. They will be taught to apply numbers up to 100 across the four operations and through different measures including length, mass, capacity/volume, time and money. Pupils will develop their ability to recognise, describe, draw, compare and sort different shapes. By the end of year 2, pupils should know and be fluent with their number bonds to 20.

Year 1

	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 (within 10)				Number: Addition and Subtraction (within 10)				Geometry: Shape	Number: Place Value (within 20)		Consolidation
Spring	Number: Addition and Subtraction (within 20)				Number: Place Value (within 50)			Measurement: Length and Height		Measurement: Weight and Volume		Consolidation
Summer	Number: Multiplication and Division			Number: Fractions		Geometry: Position and Direction	Number: Place Value (within 100)		Measurement: Money	Measurement: Time		Consolidation

Year 2

	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					Measurement: Money		Number: Multiplication and Division	
Spring	Number: Multiplication and Division		Statistics		Geometry: Properties of Shape			Number: Fractions			Measurement: Length and Height	Consolidation
Summer	Geometry: Position and Direction			Problem solving and efficient methods		Measurement: Time		Measurement: Mass, Capacity and Temperature			Investigations	

Lower Key Stage 2

Across Year 3 and Year 4, pupils will become increasingly fluent with whole numbers up to and including 1000, applying them across all four calculations and including the concept of the place holder. When secure with this number fluency, pupils will develop efficient written and mental methods, performing calculations accurately across a range of problems including those with simple fractions and decimals. Pupils will be taught to analyse shapes and their properties, and confidently describe the relationships between them. They will learn to 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 times tables showing readiness for the national Multiplication Checks.

Year 3

	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					Number: Multiplication and Division			Consolidation
Spring	Number: Multiplication and Division			Measurement: Money	Statistics		Measurement: Length and Perimeter			Number: Fractions		Consolidation
Summer	Number: Fractions			Measurement: Time			Geometry: Properties of Shape		Measurement: Mass and Capacity			Consolidation

Year 4

	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			Measurement: Length and Perimeter	Number: Multiplication and Division			Consolidation
Spring	Number: Multiplication and Division			Measurement: Area	Number: Fractions				Number: Decimals			Consolidation
Summer	Number: Decimals		Measurement: Money		Measurement: Time	Statistics		Geometry: Properties of Shape			Geometry: Position and Direction	Consolidation

Upper Key Stage 2

Across Year 5 and Year 6 pupils will **e**xtending their understanding of the number system and place value to include larger integers up to 10 million in year 6. Children will be taught to make connections between multiplication and division with fractions, decimals, percentages and ratio. With this confidence in number, pupils will be developing their ability to solve a wider range of problems, using their efficient written and mental methods of calculation. In year 6, pupils are introduced to the language of algebra as a means for solving a variety of problems. In geometry, pupils will classify shapes with increasingly complex geometric properties and they will 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.
Year 5

	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		Statistics		Number: Multiplication and Division		Measurement: Perimeter and Area		Consolidation
Spring	Number: Multiplication and Division		Number: Fractions							Number: Decimals and Percentages		Consolidation
Summer	Number: Decimals				Geometry: Properties of Shape			Geometry: Position and Direction	Measurement: Converting Units		Measurement: Volume	Consolidation

Year 6

	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, Subtraction, Multiplication and Division				Number: Fractions				Geometry: Position and Direction	Consolidation
Spring	Number: Decimals		Number: Percentages		Number: Algebra		Measurement: Converting Units	Measurement: Perimeter, Area and Volume		Number: Ratio		Consolidation
Summer	Geometry: Properties of Shape		Problem Solving			Statistics		Investigations				Consolidation

Planning and Evaluation

The long term plan set out by White Rose is followed in every year group to ensure efficient coverage and skills progression. Using the small steps of learning from each block, teachers plan their lessons, ensuring they include engaging activities, which are differentiated to meet the needs of all learners. Each lesson includes mental arithmetic to aid fluency skills and new concepts are taught using the CPA approach. The formal written methods taught at each key stage are progressive and can be found in our **calculation policy**. Across each small step, every child will be challenged appropriately and will apply their new conceptual understanding across varied reasoning and problem solving opportunities. Accurate pitch and quality of lessons are regularly monitored by the subject leader.

<u>Assessment</u>

Assessment for each new objective taught is ongoing and assessed by the class teacher. Within each lesson, pupils` understanding is checked through observations, questioning and discussion as well as any written outcomes produced. The teacher offers regular verbal and written feedback to each child so pupils are aware of their individual targets. Misconceptions are addressed and pupils are given the opportunity to reflect and respond to these. The teacher also uses feedback as an opportunity to challenge children further by providing questions that expand thinking.

As well as this, summative assessment is carried out at the end of a unit as well as the end of each term. These assessments are provided by, and therefore in line with, the White Rose schemes of learning. Formal end of term assessments are designed and produced to reflect SATS assessments and include an arithmetic paper as well as a reasoning and problem solving paper. Teachers are able to use these assessments to support their teacher judgements and the pupils` overall attainment and progress can be reported on and shared with parents/carers. These judgements are supported by ongoing moderation, both across school as well as across consortium schools.