

# **Maths Curriculum**



#### **Intent**

At Maple, our intent for mathematics is to teach a broad, balanced and progressive curriculum that excites and enables our children to use Maths to reason, problem solve and develop fluent conceptual understanding in each area. We want all pupils to develop a sense of curiosity about the subject which will help them to make better make sense of the world around them relating the pattern between mathematics and everyday life through practical tasks and real life problem solving.

We believe that they will achieve this as they

- Become fluent in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- Develop the ability to solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios.
- Reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.
- Have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately to be successful in mathematics.



#### **Implementation**

We teach the National Curriculum primarily through Herts for Learning's Essential Maths scheme, enabling us to deliver a carefully planned progression of knowledge and skills that ensures consistency across the key stages. The mapping of Mathematics across school shows clear progression in line with age related expectations. Pupils are challenged and we encourage a child led approach whereby pupils can take ownership of their learning, This ensures that skills and knowledge are built on year by year and sequenced appropriately to maximise learning for all children.

With a growth mindset, children 'have a go' and choose the equipment they need to help them to learn along with the strategies they think are best suited to each problem. Children develop their mathematical vocabulary alongside practical, pictorial and written skills.

Children are given opportunity to reason and solve problems regularly; learning is varied and allows for deep and secure understanding.

Investigative tasks are an integral part of our curriculum and allow pupils to follow lines of enquiry and develop their own ideas, justifying and proving their answers. Children work both collaboratively and independently solving problems, which require them to persevere and develop resilience.



### **Impact**

The impact of our mathematics curriculum is that children become curious mathematicians who understand and appreciate the relevance of what they are learning in relation to real world concepts.

By the end of KS2 we aim for children to be confident in the fundamentals of mathematics with a conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

They should have the skills and have the resilience to solve problems by applying their mathematics to a variety of situations with sophistication, including in unfamiliar contexts and to model real-life scenarios. Children will be able to reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.



## **Maths**

## **Curriculum Map**

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
R	ecognise, recite	Geometry -	Securing Fluency to	Place Value and	Place Value - Order	Place Value and	Place Value
n	umber to 10	Positional Language	Twenty	Regrouping	and Compare	Rounding of Large	Multiplication and
		Including Ordinal		Counting On and	Numbers Beyond	Numbers	Division by 10, 100
С	ount to establish	Numbers	Place Value -	Back in Ones, Tens	1000	Interpret Negative	1000 (whole and
h	ow many in a set		Making Tens and	and Hundreds	Rounding,	Numbers	decimal numbers)
α	nd match to	Numbers to Ten -	Some More		Estimation and		Rounding
n	umeral	Finding Patterns in	Place Value and	Estimation,	Magnitude	Place Value of	Addition (whole
		Numbers (including	Regrouping Two-	Magnitude and		Numbers with up to	numbers and
U	Inderstand if	subitising)	Digit Numbers	Rounding	Securing Addition	Three Decimal	decimals)
α	mounts are	Numbers to Ten -	Counting On and	Measures -	and Subtraction	Places	Subtraction (whole
r	earranged, the	Counting and	Back in Ones and	Comparison,	Mental Fluency		numbers and
n	umber remains the	Comparison (more,	Tens from any	Estimation and	•	Multiply and Divide	decimals)
S	ame	less, fewer)	Number	Magnitude	Securing Formal	by 10, 100 and	Multiplication
		·			Written Addition	1,000	(whole numbers an
1:	:1 counting	Numbers to Ten -	Representing,	Mental Fluency –	and Subtraction	Properties of	decimals) Division
Autumn	3	Estimating and	Ordering and	Addition	Fluency	Number - Multiples,	(whole numbers and
Ž   №	Natch spoken	Ordering	Comparing Numbers	Mental Fluency –	,	Factors and	decimals with
.D A	umeral to written	Numbers to Ten -	to 100 and	Subtraction	Counting in	Common Factors	remainders as
-	umeral	Regrouping the	Quantities for	Fact Families and	Multiples of 6, 7, 9,	Prime and	fractions and
		Whole	Measures	Applying the	25 and 1000	Composite Numbers	decimals
P	artition sets of		Estimation and	Inverse	Multiplication and	'	
5	/6/7 objects	Numbers to Ten -	Magnitude		Division Facts	Multiply and Divide	BIDMAS
	· ·	Part Whole	3	Written Addition	(Times Tables)	Mentally	Co-ordinates
C	order numbers to	Addition and	Numbers to 20 -		,	Solve Problems	Translation
10	0	Subtraction	Mental Addition and	Written	Factor Pairs,	Involving Knowledge	Reflecton
N	Jumber formation	Numbers to Ten -	Subtraction	Subtraction	Integer Scaling and	of Key Facts	Algebra
	•	Solving Problems	Finding		Correspondence		Fractions (add,
R	epeating patterns	Using Part or Whole	Complements of 10	Problem Solving -	Problems	Add and Subtract	subtract, multiply,
	epouring purronno	Unknown	and 100 Including	Worded Problems		Using a Range of	divide, mixed,
2	D shapes – names	Numbers to Ten -	Measures		Problem Solving	Strategies	equivalent,
	nd properties	Comparison		Statistics -	Including Measures	2 2. 2g. 22	ordering)
	F. <b></b>	pan	Add and Subtract	Interpreting Bar	to Apply Place		Decimals
			Numbers Mentally	Charts and Tables	Value, Mental		Area

Autumn 2  -Match quantities to correct numeral -Ordering and using numbers to 20  -Say the number that is one more than and one less than - read and write matching	Numbers to Ten - Equality and Balance  Numbers to Twenty - Making 10 and Some More Numbers to 20 - Estimating and Ordering, 1 More	Using 1- and 2-Digit Numbers  Finding Part or Whole Unknown  Money - Making Combinations and Finding Change Comparison	Angles, Right Angles and Estimation Perpendicular and Parallel Lines, Vertical and Horizontal Lines	Strategies and Arithmetic Laws  Multiply and Divide a One or Two-digit Number by 10 and 100 Measure - Conversion of Units Measures -	Add and Subtract Using Formal Written Methods Formal Written Method for Multiplication Formal Written Method of Short	Perimeter Averages - particular focus on mean Time - including timetables and time zones  Problem solving in all areas
number sentence -Missing numbers in number lines -Joining numbers together in correct order  -Lengths and height - comparing, ordering and using correct language -Measuring using non-standard units	and 1 Less  Numbers to Twenty - Doubling and Halving Numbers to Twenty - Odd and Even Numbers  Geometry - Names and Properties of 2-D and 3-D Shape	(difference, more, less, fewer) Measures - Estimation and Measure Using Different Scales  Statistics - Totalling and Comparing Amounts in Block Graphs, Pictograms, Tables and Tally Charts	Properties and Drawing  Perimeter Including Problem Solving Using Written and Mental Methods	Compare, Estimate and Calculate  Discrete and Continuous Data (Time Graphs), Including Application of Scales and Division Perimeter	Equivalent Fractions Compare and Order Fractions Adding and Subtracting Fractions	
-Capacity - use correct language and compare capacities -Weight - use correct language and compare different weights -Money - recognise coins and match different values		and Tany Charts				
 Count along number line to 20 -Match objects and count to establish how many	Measures - The Language of Comparing Length, Height, Mass and Speed	Written Addition Method Commutativity in Addition but not in Subtraction	Multiplication - 3, 4 and 8 Times Tables including Counting	Properties of Shape Symmetry Decimal Numbers	Problem Solving - All Four Operations Fractions by Whole Numbers	Negative Numbers

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-Recognise, show	Sequencing Events -	Written	Division - 1, 2, 3, 5,	Calculating With	Fraction Problem	Data handling-
and write teen	Days of the Week	Subtraction	4 and 8 Times	Decimals	Solving	Pie Charts
numbers	and Months of the	Method	Tables			Bar charts
-Doubling	Year		Multiplication -	Measure - Money	Measure -	Line Graphs
-Halving/sharing		Problem Solving	Strategy,	Problem Solving	Converting Units of	Eme or apris
amounts	Numbers to Twenty	with Addition and	Associative and	involving Decimals	Measure	N
	- Adding using	Subtraction in a	Distributive Laws	to Two Decimal		Number
-Symmetry	'Think 10'	Range of Contexts		Places	Area	sequences
-2D shapes	Numbers to Twenty		Statistics -		Volume and	
	- Subtraction using	Time - Telling the	Pictograms and	Add and Subtract	Capacity	Length
Spring 2	'Think 10'	Time: O'clock, Half	Scaled Bar Charts	Fractions with the		
-Ordering numbers		Past, Quarter Past		Same Denominator	Percentages	Weight
to 20	Numbers to Twenty	and Quarter To	Multiplication and	Finding Fractions of	Problem Solving -	
-Identifying larger	- Equality and	Time - Estimating,	Division Worded	Quantities	Percentages	2D and 3D shapes
and smaller groups	Balance	Ordering and	Problems	Fractions in the		
-Estimating	Numbers to Twenty	Comparing Time		Context of Measure	3-D Shapes from 2-	including nets
-One more and one	- Part or Whole		Fractions - Finding		D Representations	
less than	Unknown	Double and Halve	Fractions of	Equivalent	Reflection and	Angles
-Addition and		One and Two-digit	Discrete and	Fractions, Ordering	Translation	
subtraction -	Numbers to Twenty	Numbers and	Continuous	and Comparing		Problem solving in
verbalise and	- Language and	Amounts of Money	Quantities		Perimeter	all areas
writing number	Problem Solving	Times Tables - 2s,		Multiply Two and	Estimate, Compare,	an ar sas
sentences	(part or whole	5s and 10s.	Ordering and	Three-digit	Measure and Draw	
	unknown)	Patterns and	Comparing	Numbers by a One-	Angles	
-3D shapes - names	Numbers to Twenty	Strategy (counting	Fractions	digit Number Using	Identify Unknown	
and properties	- Comparison	in 3s)	Adding and	a Formal Written	Angles	
-Time	(difference, more,		Subtracting	Layout		
-Follow and give	less, fewer)	Multiplication -	Fractions with the	Divide Two and		
directions	including Statistics	Multiples and	Same Denominators	Three-digit		
		Repeated Addition	Fractions - Problem	Numbers by a One-		
	Measures - Coins	Multiplication -	Solving with Unit	digit Number Using		
	and Combinations to	Number of Groups,	and Non-Unit	a Formal Written		
	20p, Ordering and	Group Size and	Fractions	Layout		
	Comparing	Product				
		Multiplication	Multiplication -			
		Problem Solving	Multiplying			
	Counting in 2s, 5s		Multiples of Ten			
	10s.	Division - Sharing	Multiplication -			
		and Grouping	Formal Written			
			Multiplication			

		Measures - Non-	Division - Sharing				
		standard Measures	and Grouping				
		and Introducing	Problems including				
		Simple Standard	Remainders				
		Measures					
	-Count on and back	Multiplication and	Fractions - Finding	Division Problem	Time - Read, Write	Formal Methods for	Ratio and
	using a number line	Division - Equal or	Halves, Quarters	Solving - Sharing	Calculate and	Division and	Proportion
	-Addition	Unequal Groups and	and Thirds of	and Grouping	Convert Time on	Multiplication in	•
	-Subtraction	Remainders	Amounts		Analogue and	Increasingly	Volume
		Multiplication –	Fractions - Finding		Digital 12- and 24-	Complex Problems	Volumo
	-Order objects by	Repeated Addition	Halves, Quarters	Division – Two and	Hour Clocks	Strategies for	Dandina Caalaa
	size	and Arrays (number	and Thirds of	Three-Digit		Multiplication and	Reading Scales
	-Compare lengths	of groups and size	Shapes	Numbers by One-		Division (Mental and	
	and heights	of group)	Fractions - Finding	Digit Numbers	Statistics -	Written)	Revision of
	-Use positional	Multiplication –	Three-Quarters of	including Halving	Interpret and		weaker areas
	language	Problem Solving	Shapes and		Present Continuous		pre- SATS
		(identifying the	Amounts	Multiplication,	and Discrete Data,	Fractions, Decimals	·
		number of groups		Division and	Solve Problems	and Percentages	Problem Solving
	Summer 2	and size of the	Fractions -	Fractions - Scaling	incorporating	Problem Solving	in all areas
	-100 square -	group)	Equivalence	and Correspondence	Measures		in an areas
	recognise numbers		Fractions - of	Problems		Solving Problems	
Summer	-Missing numbers on	Multiplication –	Continuous		Roman Numerals to	involving Scaling by	
	number lines	Scaling and	Quantities	Division - Long	100 and Zero	Simple Fractions	
Su	-One more and one	Counting in 2s to 24		Division	Negative Numbers -	and Rates	
	less than		Time - Telling the		Counting through		
	-Addition - using	Division - Sharing	Time to the	Time - Days,	Zero and	Conversion of	
	counting on	and Grouping	Nearest 5 Minutes	Weeks, Months,	Calculating in	Imperial and Metric	
	-Subtraction - using	Problems		Years	Context	Units of Measure	
	counting back		Problem Solving	Time - Telling the			
	-Addition and	Geometry - Turns	for all Operations	Time (analogue and	Geometry - Angles	Reading Timetables	
	subtraction number	Time - Telling the	(including	digital) and	Geometry -	and Calculating with	
	problems	Time, Oʻclock and	Fractions)	Estimation	Properties of	Time	
	-Number sentences	Half Past		Time - Duration	Triangles		
	- verbalising and		Multiplication and			Solve Problems	
	writing	Fractions - Sharing	Division – Equality	Securing the Four	Geometry -	involving the Four	
	-Number formation	into Equal Groups	and Balance	Operations with	Coordinates in the	Operations	
	-Number bonds to	Week seven		Whole Number	First Quadrant and		
	10		Geometry -	including Problem	Translations	Distinguish between	
	-Counting in groups		Properties of 2-D	Solving	Geometry - Position	Regular and	
	of 2s, 5s, 10s		and 3-D Shape,		and Direction,	Irregular Polygons	

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			Fractions - Equal or	Classifying and	Place Value and	incorporating	Use Properties of	
		-2D and 3D shapes	Unequal Parts of	Sorting	Decimals - Ten	Angles and Plotting	Rectangles	
		-Compare capacity	Shapes	Geometry -	Times Bigger and	Points of a Shape		
		and weight		Symmetry	Ten Times Smaller		Statistics - Solve	
			Fractions - of		Place Value and	Multiplication and	Comparison, Sum	
			Continuous	Mental Calculation	Decimals -	Division Review	and Difference	
			Quantities including	Review	Partitioning		Problems using	
			Capacity		Place Value and	Area	Information in a	
			Numbers to Twenty	Geometry -	Decimals -		Line Graph	
			- Review	Sequencing	Estimation,	Fractions Review		
				Geometry -	Comparing and		Statistics -	
			Numbers to One	Rotation and Right	Rounding		Interpreting and	
			Hundred - Place	Angles		Application and	Evaluating	
			Value and Digits,		Measures -	Problem Solving -	Information	
			Making Tens and	Place Value and	Measuring and	Developing	Presented in Charts	
			Some More	Written Calculation	Problem Solving	Operation Sense	and Tables	
			Place Value -	Review				
			Estimation,		3-D Shape -		Roman Numerals	
			Ordering and		Building and			
			Comparison		Identifying			
					Properties			
			Selects the mathema	•	Develops the mathem		Identifies and obtain	•
	enquiry		increasing range of cl		wide range of contex	ts	information to carry	
., 4	Ę.			a suggested model or			solve mathematical pr	oblems
Key Skills Application	en en		,	atic approach		suggestions of ways		
र्छ .घ	4		makes	connections and		kle a range of	recogn	ises when information
ey bbl			applies	knowledge to similar	proble	ms		not crucial to the
× 4	lines		situati	ons		connections to		of a problem
	<del>-</del>				previo	us work	determ	ines what is missing
	and			propriate to the task			and de	velops lines of enquiry
			with support			ppropriate to the task		
	questions				independently		Selects the most app	ropriate equipment
	S		Asks simple questions	relevant to the			and explains choices	
	90		problem and begins to	suggest ways of	Poses and answers qu			
	IS,		exploring		problem and suggest:		Uses their mathemat	•
	Ideas,				approaches to the so	lution	explore ideas and rais	
	ŭ						pursue further lines o	of enquiry

Plan an approach and implement it	Describes a problem in their own words e.g.  acts it out represents the problem pictorially or with concrete resources  Begins to develop own ways of recording uses and interprets familiar mathematical symbols and diagrams  Begins to organise work and check results shows evidence of method in responses  Discusses their mathematical work and begins to explain their thinking using appropriate mathematical vocabulary  Understands and uses known facts and procedures to solve simple problems  Uses familiar strategies and operations to solve problems within known mathematical concepts and procedures  Tries different approaches and finds ways of overcoming difficulties when solving problems - sometimes with support	Represents problems pictorially, using a model or with concrete resources  Restates the problem in another way  Presents work in a clear and organised way uses and interprets a wide range of mathematical symbols and diagrams  Begins to work in an organised way from the start using strategies such as recording results in order and checks for accuracy  Discusses their mathematical work and uses mathematical language in a more precise and accurate way  Uses facts and procedures to solve simple and more complex problems  Develops own strategies for solving problems and applying mathematics to practical contexts  Finds solutions that match the context of the problem	Shows understanding of situations by describing them mathematically using symbols, words and diagrams  Decides how best to represent conclusions, using appropriate recording  begins to understand and use formulae and symbols to represent problems  Organises work from the outset, looks for ways to record systematically and checks results to see if they are reasonable checks for and spots errors while working  Constructs complex explanations and reasoned arguments  Understands and uses facts and procedures creatively to solve complex or unfamiliar problems  Uses appropriate mathematical concepts, processes, skills and tools to solve a problem  Interprets the mathematical solution in the context of the problem and makes sense of the solution

		Computational complexity (Within the range of number facts known)	Solves problems with one or a small number of steps, where all steps are simple	Solves problems with more than one step at least one of which is more complex	Solves problems with a larger number of numeric steps, at least one of which is more complex
		Make connections	Recognises similarities to previous work through classroom discussion  Begins to use familiar elements of knowledge to tackle problems that are more unfamiliar or complex	Makes connections to previous work within mathematics and with other subjects  Poses and answer questions that will help make sense of the problem	Poses own questions and create problems for peers that are similar to ones worked on in class Develops own lines of enquiry
	_	Evaluate	Poses 'What if?' questions during practical problem solving opportunities  Reviews their work by explaining why they have done something	Poses 'What if?' questions that may change the outcome or direction of the problem  Suggests refinements to elements of problem solving by comparing other	Considers efficiency of methods and adapts work accordingly throughout
	Skills soning	Draw conclusions	Predicts an answer or outcome e.g.	approaches and against 'modelled' examples  Predicts conclusions and reason why when	problem solving activities  Conjectures to develop own line of enquiry
2	Key Skills Reasoning		numbers in an extended sequence  Talks about findings by referring to own work	referring to work  Comments on whether the conclusion was expected	when testing outcomes  Draws own valid conclusions and give an explanation of reasoning (including written explanations)
			Explains why an answer is correct  Begins to make simple inferences when referring to own work	Makes valid inferences when referring to own work	
		Generalise	Understands a general statement by finding a particular example that match it  Begins to describe a pattern or sequence in words or using concrete resources or own representation	Finds solutions and makes predictions by identifying patterns when working  Forms generalised rules in words, using concrete resources or own representation	Identifies more complex patterns and begins to express generalisations using symbolic notation

		Justify	Provides simple reasons for opinions	Justifies answers and solutions by referring to their work and support with examples	Justifies methods chosen and why the solution is the best one or not  Supports conclusions with examples and counter examples
	Key Skills Problem Solving	Sort information	Uses 'guess and check' strategy to solve unfamiliar problems  Begins to look for patterns in results while working and uses them to find other possible outcomes  Draws simple pictures or diagrams  Gives examples to match statements and ones that do not finds a starting point	Identifies irrelevant information; uses lists and tables to identify and organise information  Uses informed 'guess and check'  Seeks a pattern  Draws a diagram or model  Seeks an exception  Breaks the problem down into simpler steps  e.g. works backwards	Organises, deconstructs and prioritises information; uses systematic lists and tables to identify information  Uses informed 'guess, check and improve'  Identifies and uses a pattern  Draws a mathematical model to support visualisation of problem  Uses and applies negative proof (uses counter argument to prove the rule)  Uses a structured approach to tackle the problem (devise a plan)  e.g. works backwards  Solves a simpler related problem
Early Years Outcomes	Autumn	M 6 N Recognises nur M 6 N Counts up to tl M 6 N Counts actions M 6 N Counts objects M 6 N Counts out up M 6 N Selects the co M 6 N Counts an irred M 6 N In practical ac M 6 SSM Beginning to M 6 SSM Selects a p	e numerals of personal significance. nerals 1 to 5. nree or four objects by saying one number nar or objects which cannot be moved. s to 10, and beginning to count beyond 10. to six objects from a larger group. rrect numeral to represent 1 to 5, then 1 to 10 gular arrangement of up to ten objects. tivities and discussion, beginning to use the vo	O objects. ocabulary involved in adding and subtracting. s and 'flat' 2D shapes, and mathematical terms	s to describe shapes.

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		Early Years Outcomes  M 6 N Counts objects to 10, and beginning to count beyond 10.  M 6 N Selects the correct numeral to represent 1 to 5, then 1 to 10 objects.  M 6 N Counts an irregular arrangement of up to ten objects.  M N Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number.  M 6 SSM Orders two or three items by length or height.  M 6 SSM Orders two items by weight or capacity.  M SSM Beginning to use everyday language related to money.
Early Years Outcomes	Spring	Early Years Outcomes M 6 N Counts objects to 10, and beginning to count beyond 10. M N Children count reliably with numbers from one to 20, place them in order. M N They solve problems, including doubling, halving and sharing.  M 6 SSM Beginning to use mathematical names for 'solid' 3D shapes and 'flat' 2D shapes, and mathematical terms to describe shapes. M 6 SSM Selects a particular named shape. M 6 SSM Uses familiar objects and common shapes to create and recreate patterns and build models.  Early Years Outcomes M 6 SSM Beginning to use mathematical names for 'solid' 3D shapes and 'flat' 2D shapes, and mathematical terms to describe shapes. M 6 SSM Selects a particular named shape. M 6 SSM Selects a particular named shape. M 6 SSM Uses everyday language related to time. M 6 SSM Uses everyday language related to time. M 6 SSM Measures short periods of time in simple ways. M 6 SSM Can describe their relative position such as 'behind' or next to'.  M 6 N Uses the language of 'more' and 'fewer' to compare two sets of objects. M 6 N Estimates how many objects they can see and checks by counting them. M 6 N In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting. M N Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number.
Early Years Outcomes	Summer	Early Years Outcomes  M SSM Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.  M N Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer.  M 6 N In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting.  M 6 N Records, using marks that they can interpret and explain.

#### Early Years Outcomes

M N Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.

M SSM Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.