Mathematics

Intent

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.

At Longthorpe Primary Academy, we believe that all children can achieve in mathematics, and develop a deep, long-lasting understanding of key concepts. We have chosen to use the White Rose Maths programme as the foundation of our mathematics curriculum because of its strong pedagogical approach, which is rooted in mastery principles. This programme also aligns closely with the expectations of the National Curriculum and provides a clear, progressive structure that ensures all pupils develop fluency, reasoning, and problem-solving skills in a way that is accessible and engaging. Ultimately, our aim is to:

- Develop confident, resilient, and curious mathematicians who see maths as an interconnected subject that applies to real-life situations.
- Ensure that all pupils secure a deep conceptual understanding of mathematical concepts before moving on to new content.
- Embed fluency, reasoning, and problem-solving skills into every lesson, ensuring children develop the ability to apply their knowledge flexibly.
- Provide a coherent, cumulative curriculum that follows a carefully structured sequence of learning, preventing gaps in knowledge.
- Foster a growth mindset in mathematics, ensuring that all pupils believe in their ability to succeed and view mistakes as learning opportunities.
- Ensure that all children, regardless of background or ability, develop a strong foundation in mathematics that prepares them for the next stages of their education and beyond.

Implementation

The White Rose Maths programme follows a 'small-steps' approach to teaching and learning. This ensures that knowledge is broken down into manageable chunks, allowing pupils to develop deep understanding before progressing. The programme is designed around the principles of teaching for 'mastery', influenced by research from organisations such as the National Centre for Excellence in the Teaching of Mathematics (NCETM) and international education systems such as Shanghai and Singapore Maths.

Key features of our curriculum include:

- Daily maths lessons following the White Rose Maths framework, ensuring a clear progression of knowledge and skills.
- A concrete-pictorial-abstract (CPA) approach, where children first explore concepts using physical manipulatives, then pictorial representations, and finally abstract notation. This approach ensures a deep and secure understanding.
- Fluency, reasoning, and problem-solving tasks embedded in every lesson to encourage children to apply their mathematical knowledge in different contexts.
- Opportunities for all learners, including carefully planned scaffolding for those who need additional support and challenge for those who grasp concepts quickly.
- Regular retrieval practice and formative assessment, ensuring that key knowledge is retained and misconceptions are addressed promptly.
- A focus on mathematical vocabulary, ensuring that children can articulate their reasoning clearly and confidently.
- Cross-curricular links, where appropriate, to demonstrate the relevance of mathematics in other subjects and real-life applications.

The curriculum is underpinned by the following core concepts:

Mastery	Depth Before Breadth	Putting Number First	C.P.A.
The teaching for mastery approach means that all pupils move through the curriculum at broadly the same pace, with extra support provided where necessary. Pupils who grasp concepts more quickly are challenged through deeper reasoning tasks, rather than accelerating through new content.	This approach emphasises mastering fundamental concepts thoroughly before moving on to more advanced topics. This method ensures a strong foundation, allowing pupils to understand and apply basic principles deeply. By focusing on depth, learners can build a solid base, making it easier to grasp complex ideas later on.	Our curriculum has number at its heart. A significant amount of teaching time is spent reinforcing number in order to build competency and ensure pupils can confidently access the rest of the curriculum.	Research shows that children should build competency using the CPA approach. Pupils firstly work with physical objects, in order to bring the maths to life and to build understanding. Then, pupils work with pictorial representations, making links to the concrete. Finally, pupils can then develop their understanding of abstract methods as they have a solid understanding of the maths.

In the EYFS (and as in addition to the White Rose Maths programme in years 1 and 2), we also teach using the 'Mastering Number' programme. This programme, developed by the National Centre for Excellence in the Teaching of Mathematics (NCETM), is designed to help children develop firm foundations in early number sense, ensuring they build fluency, confidence, and flexibility with number facts. We have chosen to incorporate 'Mastering Number' because:

- It develops strong number fluency, ensuring children become confident in recognising, comparing, and manipulating numbers within 10 and 20.
- It provides daily, structured practice that deepens understanding of key number concepts, preventing gaps from developing early on.
- It reinforces the conceptual understanding of number, ensuring children can visualise and reason about numbers rather than relying on rote learning.
- It supports the automatic recall of number facts, such as number bonds and doubles, which are essential for mental arithmetic.
- It helps children build mathematical resilience, promoting a positive attitude towards number work.

By embedding this programme in our EYFS and KS1 curriculum, we ensure that pupils enter Key Stage 2 with strong foundational knowledge, allowing them to confidently tackle more complex mathematical concepts. The fluency developed through 'Mastering Number' reduces cognitive load in later years, ensuring that pupils can focus on problem-solving and reasoning without struggling with basic number recall. This additional focus on fluency supports all learners, particularly those who may struggle with number sense, and provides a consistent, structured approach to early maths that aligns well to our core maths curriculum. There are five key aspects to the Mastering Number programme that are covered from the EYFS to Year 2.

Subitising	**Composition**	**Comparison**	**Counting, ordinality and cardinality**	**Number facts and arithmetic**
This involves recognizing the number of objects in a small group without counting. It's a foundational skill that helps children quickly identify quantities and develop number sense.	This area focuses on understanding how numbers are made up of other numbers. For example, knowing that 5 can be composed of 2 and 3. It helps children grasp the concept of part-whole relationships.	This involves comparing quantities to determine which is larger, smaller, or if they are equal. It helps children develop an understanding of relative size and order.	Counting: Learning to count objects accurately. Ordinality: Understanding the position of numbers in a sequence (e.g., first, second, third). Cardinality: Recognising that the last number counted represents the total number of objects.	This area covers basic number facts (like addition and subtraction facts) and arithmetic operations. It helps children develop fluency in calculations and a deeper understanding of how numbers work.

The Journey of a Mathematician at Longthorpe

EYFS	By the end of the EYFS, pupils will: • Have a deep understanding of number to 10, including the composition of each number. • Subitise (recognise quantities without counting) up to 5. • Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. • Verbally count beyond 20, recognising the pattern of the counting system. • Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. • Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally. count reliably with numbers from one to 20.
KS1	By the end of KS1, pupils will: • Develop confidence and mental fluency with whole numbers, counting and place value. This will involve working with numerals, words and the four operations, including with practical resources. • Develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. • Describe and compare different quantities such as length, mass, capacity/volume, time and money. • Know the number bonds to 20 and be precise in using and understanding place value. • Read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at KS1.
LKS2	By the end of Lower KS2, pupils will: • Become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. • Develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. • Develop their ability to solve a range of problems, including with simple fractions and decimal place value. • Draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. • Use measuring instruments with accuracy and make connections between measure and number. • Have memorised their multiplication tables up to and including the 12-multiplication table and show precision and fluency in their work. • Read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.
UKS2	By the end of Upper KS2, pupils will: • Extend their understanding of the number system and place value to include larger integers. • Develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio. • Develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. • Be introduced to the language of algebra as a means for solving a variety of problems. • Consolidate and extend knowledge developed in number and link to geometry and measures. • Classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. • Be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. • Read, spell and pronounce mathematical vocabulary correctly.

Units Overview

		YEAR 6														
		HT 1								HT 2						
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7
AUTUMN	Unit	AW	Place Value		Four Operations					Fractions A		Fractions B		AW + Revision	Converting Units	Position & Direction
	Unit Quiz					Place Value				Four Operations			Fractions A		Fractions B	
	Daily Arithmetic	Revise Year 5 Four Operations					Place Value			Place Value	Four Operations					Fractions A + B
SPRING	Unit	Algebra		Decimals		FDP				Area, Perimeter & Volume		AW + Revision	Statistics			
	Unit Quiz						Decimals			FDP						
	Daily Arithmetic	Fractions A + B								Decimals	FDP					
SUMMER	Unit	Ratio	Revision & Consolidation			SATs	R + C			Shape			Revision & Consolidation / Themed Projects			
	Unit Quiz															
	Daily Arithmetic	Revision & Consolidation														

YEAR 5

		HT 1								HT 2						
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7
AUTUMN	Unit	AW	Place Value			Addition & Subtraction		Multiplication & Division A		Multiplication & Division A		Fractions A		AW + Revision	Fractions A	
	Unit Quiz						Place Value		Add & Sub				Mult & Div A			
	Daily Arithmetic	Revise Year 4 Four Operations						Place Value		Addition & Subtraction				Multiplication & Division A		
SPRING	Unit	Multiplication & Division B			Fractions B		Dec-imals & Percent-ages			Decimals & Percentages		AW + Revision	Perimeter & Area			
	Unit Quiz	Frac-tions A				Mult & Div B				Frac-tions B			Decimals & Perc			
	Daily Arithmetic	Mult & Div A	Fractions A				Mult & Div B			Mult & Div B	Fractions B			Decimals & Perc		
SUMMER	Unit	Statistics		Position & Direction		Decimals				Decimals	Negative Numbers	AW + Revision	Converting Units		Volume	Consoli-dation & Revision
	Unit Quiz															
	Daily Arithmetic	Decimals & Percentages				Consolidation & Revision				Consolidation & Revision						

YEAR 4

		HT 1								HT 2						
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7
AUTUMN	Unit	AW	Place Value				Addition & Subtraction			Area	Multiplication & Division A			AW + Revision	Consolidation & Revision	
	Unit Quiz							Place Value		Addition & Subtrac-tion					Mult & Div A	
	Daily Arithmetic	Revise Year 3 Four Operations							Place Value	Place Value	Addition & Subtraction					Mult & Div A
SPRING	Unit	Multiplication & Division B			Stat-istics		Fractions			Fractions		AW + Revision	Length & Perimeter			
	Unit Quiz					Mult & Div B							Frac-tions			
	Daily Arithmetic	Multiplication & Division A					Mult & Div B			Multiplication & Division B				Frac-tions		
SUMMER	Unit	Decimals A		Decimals B		Money				Time		AW + Revision	Shape		Position & Direction	
	Unit Quiz						Dec-imals A + B									
	Daily Arithmetic	Fractions								Decimals A + B			Consolidation & Revision			

YEAR 3

HT 1

		1	2	3	4	5	6	7	8
AUTUMN	Unit	AW	Place Value			Addition & Subtraction			
	Unit Quiz						Place Value		
	Daily Arithmetic	Revise Year 2 Four Operations						Place Value	
SPRING	Unit	Multiplication & Division B			Length & Perimeter				
	Unit Quiz	Mult & Div A				Mult & Div B			
	Daily Arithmetic	Add & Sub	Multiplication & Division A				Mult & Div B		
SUMMER	Unit	Mass & Capacity			Fractions B		Money		
	Unit Quiz	Frac-tions A							
	Daily Arithmetic	Mult & Div B	Fractions A						

HT 2

		1	2	3	4	5	6	7
AUTUMN	Unit	Addition & Subtraction		Multiplication & Division A		AW + Revision	Multiplication & Division A	
	Unit Quiz				Add & Sub			
	Daily Arithmetic	Place Value				Addition & Subtraction		
SPRING	Unit	Fractions A		AW + Revision	Fractions A			
	Unit Quiz							
	Daily Arithmetic	Multiplication & Division B						
SUMMER	Unit	Time		AW + Revision	Shape	Statistics		
	Unit Quiz	Frac-tions B						
	Daily Arithmetic	Frac-tions A	Fractions B		Consolidation & Revision			

YEAR 2

HT 1

		1	2	3	4	5	6	7	8
AUTUMN	Unit	AW	Place Value				Addition & Subtraction		
	Mastering Number		Compo-sition	Comp-arison	Composition				Consolidation
			6, 7, 8 and 9 as 5 and a bit.	Inequal-ity and equals symbol.	Odd and even.	Focus on 6.	Focus on 8.	Focus on 10.	
SPRING	Unit	Multiplication & Division							
	Mastering Number	Num-ber Facts	Compo-sition	Number Facts			Consolidation		
		Doubl-ing to 10	Focus on 20.	Num-ber bonds to 10.	Doubles and near doubles.				
SUMMER	Unit	Fractions			Time				
	Mastering Number	Count-ing	Number Facts			Compo-sition	Consolidation		
		Mult-iples of 10.	Addition and subtraction.			Focus on 20.			

HT 2

		1	2	3	4	5	6	7
AUTUMN	Unit	Addition & Subtraction			Shape	AW + Revision	Shape	
	Mastering Number	Composition				Count-ing	Consolidation	
		Odd and even.	Focus on 7.	Focus on 9.	11 – 19 as 10 and a bit.	Numbers to 20.	Consolidation	
SPRING	Unit	Money		AW + Revision	Length & Height			
	Mastering Number	Number Facts						
		Add 3 numbers.	Add by bridging 10.		Subtract by bridging 10.			
SUMMER	Unit	Mass, Capacity & Temp		AW + Revision	Statistics		Position & Direction	
	Mastering Number	Comp-arison	Number Facts				Consolidation	
		Inequal-ity and equals symbol.	Doubles and near doubles.	Addition.	Number bond fluency.	Addition and sub-traction.	Consolidation	

YEAR 1

HT 1

		1	2	3	4	5	6	7	8
AUTUMN	WR Unit	AW	Place Value (within 10)					Addition & Subtraction (within 10)	
	Mastering Number		Composition			Comp-arison	Count-ing	Compo-sition	Consolidation
			Focus on 5.	6, 7, 8, 9 as 5 and a bit.		More than, fewer than.	1 more, 1 less.	Doub-les.	
SPRING	WR Unit	Place Value (within 20)			Addition & Subtraction (within 20)				
	Mastering Number	Composition				Consolidation			
		Focus on 7.	Focus on 9.	Odd and even.	Part-part-whole.				
SUMMER	WR Unit	Mass & Volume		Multiplication & Division		Money			
	Mastering Number	Compo-sition	Count-ing	Number Facts		Compo-sition	Consolidation		
		11 – 15 as 10 and a bit.	11 – 15 on a number line.	Read, write and interpret expressions and equations (+).		6, 7 , 8 and 9.			

HT 2

		1	2	3	4	5	6	7
AUTUMN	WR Unit	Addition & Subtraction (within 10)				AW + Revision	Shape	Consolid-ation
	Mastering Number	Composition				Count-ing	Consolidation	
		Odd and even.	Focus on 6.	Focus on 8.	Focus on 10.	Number lines.	Consolidation	
SPRING	WR Unit	Place Value (within 50)		AW + Revision	Length & Height			
	Mastering Number	Compo-sition	Number Facts					
		Parti-tioning to 10.	1 more, 1 less.	Add / subtract 2.	Subtract from 6, 8 and 10.	Subtract from 5, 7 and 9.		
SUMMER	WR Unit	Fractions		AW + Revision	Place Value (within 100)		Time	Position & Direc-tion
	Mastering Number	Compo-sition	Number Facts				Consolidation	
		11 – 19 as 10 and a bit.	Read, write and interpret expressions and equations (-).		Applying knowledge of composition when + or - .		Consolidation	

		EYFS													
		HT 1								HT 2						
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7
AUTUMN	Mastering Number	Baseline Assessments		Subit-ising	Count-ing	Compo-sition	Subit-ising	Comp-arison	Consolidation	Count-ing	Comp-arison	Composition		Count-ing	Consolidation	
				Subitising to 3.	Counting Skills.	Numbers are made of 1s. Composition of 3 and 4.	Subitise objects and sounds.	Comparison of sets just by looking. More &		The fiveness of five.	Comparison of sets just by matching. More, fewer & equal.	Whole & part.	Composition of 3, 4 and 5.	Match numerals to quantities to 10. Verbal counting beyond 20.		
SPRING	Mastering Number	Subit-ising	Count-ing	Composition			Consolidation			Count-ing	Comp-arison	Composition				
		Subitising to 5.	Counting: ordinality and the staircase pattern.	Focus on 5.	Composition of 6 and 7 as 5 and a bit.	Make unequal sets equal. More, fewer and equal.				Counting: ordinality and the staircase pattern.	Numbers to 8. Less than.	Focus on 7.	Doubles – 2 equal parts.	Odd and even numbers. Sorting according to attributes.		
SUMMER	Mastering Number	Count-ing	Subit-ising	Composition		Comp-arison	Consolidation			Subit-ising	Number Facts	Compo-sition	Comp-arison	Counting		Consolidation
		Larger sets and things that cannot be seen.	Subitising to 6.	5 and a bit.	Composition to 10.	Comparison and ordinality.				Subitising beyond 5.	Recall of number bonds to 5.	Composition to 10.	Numbers to 10.	Number patterns.	Counting beyond 20.	

Progression of Knowledge and Skills

Below is the National Curriculum for maths mapped out as part of the White Rose Maths programme. In each of the major topic areas (Number, Measurement, Geometry and Statistics), the curriculum has been broken down into key sub-sections.

Number: Place Value Counting					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Count numbers to 100 in numerals; count in multiples of twos, fives and tens	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.	Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.	Count in multiples of 6, 7, 9, 25 and 1000. Count backwards through zero to include negative numbers.	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. Count forwards and backwards with positive and negative whole numbers, including through zero.	

Number: Place Value Representing Number					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Identify and represent numbers using objects and pictorial representations. Read and write numbers to 100 in numerals. Read and write numbers from 1 to 20 in numerals and word.	Read and write numbers to at least 100 in numerals and in words. Identify, represent and estimate numbers using different representations, including the number line.	Identify, represent and estimate numbers using different representations. Read and write numbers up to 1000 in numerals and in words.	Identify, represent and estimate numbers using different representations. Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	Read, write, (order and compare) numbers to at least 1 000 000 and determine the value of each digit, Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	Read, write, (order and compare) numbers up to 10 000 000 and determine the value of each digit.

Number: Place Value Using & Comparing					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Given a number, identify one more and one less.	Recognise the place value of each digit in a two-digit number (tens, ones). Compare and order numbers from 0 up to 100; use and = signs.	Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). Compare and order numbers up to 1000.	Find 1000 more or less than a given number. Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). Order and compare numbers beyond 1000.	(Read, write) order and compare numbers to at least 1 000 000 and determine the value of each digit.	(Read, write), order and compare numbers up to 10 000 000 and determine the value of each digit.

Number: Place Value Problems / Rounding					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Use place value and number facts to solve problems.	Solve number problems and practical problems involving these ideas.	Round any number to the nearest 10, 100 or 1000. Solve number and practical problems that involve all of the above and with increasingly large positive numbers.	Interpret negative numbers in context Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. Solve number problems and practical problems that involve all of the above.	Round any whole number to a required degree of accuracy. Use negative numbers in context, and calculate intervals across zero. Solve number and practical problems that involve all of the above.

Number: Addition & Subtraction Calculations					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Add and subtract one-digit and two digit numbers to 20, including zero.	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: - a two-digit number and ones	Add and subtract numbers mentally, including: - a three-digit number and ones - a three-digit number and tens	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).	Perform mental calculations, including with mixed operations and large numbers. Use their knowledge of the order of operations to

	- a two-digit number and tens - two two-digit numbers - adding three one digit numbers.	- a three-digit number and hundreds. Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.		Add and subtract numbers mentally with increasingly large numbers.	carry out calculations involving the four operations.

Number: Addition & Subtraction Problems					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9.	Solve problems with addition and subtraction: - using concrete objects and pictorial representations, including those involving numbers, quantities and measures - applying their increasing knowledge of mental and written methods.	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	Solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why.	Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why. Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.	Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why.

Number: Multiplication & Division Recall / Use					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	Recall multiplication and division facts for multiplication tables up to 12 × 12. Use place value, known and derived facts to multiply and divide	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. Know and use the vocabulary of prime	Identify common factors, common multiples and prime numbers. Use estimation to check answers to calculations and determine, in the context of a problem, an

	Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.		mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. Recognise and use factor pairs and commutativity in mental calculations.	numbers, prime factors and composite (non-prime) numbers. Establish whether a number up to 100 is prime and recall prime numbers up to 19. Recognise and use square numbers and cube numbers, and the notation for squared and cubed.	appropriate degree of accuracy.

Number: Multiplication & Division Calculations					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs.	Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.	Multiply numbers up to 4 digits by a one-or two-digit number using a formal written method, including long multiplication for two digit numbers. Multiply and divide numbers mentally drawing upon known facts. Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting

					remainders according to the context. Perform mental calculations, including with mixed operations and large numbers.

Number: Multiplication & Division Problems					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.	Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.	Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	Solve problems involving addition, subtraction, multiplication and division.

Number: Multiplication & Division Combined					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.	Use their knowledge of the order of operations to carry out calculations involving the four operations.

Number: Fractions, Decimals & Percentages

Fractions: Recognise & Write					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise, find and name a half as one of two equal parts of an object, shape or quantity. Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	Recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity.	Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. Recognise, find and write fractions of a discrete set of objects: unit fractions and non unit fractions with small denominators. Recognise and use fractions as numbers: unit fractions and non unit fractions with small denominators.	Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5].	

Number: Fractions, Decimals & Percentages Fractions: Compare					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Recognise the equivalence of 2/4 and 1/2.	Recognise and show, using diagrams, equivalent fractions with small denominators. Compare and order unit fractions, and fractions with the same denominators.	Recognise and show, using diagrams, families of common equivalent fractions.	Compare and order fractions whose denominators are all multiples of the same number.	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. Compare and order fractions, including fractions > 1.

Number: Fractions, Decimals & Percentages Fractions: Calculations					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Write simple fractions for example, 1/2 of 6 = 3.	Add and subtract fractions with the same denominator within one	Add and subtract fractions with the same denominator.	Add and subtract fractions with the same denominator and	Add and subtract fractions with different denominators and mixed

		whole [for example, 5/7 + 1/7 = 6/7].		denominators that are multiples of the same number. Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	numbers, using the concept of equivalent fractions. Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, 1/4 × 1/2 = 1/8]. Divide proper fractions by whole numbers [for example 1/3 ÷ 2= 1/6].

Number: Fractions, Decimals & Percentages **Fractions: Problems**					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Solve problems that involve all of the above.	Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.		

Number: Fractions, Decimals & Percentages **Decimals: Recognise, Write & Compare**					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			Recognise and write decimal equivalents of any number of tenths or hundredths. Recognise and write decimal equivalents to 1/4, 1/2, 3/4. Round decimals with one decimal place to the nearest whole number.	Read and write decimal numbers as fractions [for example, 0.71 = 71/100]. Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. Round decimals with two decimal places to the	Identify the value of each digit in numbers given to three decimal places.

			Compare numbers with the same number of decimal places up to two decimal places.	nearest whole number and to one decimal place. Read, write, order and compare numbers with up to three decimal places.	

Number: Fractions, Decimals & Percentages Combined					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			Solve simple measure and money problems involving fractions and decimals to two decimal places.	Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal. Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25.	Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8]. Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

Number: Ratio, Proportion & Algebra Ratio & Proportion					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.

					Solve problems involving the calculation/use of percentages for comparison. Solve problems involving similar shapes where the scale factor is known or can be found. Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Number: Ratio, Proportion & Algebra **Algebra**					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					Use simple formulae. Generate and describe linear number sequences. Express missing number problems algebraically. Find pairs of numbers that satisfy an equation with two unknowns. Enumerate possibilities of combinations of two variables.

Measurement **Using Measures**					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Compare, describe and solve practical problems for:	Choose and use appropriate standard units to estimate and measure length/height in any	Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).	Convert between different units of measure [for example, kilometre to metre; hour to minute].	Convert between different units of metric measure.	Solve problems involving the calculation and conversion of units of measure, using decimal

- lengths and heights - mass/weight - capacity and volume - time. Measure and begin to record the following: - lengths and heights - mass/weight - capacity and volume - time (hours, minutes, seconds).	direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. Compare and order lengths, mass, volume/capacity and record the results using >, < and =.		Estimate, compare and calculate different measures.	Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.	notation up to 3 d.p. where appropriate. Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 d.p. Convert between miles and kilometres.

Measurement Money					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise and know the value of different denominations of coins and notes.	Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. Find different combinations of coins that equal the same amounts of money. Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.	Add and subtract amounts of money to give change, using both £ and p in practical contexts.	Estimate, compare and calculate different measures, including money in pounds and pence.	Use all four operations to solve problems involving measure [for example, money].	

Measurement Time					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]. Recognise and use language relating to dates, including days of the week, weeks, months and years. Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	Compare and sequence intervals of time. Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. Know the number of minutes in an hour and the number of hours in a day.	Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12 hour and 24-hour clocks. Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight. Know the number of seconds in a minute and the number of days in each month, year and leap year. Compare durations of events [for example to calculate the time taken by particular events or tasks].	Read, write and convert time between analogue and digital 12 and 24-hour clocks. Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	Solve problems involving converting between units of time.	Use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa.

Measurement Perimeter, Area & Volume					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Measure the perimeter of simple 2-D shapes.	Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. Find the area of rectilinear shapes by counting squares.	Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. Calculate and compare the area of rectangles (including squares) and including using standard	Recognise that shapes with the same areas can have different perimeters and vice versa. Recognise when it is possible to use formulae for area and volume of shapes.

				units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes. Estimate volume [for example, using blocks to build cuboids] and capacity [for example, using blocks to build cuboids] and capacity [for example, using water].	Calculate the area of parallelograms and triangles. Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units.

Geometry 2D-Shapes					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise and name common 2 D shapes [for example, rectangles (including squares), circles and triangles].	Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]. Compare and sort common 2-D shapes and everyday objects.	Draw 2-D shapes.	Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. Identify lines of symmetry in 2-D shapes presented in different orientations.	Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. Use the properties of rectangles to deduce related facts and find missing lengths and angles.	Draw 2-D shapes using given dimensions and angles. Compare and classify geometric shapes based on their properties and sizes. Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.

Geometry 3D-Shapes					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise and name common 3 D shapes [for example, cuboids (including cubes), pyramids and spheres].	Recognise and name common 3 D shapes [for example, cuboids (including cubes), pyramids and spheres].	Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them.		Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.	Recognise, describe and build simple 3-D shapes, including making nets.

	Compare and sort common 3-D shapes and everyday objects.				

Geometry Angles & Lines					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Recognise angles as a property of shape or a description of a turn. Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle. Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	Identify acute and obtuse angles and compare and order angles up to two right angles by size. Identify lines of symmetry in 2-D shapes presented in different orientations. Complete a simple symmetric figure with respect to a specific line of symmetry.	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles. Draw given angles, and measure them in degrees. Identify: - angles at a point and one whole turn (total 360°) - angles at a point on a straight line and a turn (total 180°) - other multiples of 90°.	Find unknown angles in any triangles, quadrilaterals, and regular polygons Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Geometry Position & Direction					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Describe position, direction and movement, including whole, half, quarter and three-quarter turns.	Order and arrange combinations of mathematical objects in patterns and sequences. Use mathematical vocabulary to describe position, direction and movement, including movement in a straight		Describe positions on a 2-D grid as coordinates in the first quadrant. Describe movements between positions as translations of a given unit to the left/right and up/down.	Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.	Describe positions on the full coordinate grid (all four quadrants). Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

	line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).		Plot specified points and draw sides to complete a given polygon.		

Statistics **Present & Interpret Data**					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Interpret and construct simple pictograms, tally charts, block diagrams and simple tables,	Interpret and present data using bar charts, pictograms and tables.	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	Complete, read and interpret information in tables, including timetables.	Interpret and construct pie charts and line graphs and use these to solve problems.

Statistics **Solve Statistical Problems**					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. Ask and answer questions about totalling and comparing categorical data.	Solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	Solve comparison, sum and difference problems using information presented in a line graph.	Calculate and interpret the mean as an average.