

Mathematics, Year 7, Long Term Plan

Week/ Lesson	Term	Topic	Knowledge	Skill Complex activity:
Unit 1 3 Lessons	Autumn T1	Number and Numerals Unit 1.1 Representing number	<ul style="list-style-type: none"> ● Understand the value of different place value columns in base 10 number systems ● Understand the multiplicative relationships between different columns in base 10 number systems ● Recognise and name nine- and ten-digit numbers in base 10 ● Understand a range of notation for quantities of time and time of day ● Develop a sense of flexible number composition by solving problems involving time of day and quantities of time ● Have an awareness of different numerical systems and their representation 	<ul style="list-style-type: none"> ● Experience different representations of number and grouping ● Reason using base 10 equivalences ● Explore base 10 and base 5 number grouping ● Convert between base 10 and base 5 ● Understand the Indian base 10 number system ● Compare and evaluate using the Indian number system ● Understand Mayan numeral representation of number ● Informally explore base 20 place value grouping
		Unit 1.2 Base 10 and base 5		
		Unit 1.3 Indian number system		
		Unit 1.4 Mayan number system		
Unit 2 7 Lessons		Axioms and Arrays Unit 2.1 What is multiplication?	<ul style="list-style-type: none"> ● Use arrays and area models to develop understanding of commutativity of multiplication ● Use arrays and area models to develop understanding of associativity and distributivity 	<ul style="list-style-type: none"> ● Explore contexts leading to multiplication and division calculations ● Develop and interpret models for multiplication and division ● Define commutativity of multiplication ● Use arrays to define fact families
		Unit 2.2 What is commutativity?		

	Unit 2.3 Multiplication and division Unit 2.4 What is associativity? Unit 2.5 What is the distributive property? Unit 2.6 Multiplication facts Unit 2.7 Number pyramids Unit 2.8 Number talk	<ul style="list-style-type: none"> ● Make use of and generalise the commutative, associative and distributive properties ● Use commutativity, associativity and distributivity to solve calculations efficiently ● Compare and contrast scaling, area, repeated addition and grouping/sharing models for multiplication and division ● Develop number sense and efficient calculation strategies ● Make links between efficient calculation strategies and the axioms 	<ul style="list-style-type: none"> ● Use commutativity of multiplication to solve division problems ● Develop models for the commutativity of multiplication ● Define associativity of multiplication ● Develop models for the associativity of multiplication ● Develop understanding of the distributive property of multiplication over addition ● Use the distributive property to calculate efficiently ● Use the commutative, associative and distributive properties to describe relationships between different multiplication tables ● Explore common multiples ● Explore conjectures using tracking calculations ● Use algebraic notation to represent distributivity ● Use understanding of the axioms to calculate using a range of strategies deciding on most efficient.
Unit 3 7 Lessons	Factors and multiples Unit 3.1 Factors, primes and squares Unit 3.2 Squares Unit 3.3 "Lots of" Unit 3.4 More "lots of" Unit 3.5 Factor Polygons Unit 3.6 Common multiples	<ul style="list-style-type: none"> ● Understand the terms factor and multiple ● Recognise and define prime, square and cube numbers ● Use the definitions of factors and multiples to find common factors and common multiples ● Express an integer as a product of its factors 	<ul style="list-style-type: none"> ● Use factor pairs to find all factors of an integer ● Recognise primes and square numbers ● Investigate the structure of square numbers ● Explore different ways of constructing square numbers ● Developing a new representation to reveal the structure of positive integers ● Using the "lot of" representation to find the factors of an integer

		Unit 3.7 Number grids Unit 3.8 Prime patterns	<ul style="list-style-type: none"> ● Interpret and create representations of integers that reveal their structure ● Conjecture and make generalised statements e.g.: <ul style="list-style-type: none"> - Square numbers cannot be prime - The common multiples of 5 and 4 are always multiples of 20 - Prime numbers greater than 3 are one more or one less than a multiple of 6 ● Solve problems involving factors and multiples in unfamiliar contexts 	<ul style="list-style-type: none"> ● Using the “lot of” representation to express an integer as a product of two or more of its factors ● Explore a geometric application of factors ● Define the “common multiples” of a set of integers ● Use venn diagrams to categorise multiples of two or more numbers ● Express the multiples of a number using algebra ● Explore patterns involving multiples in number grids ● Identify the prime numbers in a 6-column number grid using a sieve algorithm ● Deduce that prime numbers greater than 3 can be written as $6n + 1$ or $6n - 1$
Unit 4 3 Lessons		Order of operations Unit 4.1 Equal and Non-Equal Priority Unit 4.2 Writing Calculations Unit 4.3 Area Expressions Unit 4.4 Calculations with Variables	<ul style="list-style-type: none"> ● Understand the equal priority of addition with subtraction and multiplication with division in written calculations ● Understand that operations of equal priority can be evaluated in any order ● Understand that written calculations follow rules of ‘syntax’ determining the order of operations ● Understand the higher priority of multiplication with division over addition with subtraction in written calculations ● Interpret the order of operations from written calculations, function machines and worded descriptions 	<ul style="list-style-type: none"> ● Develop understanding of equal and non-equal priority of the four operations ● Interpret and form written calculations using brackets ● Deepen understanding of equal and non-equal priority of four operations ● Form multi-step calculations in function machines and as written calculations ● Form calculations to work out compound area of rectilinear shapes ● Understand equivalent calculations including brackets and variables ● Express and describe multi-step calculations including variables ● Form expressions for multi-step calculations including variables

			<ul style="list-style-type: none"> ● Form written calculations, function machines and worded descriptions correctly embedding the order of operations ● Form and identify equivalent calculations based on distributivity, commutativity and the order of operations ● Form and interpret expressions involving variables correctly embedding the order of operations 	
2 Lessons		Reteach week END OF TERM ASSESSMENT AND FEEDBACK		
Unit 5 11 Lessons	Autumn T2	Positive and negative numbers	<ul style="list-style-type: none"> ● Interpret negative numbers in a variety of contexts ● Compare and order positive and negative numbers ● Use positive and negative numbers to express change and difference ● Understand the meaning of absolute value ● Calculate using all four operations with positive and negative values ● Form and manipulate expressions involving negative numbers ● Use number lines to model calculations with negative numbers ● Explore scaling with negative multipliers 	<ul style="list-style-type: none"> ● Interpret negative numbers in a variety of contexts ● Explore movement on an 'extended' number line ● To interpret the absolute value of a number as its distance from zero ● To understand how to order negative numbers using inequality notation ● To be able to model addition of a positive number as a translation on a number line ● To use this model to develop strategies for addition ● To be able to model addition of a negative number as a translation on the number line ● To understand that if two numbers are additive inverses they sum to zero
		Unit 5.1 Negative numbers in Context		
		Unit 5.2 Order and absolute value		
		Unit 5.3 Modelling addition		
		Unit 5.4 Further addition		
		Unit 5.5 Subtracting positive numbers		
		Unit 5.6 Subtracting negative numbers		
		Unit 5.7 Multiplication as scaling		
Unit 5.8 Negative scale factors				

		Unit 5.9 Further Multiplication Unit 5.10 Division Unit 5.11 Further division Unit 5.12 Axioms and negative numbers		<ul style="list-style-type: none"> ● Subtracting positive numbers is equivalent to the addition of the additive inverse. ● Subtracting negative numbers is equivalent to the addition of the additive inverse ● Subtraction is then explored as the inverse of addition. ● Explore multiplication involving at least one positive number ● Visualise multiplication as a stretch by a scale factor ● Negative scale factors are described as a stretch in the opposite direction ● The commutativity of multiplication is explored ● Multiplication with a negative scale factor is extended to finding the product of two negative numbers ● Division by a positive integer is equivalent to multiplying by the reciprocal ● Further division facts are derived using 'fact families' ● The axioms introduced in Unit 2 also hold for negative numbers ● Manipulating and simplifying calculations using these axioms
Unit 6 10 Lessons	Expressions, equations and inequalities Unit 6.1 Algebraic expressions Unit 6.2 Collecting like terms	<ul style="list-style-type: none"> ● Develop understanding of algebraic notation including: $a \times b = ab$, $y + y + y = 3y$, $a \times a = a^2$, $\frac{a}{b} = a \div b$ ● Collect like terms to simplify expressions and understand that this is a result of the distributive 	<ul style="list-style-type: none"> ● Substitute variables to evaluate simple expressions ● Understand the algebraic notation of multiplication ● Collecting together like terms using tracking arithmetic and algebra 	

		Unit 6.3 Distributivity and expanding Unit 6.4 Factorising expressions Unit 6.5 Forming and exploring equations Unit 6.6 Exploring equations Unit 6.7 Inequalities Unit 6.8 Further Inequalities Unit 6.9 Perimeter expressions Unit 6.10 Perimeter inequalities Unit 6.11 Counting strategies Unit 6.12 Growing tree patterns	<p>property e.g. $3a + 2a = (3 + 2)a = 5a$ ◆</p> <ul style="list-style-type: none"> ● Substitute numerical values into expressions and evaluate ● Use the distributive property to identify equivalent expressions involving a single bracket and the expanded form e.g. $3(a + b) = 3a + 3b$ ◆ ● Develop understanding of the equality and inequality signs ● Use two equations to form another related equation or inequality e.g. if $a = b$ and $b = c$ then $a = c$, $a + 1 > b$, $2a + b = 3c$ etc. ● Use different contexts, including sequences, to construct expressions, equations and inequalities ● Represent algebraic expressions using a variety of models including arrays and bar models 	<ul style="list-style-type: none"> ● manipulating linear expressions involving multiple variables ● Using the distributive property to 'expand brackets' with linear expressions ● An introduction to factorising basic linear expressions ● Introducing the concept of an equation ● Using Cuisenaire Rods or bar models to form equations ● Form equations related to a known equation ● Explore how equality is preserved (i.e. balancing). ● Using Cuisenaire Rods or bar models to form inequalities ● Form inequalities related to a known equation ● Forming expressions using algebraic lengths specified on a grid ● Drawing shapes given expressions for the perimeter ● Forming expressions using algebraic lengths specified on a grid ● Establishing inequalities from perimeter expressions ● Generalising counting strategies algebraically for repeating patterns ● Generalising counting strategies algebraically for different repeating patterns
2 Lessons			Reteach week END OF TERM ASSESSMENT AND FEEDBACK	
Unit 7 7 Lessons	Spring T1	Angles Unit 7.1 Describing and comparing angles	<ul style="list-style-type: none"> ● Draw and measure acute and obtuse angles reliable to the nearest degree 	<ul style="list-style-type: none"> ● Comparing and classifying angles ● Estimating angles ● Using a protractor to measure angles

	Unit 7.2 Measuring and drawing angles Unit 7.3 Partitioning angles Unit 7.4 Finding unknown angles Unit 7.5 Exploring intersections Unit 7.6 Transversal angles Unit 7.7 Alternate angles Unit 7.8 Corresponding and allied angles	<ul style="list-style-type: none"> ● Estimate the size of a given angle ● Know and use angle facts: angles at a point, angles at a point on a straight line, vertically opposite angles. ● Generalisations and reasoning – e.g. going beyond two angles ● Define parallel and perpendicular lines ● Use angle facts around corresponding, alternate and co interior angles to find missing angles ● Find unknown angles. Form algebraic expressions. Solve for unknowns on one side. 	<ul style="list-style-type: none"> ● Use a protractor to draw angles. ● Find known angles that partition a known angle ● Introduce the vocabulary of ‘vertically opposite’ angles ● More problems ● Understanding properties of parallel lines ● Explore intersections formed with two lines and a transversal ● Understand and identify vertically opposite angles ● Identify alternate angles ● Understand equality of alternate angles for parallel lines ● Understand and identify allied angles ● Understand and identify corresponding angles
Unit 8 7 Lessons	Classifying 2-D shapes Unit 8.1 Rotational symmetry Unit 8.2 Reflection symmetry Unit 8.3 Classifying triangles Unit 8.4 Angles in triangles Unit 8.5 Comparing quadrilaterals	<ul style="list-style-type: none"> ● Classifying polygons by symmetry, regularity, intersection of diagonals, number of parallel sides ● Classify triangles and quadrilaterals according to properties (angles, regularity, symmetry) ● Know and use the angle sum of triangles and quadrilaterals ● Generalise results for properties of special types of triangles and quadrilaterals 	<ul style="list-style-type: none"> ● Defining and identifying the order of rotational symmetry ● Creating and testing conjectures regarding rotational symmetry in polygons ● Identifying and counting the lines of symmetry ● Creating and testing conjectures regarding reflectional symmetry in polygons ● Describing the properties of scalene, isosceles and equilateral triangles

	Unit 8.6 Diagonals in quadrilaterals Unit 8.7 Internal angles in quadrilaterals Unit 8.8 Tessellating quadrilaterals		<ul style="list-style-type: none"> ● Form and solve equations from contexts arising from properties of triangles and quadrilaterals 	<ul style="list-style-type: none"> ● Identifying and classifying triangles inscribed in circles ● Understanding that the interior angles in a triangle sum to 180° ● Solve problems involving unknown angles in triangles ● Providing the opportunity to revisit the names of quadrilaterals from KS2 ● Comparing the symmetry, side length, number of parallel sides and angles in quadrilaterals ● Comparing the diagonals in quadrilaterals ● Using triangles to deduce the sum of the interior angles in quadrilaterals ● Finding the angles in quadrilaterals ● Using the properties of triangles and quadrilaterals to create and describe tessellation patterns
Unit 9 7 Lessons	Constructing triangles and quadrilaterals Unit 9.1 Exploring circles Unit 9.2 Constructing triangles Unit 9.3 Impossible triangles Unit 9.4 Drawing similar triangles Unit 9.5 Triangle constructions Unit 9.6 Quadrilaterals in circles		<ul style="list-style-type: none"> ● Construct triangles and quadrilaterals for given conditions using ruler, protractor and compasses ● Explore constructions through use of dynamic geometry software ● Explore and define the minimum conditions for constructing triangles ● Become familiar with the different cases of minimum conditions for the construction of triangles ● Recognise when two triangles are congruent using the criteria of minimum conditions 	<ul style="list-style-type: none"> ● Naming the basic features of circles and reasoning using their properties ● Drawing circles using a pair of compasses ● Constructing triangles using a pair of compasses and ruler given the length of the three sides ● Determining when it is impossible to construct a triangle given three lengths ● Drawing triangles with the same interior angles using a protractor ● Informally discussing the properties of similar triangles ● Constructing triangles given two sides and an angle

		Unit 9.7 Constructing quadrilaterals		<ul style="list-style-type: none"> ● Forming quadrilaterals using the properties of circles ● Using the symmetrical properties of special quadrilaterals ● Constructing kites and rhombuses ● Identifying symmetry in constructions ● Constructing kites and rhombuses ● Exploring diagonals and symmetry in constructions
2 Lessons		Reteach week END OF TERM ASSESSMENT AND FEEDBACK		
Unit 10 7 Lessons	Spring T2	Coordinates	<ul style="list-style-type: none"> ● Reading and writing coordinates of points in all four quadrants. Including non-integer coordinates ● Solving geometric problems involving missing coordinates ● Finding the mid-point of a line segment or two points ● Using the midpoint and a point on the line to find the coordinates of another point on the line ● Recognise and plot horizontal and vertical lines on a coordinate axis 	<ul style="list-style-type: none"> ● Describe positions on a coordinate grid ● Identify and compare line segments ● Use horizontal and vertical lengths of line segments ● Find midpoints of line segments ● Solve problems involving midpoints ● Solving tilted square problems ● Solving problems involving midpoints ● Finding and using midpoints ● Solving shape problems involving midpoints ● Comparing line segment lengths ● Solving shape problems involving diagonals ● Drawing horizontal and vertical lines on a coordinate grid ● Understanding equations of horizontal and vertical lines ● Solving problems involving horizontal and vertical lines
		Unit 10.1 The 2-D coordinate axes		
		Unit 10.2 Line segments		
		Unit 10.3 Finding midpoints		
		Unit 10.4 Solving geometric problems		
		Unit 10.5 Forming shapes from midpoints		
		Unit 10.6 Forming shapes from diagonals		
		Unit 10.7 Equations of lines		
Unit 10.8 Exploring horizontal and vertical lines				

<p>Unit 11 7 Lessons</p>	<p>Area and Perimeter of 2D shapes Unit 11.1 Describing perimeters Unit 11.2 Describing area Unit 11.3 Cutting and combining shapes Unit 11.4 Exploring rectangles Unit 11.5 Rectilinear shapes Unit 11.6 Area of parallelogram Unit 11.7 Area of triangles Unit 11.8 Further triangles</p>		<ul style="list-style-type: none"> ● Develop understanding of counting strategies in arrays to using similar strategies to calculate the area of shapes ● Finding the area of rectilinear shapes ● Finding the area of other 2-D shapes including triangles, and special quadrilaterals ● Generalise formulae for finding the area of 2-D shapes using the language of height, base, width, length etc. ● Rearrange formulae to make a different subject ● Reason about generalised statements of the relationship between area and perimeter 	<ul style="list-style-type: none"> ● Using different units of length to describe perimeter ● Calculating the perimeter of polygons ● Estimating perimeter of 'curved' shapes ● Using different square units to describe area ● Using informal counting strategies to calculate area ● Estimating area of 'curved' shapes ● Analysing the effect of cutting, moving and combining shapes on area ● Analysing the effect of cutting, moving and combining shapes on perimeter ● Exploring the perimeter and area of rectangles as the dimensions change ● Calculating the area (and perimeter) of rectilinear shapes by 'combining' rectangles ● Calculating the area of parallelograms by rearranging rectangles ● Arriving at a formula for the area of a parallelogram ● Calculating the area of triangles ● Linking the area of triangles to the area of parallelogram ● Further problems involving area of triangles
<p>Unit 12 7 Lessons</p>	<p>Transforming 2D figures Unit 12.1 Translation Unit 12.2 Rotation Unit 12.3 Reflection Unit 12.4 Mixed isometries</p>		<ul style="list-style-type: none"> ● Reflection of an object in a mirror line ● Identify horizontal and vertical mirror lines and their equations ● Rotation of an object using the centre of rotation 	<ul style="list-style-type: none"> ● Translating shapes and describing translation using column vectors ● Rotating shapes about a point by a multiple of 90° clockwise and anticlockwise ● Describing rotations, understanding there is more than one correct description

		Unit 12.5 Combining reflections	<ul style="list-style-type: none"> ● Translating shapes by a given number of units (positive or negative) in the x and y directions ● Combining transformations and which combinations can be expressed as a single transformation ● Simple enlargements with positive scale factors ● Exploring the ratios of sides lengths within and between shapes produced by an object being enlarged by a given scale factor ● Recognise which transformations produce congruent shapes ● Explore the ratios within and between similar shapes when an object is enlarged by a given scale factor 	<ul style="list-style-type: none"> ● Reflecting shapes in lines, describing horizontal and vertical lines with their equations ● Observing the effect on the reflected images when the 'original' shape is translated ● Defining an isometry as a transformation that preserves length and shape ● Exploring when we can describe transformations in different ways ● Expressing combinations of reflections, where the lines of reflection are parallel, as a translation ● Exploring the combination of translation and reflections ● Identifying when the combination of the operations is commutative ● Defining scale factor enlargement for positive integers and unit fractions ● Describing and drawing enlargements, observing the effect on the perimeter ● Describing and drawing enlargements, observing the effect on the area
		Unit 12.6 Combining translations and reflections		
		Unit 12.7 Enlargements		
		Unit 12.8 Enlargements and area		
2 Lessons		<b style="color: red;">Reteach week END OF TERM ASSESSMENT AND FEEDBACK		
Unit 13 7 Lessons	Summer T1	Prime Factorisation	<ul style="list-style-type: none"> ● Factors and multiples, square numbers, cube numbers, prime number, triangular ● Write a number as a product of primes ● Find the highest common factor and lowest common multiple using the prime factorisation 	<ul style="list-style-type: none"> ● Index notation for positive integer powers beyond two are introduced ● Students explore conjecture involving powers. Purpose of this is to give students the opportunity to practice using the notation and to develop their mathematical thinking. Formal conclusions are not required
		Unit 13.1 Indices		
		Unit 13.2 Prime building blocks		
		Unit 13.3 Prime factorisation		
		Unit 13.4 Prime deductions		

		Unit 13.5 Highest common factor	<ul style="list-style-type: none"> ● Determine LCM by prime factorisation ● Find squares, square roots, cubes and cube roots using prime factorisation ● Use indices to record repeated multiplication ● Calculate with the use of a calculator, including squares, cubes, square roots and cube roots 	<ul style="list-style-type: none"> ● Students 'build' numbers by considering products ● This is an opportunity to practice using index notation and to sew the seeds for prime factorisation which is formally introduced next lesson ● Students are introduced to the fundamental theorem of arithmetic ● Students are given the opportunities to connect array representations, factor tree diagrams and 'lots of' diagrams ● This lesson prepares students for the work to follow on HCF ● Students are required to identify factors using the prime factorisation of a number ● Students are given the opportunity to revisit common factors. The HCF is introduced ● Students explore common factors through cutting up arrays into squares. This allows students to connect the HCF as a geometrical visual. We see that all common factors are factors of the HCF ● Prime factorisation is used to identify common factors and the HCF ● Venn diagrams are used to sort prime factors and to help with this identification ● Students are given the opportunity to revisit common multiples. The LCM is introduced ● Students explore common factors through building squares with rectangles. This allows students to connect the LCM as a geometrical visual. We see that all 		
Unit 13.6 HCF and prime factors		Unit 13.7 Lowest common multiple				
Unit 13.8 LCM and prime factors						

				<p>common multiples are multiples of the LCM</p> <ul style="list-style-type: none"> ● Prime factorisation is used to identify common multiples and the LCM ● Venn diagrams are used to sort prime factors and to help with this identification
<p>Unit 14 7 Lessons</p>		<p>Conceptualising and comparing fractions</p> <p>Unit 14.1 Equal parts of a whole</p> <p>Unit 14.2 Fractions and units of measure</p> <p>Unit 14.3 Fair shares</p> <p>Unit 14.4 Equivalence</p> <p>Unit 14.5 Comparing fractions 1</p> <p>Unit 14.6 Comparing fractions 2</p> <p>Unit 14.7 Ordering decimal fractions</p> <p>Unit 14.8 Mixed comparisons</p>	<ul style="list-style-type: none"> ● Explore multiple representations of fractions ● Represent fractions using area diagrams, bar models and number lines ● Recognise and name equivalent fractions ● Convert fractions to decimals ● Convert terminating decimals to fractions in their simplest form ● Convert between mixed numbers and improper fractions ● Compare and order numbers (including like and unlike fractions) ● Convert simple fractions and decimals to percentages ● Express one quantity as a fraction of another 	<ul style="list-style-type: none"> ● Derive the concept of a fraction by exploring equal parts of a whole ● Express fractions greater than one as a mixed number and as a single fraction. ● Express fractions of units of measure ● Explore problems involving fractions of quantities ● Experience fractions as a division of two integers ● Explore different ways to divide integers into fractional parts ● Represent and understand equivalent fractions ● Using reasoning to compare fractions ● Compare mixed numbers, proper and improper fractions ● Using common denominators to compare fractions ● Representing common denominators through area models ● Representing and ordering decimal fractions ● Comparing fractions through reasoning ● Comparing fractions with accurate methods

<p>Unit 15 11 Lessons</p>		<p>Manipulating and calculating with fractions</p> <p>Unit 15.1 Modelling multiplication 1</p> <p>Unit 15.2 Modelling multiplication 2</p> <p>Unit 15.3 Multiplying fractions 1</p> <p>Unit 15.4 Multiplying fractions 2</p> <p>Unit 15.5 Dividing fractions by integers</p> <p>Unit 15.6 Modelling division by fractions 1</p> <p>Unit 15.7 Modelling division by fractions 2</p> <p>Unit 15.8 Dividing with fractions in mixed contexts</p> <p>Unit 15.9 Adding and subtracting 1</p> <p>Unit 15.10 Adding and subtracting 2</p> <p>Unit 15.11 Adding and subtracting 3</p> <p>Unit 15.12 Distributivity</p>	<ul style="list-style-type: none"> ● Find a fraction of a set of objects or quantity ● Find the whole given a fractional part ● Multiply and divide fractions by a whole number or fraction ● Solve word problems involving multiplication of a fraction by a whole number or fraction using models and equations to represent the problem ● Add and subtract fractions with like denominators ● Add and subtract fractions with unlike denominators ● Add and subtract fractions mixed numbers and improper fractions ● Convert between improper fractions and mixed numbers ● Calculate with decimals 	<ul style="list-style-type: none"> ● Multiplying unit fractions with integers comparing 'lots of' and 'of' models ● Applying the same models to non-unit fractions ● Using area models to multiply two fractions ● Applying knowledge of decimals and percentages to use the area model of fraction multiplication ● Exploring models for dividing fractions by integers, and noticing the effect on the numerator and denominator ● Dividing by fractions using the linguistic frame "___ is ___ of what?" ● Dividing fractions considering how many of the divisor 'fit' in the dividend ● Exploring the relationship between division of fractions and multiplication ● Inspecting division of fractions using function machines ● Applying division of fractions to area ● Adding and subtracting fractions with common denominators ● Addition and subtraction of related fractions ● Comparing fraction additions and subtractions through reasoning ● Representing fraction addition and subtraction ● Adding and subtracting fractions with the (lowest) common denominator
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				<ul style="list-style-type: none"> ● Using the distributive property with fraction calculations ● Manipulating and simplifying calculations
2 Lessons		Reteach week END OF TERM ASSESSMENT AND FEEDBACK		
Unit 16 7 Lessons	Summer T2	Ratio Unit 16.1 Groups	<ul style="list-style-type: none"> ● Understand the concept of ratio and use ratio language and notation ● Connect ratio with understanding of fractions ● Compare two or more quantities in a ratio ● Recognise and construct equivalent ratios ● Express ratios involving rational numbers in their simplest form ● Construct tables of values and use graphs as a representation for a given ratio ● Compare ratios by finding a common total value ● Solve ratio and proportion problems in a variety of contexts 	<ul style="list-style-type: none"> ● Students solve numerical problems about multiple copies of identical groups ● Students use ratio notation to describe the composition of each group ● Students scale up from one group to 'many' groups, preserving the ratio of the components of each group ● They use multiplicative relationships to calculate unknown values in the 'many' groups ● Students represent ratios concretely or pictorially ● They use these representations to justify the equivalence of ratios ● Students identify multiplicative relationships between 'times tables' ● They use similar patterns to solve problems in direct proportionality contexts (but they don't discuss this concept explicitly) ● Students compare the side lengths of triangles, one of which is an enlargement of the other, and calculate the ratios of the lengths of corresponding sides. ● Students divide oblique line segments into specified ratios by dividing the
		Unit 16.2 In the same ratio		
		Unit 16.3 Equivalent ratios		
		Unit 16.4 Rule of four		
		Unit 16.5 Ratio and proportion in geometry 1		
		Unit 16.6 Ratio and proportion in geometry 2		
		Unit 16.7 Dividing into a ratio 1		
		Unit 16.8 Dividing into a ratio 2		

				<p>segment's horizontal and vertical displacements in the same ratio.</p> <ul style="list-style-type: none"> ● Students divide a quantity into a ratio of the form $a : b$. They compare the relative sizes of the parts to each other and to the whole. ● Students use part-part bar models to support their calculations and express their reasoning. ● Students divide a quantity into a ratio of the form $a : b : c$. They compare the relative sizes of two parts to each other and to the whole. ● Students use part-part-part bar models to support their calculations and express their reasoning.
Unit 17 7 Lessons	Percentage Unit 17.1 Percentage number line	<ul style="list-style-type: none"> ● Understand percentages as a ratio of two quantities where one quantity is standardised to 100 ● Understand percentages as a fractional operator with a denominator of 100 ● Understand and interpret percentages over 100 ● Interpret a percentage as a fraction and decimal ● Express a quantity as a percentage of another ● Compare two quantities using percentages ● Find a percentage of an amount with and without a calculator ● Increase and decrease a quantity by a given percentage ● Find a quantity given a percentage of it 	<ul style="list-style-type: none"> ● Students locate percentages and their fraction and decimal equivalents on number lines ● They read or estimate values already marked on number lines. ● Students use place value tables, fractions and number lines to locate, write and read or estimate percentage values written to (at most) one decimal place. ● Students convert fractions to percentages, and vice versa ● They use multiplicative relationships to do so, rather than 'long division'. ● Students use bar models to represent and support their calculation of percentages of quantities. 	
	Unit 17.2 Tenths, hundredths and thousandths			
	Unit 17.3 Converting fractions and percentages			
	Unit 17.4 Percentages of quantities			
	Unit 17.5			
	Unit 17.6			
	Unit 17.7			
	Unit 17.8			

2 Lessons		END OF TERM ASSESSMENT AND FEEDBACK
3 Lessons		END OF YEAR ASSESSMENT AND FEEDBACK