Maths Long Term Plan and Progression of Skills and Knowledge

Year 6 Long Term Plan:

	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
Aut	**Number: Place Value** 6NPV-2, 6NPV-3, 6NPV-4		**Number: Addition, Subtraction, Multiplication & Division** 6AS/MD-1, 6AS/MD-2					**Number: Fractions A** 6F-1, 6F-2, 6F-3, 6NPV-4		**Number: Fractions B** 6F-1, 6F-2, 6F-3, 6NPV-4		**Measurement: Converting Units** 6NPV-1, 6NPV-4
Spr	**Number: Ratio** 6AS/MD-3		**Number: Algebra** 6AS/MD-4		**Number: Decimals** 6NPV-1, 6NPV-2		**Number: Frations, Decimals and Percentages** 6NPV-3		**Measurement: Perimeter, Area and Volume** 6G-1		**Statistics** 6NPV-4	
Sum	**Geometry: Properties of Shapes** 6G-1			**Geometry: Position and Direction**	**Consolidation or SATs Prep**	**Consolidation, investigations and preparation for KS3**						

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In line with government guidance, the Year 6 Ready-to-Progress criteria has been mapped to the long term plan. The Ready-to-Progress criteria sets out the key areas that children must be secure with in order to progress with their learning the following year.

There are 6 strands within this criteria: Number and Place Value, Number Facts, Addition and Subtraction, Multiplication and Division, Fractions and Geometry.

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
NPV	1NPV–1 Count within 100, forwards and backwards, starting with any number.		3NPV–1 Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other threedigit multiples of 10	4NPV–1 Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100.	5NPV–1 Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1. Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01. Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01.	6NPV–1 Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000).
		2NPV–1 Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and	3NPV–2 Recognise the place value of each digit in three-digit numbers, and compose and decompose three-digit numbers using standard and non-	4NPV–2 Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and	5NPV–2 Recognise the place value of each digit in numbers with up to 2 decimal places, and compose and decompose numbers with up to	6NPV–2 Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose

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		nonstandard partitioning.	standard partitioning.	nonstandard partitioning.	2 decimal places using standard and nonstandard partitioning.	numbers up to 10 million using standard and nonstandard partitioning.
	1NPV–2 Reason about the location of numbers to 20 within the linear number system, including comparing using < > and =	2NPV–2 Reason about the location of any twodigit number in the linear number system, including identifying the previous and next multiple of 10.	3NPV–3 Reason about the location of any threedigit number in the linear number system, including identifying the previous and next multiple of 100 and 10.	4NPV–3 Reason about the location of any fourdigit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each.	5NPV–3 Reason about the location of any number with up to 2 decimals places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each.	6NPV–3 Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system, and round numbers, as appropriate, including in contexts.
			3NPV–4 Divide 100 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 100 with 2, 4, 5 and 10 equal parts.	4NPV–4 Divide 1,000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts.	5NPV–4 Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts.	6NPV–4 Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.
					5NPV–5 Convert between units of measure, including using common decimals and fractions.	
NF	1NF–1 Develop fluency in addition	2NF–1 Secure fluency in addition	3NF–1 Secure fluency in addition			

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	and subtraction facts within 10.	and subtraction facts within 10, through continued practice.	and subtraction facts that bridge 10, through continued practice.			
	1NF–2 Count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple, and count forwards and backwards through the odd numbers.		3NF–2 Recall multiplication facts, and corresponding division facts, in the 10, 5, 2, 4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number.	4NF–1 Recall multiplication and division facts up to , and recognise products in multiplication tables as multiples of the corresponding number.	5NF–1 Secure fluency in multiplication table facts, and corresponding division facts, through continued practice.	
				4NF–2 Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, and interpret remainders appropriately according to the context.		
			3NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10).	4NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100)	5NF–2 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1	

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					tenth or 1 hundredth).	
AS	1AS–1 Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers.	2AS–1 Add and subtract across 10.	3AS–1 Calculate complements to 100.			6AS/MD–1 Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number).
	1AS–2 Read, write and interpret equations containing addition (+), subtraction (-) and equals (=) symbols, and relate additive expressions and equations to real-life contexts.	2AS–2 Recognise the subtraction structure of 'difference' and answer questions of the form, "How many more…?".	3AS–2 Add and subtract up to three-digit numbers using columnar methods.			6AS/MD–2 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.
		2AS–3 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number.	3AS–3 Manipulate the additive relationship: Understand the inverse relationship between addition and subtraction, and how both relate to the part–part–whole			6AS/MD–3 Solve problems involving ratio relationships.

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			structure. Understand and use the commutative property of addition, and understand the related property for subtraction.			
		2AS–4 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers.				6AS/MD–4 Solve problems with 2 unknowns.
MD		2MD–1 Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables.	3MD–1 Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division.	4MD–1 Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or 100 times the size.	5MD–1 Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.	For year 6, MD ready-to-progress criteria are combined with AS ready-to-progress criteria (please see above).
		2MD–2 Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division		4MD–2 Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication.	5MD–2 Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.	

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		equations (quotitive division).				
				4MD–3 Understand and apply the distributive property of multiplication.	5MD–3 Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.	
					5MD–4 Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.	
F			3F–1 Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.			6F–1 Recognise when fractions can be simplified, and use common factors to simplify fractions.
			3F–2 Find unit fractions of quantities using known division facts (multiplication tables fluency).		5F–1 Find non-unit fractions of quantities.	6F–2 Express fractions in a common denomination and use this to compare fractions that are similar in value.
			3F–3 Reason about the location of any	4F–1 Reason about the location of		6F–3 Compare fractions with

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			fraction within 1 in the linear number system.	mixed numbers in the linear number system.		different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.
				4F–2 Convert mixed numbers to improper fractions and vice versa.	5F–2 Find equivalent fractions and understand that they have the same value and the same position in the linear number system.	
			3F–4 Add and subtract fractions with the same denominator, within 1.	4F–3 Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers	5F–3 Recall decimal fraction equivalents for $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}$ and $\frac{1}{10}$ and for multiples of these proper fractions.	
G	1G–1 Recognise common 2D and 3D shapes presented in different orientations, and know that rectangles, triangles,	2G–1 Use precise language to describe the properties of 2D and 3D shapes, and compare shapes by reasoning about similarities and	3G–1 Recognise right angles as a property of shape or a description of a turn, and identify right angles in 2D shapes presented in		5G–1 Compare angles, estimate and measure angles in degrees (°) and draw angles of a given size.	

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	cuboids and pyramids are not always similar to one another.	differences in properties.	different orientations.			
					5G–2 Compare areas and calculate the area of rectangles (including squares) using standard units.	
	1G–2 Compose 2D and 3D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations.		3G–2 Draw polygons by joining marked points, and identify parallel and perpendicular sides.	4G–1 Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant.		6G–1 Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.
				4G–2 Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal. Find the perimeter of regular and irregular polygons.		
				4G–3 Identify line symmetry in 2D shapes presented in different		

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				orientations. Reflect shapes in a line of symmetry and complete a symmetric figure or pattern with respect to a specified line of symmetry.		

Maths Programme of Study
National Curriculum (2013)

Purpose of study	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.

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Aims	The national curriculum for mathematics aims 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 nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions. Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects. 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.
Subject content – by the end of Key Stage 1 pupils should be taught to:	The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools]. At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money. By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

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Subject content – by the end of Lower Key Stage 2 pupils should be taught to:	The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number. By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.
Subject content – by the end of Upper Key Stage 2 pupils should be taught to:	The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio. At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils should read, spell and pronounce mathematical vocabulary correctly.