Maths Progression of Knowledge and Skills

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition	• Subitise to 3 • Count how many • Make numbers to 5 • Add 1 more (through songs and rhymes) Begin to have an understanding of numbers to 5	• Conceptually subitise to 5 • 1 more • Notice the composition of numbers within 10 • Combine 2 groups • Add more Have a deep understanding of numbers 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 and some number bonds to 10, including double facts.	• Add together • Add more • Bonds within 10 • Related facts within 20 • Missing numbers Read, write and interpret mathematical statements involving addition (+) and equals (=) signs. • Represent and use number bonds within 20 • Add 1-digit and 2-digit numbers to 20, including zero. • Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems such as 7 = + 2	• Add 1s to any number (related facts) • Add three 1-digit numbers • Add across a 10 • Add multiples of 10 • Add 10s to any number • Add two 2-digit numbers (not across a ten) • Add two 2-digit numbers (across a ten) • Missing numbers Recall and use addition facts to 20 fluently, and derive and use related facts up to 100 • Add numbers using concrete objects, pictorial representations, and mentally, including: • a two-digit number and 1s	• Add 1s, 10s and 100s to a 3-digit number • Add two numbers (no exchange) • Add two numbers across a 10 or 100 • Complements to 100 • Add fractions with the same denominator within 1 whole • Calculate the duration of events Add numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds. • Add numbers with up to three digits, using formal written methods of columnar addition.	• Add 1s, 10s and 100s to a 4-digit number • Add up to two 4-digit numbers • Add decimal numbers in the context of money • Add fractions and mixed numbers with the same denominator beyond 1 whole Add numbers with up to 4 digits using a formal written method. • Solve simple measure and money problems involving fractions and decimals to 2 decimal places. • Add fractions with the same denominator.	• Add using mental strategies • Add whole numbers with more than 4 digits • Add decimals with up to 2 decimal places • Complements to 1 • Add fractions with denominators that are a multiple of one another Add whole numbers with more than 4 digits, including using formal written methods. • Add numbers mentally with increasingly large numbers. • Add decimals, including a mix of whole numbers and decimals, decimals with different	• Add integers up to 10 million • Add decimals with up to 3 decimal places • Order of operations • Negative numbers • Add fractions Add larger numbers, using the formal written method of columnar addition. • Use their knowledge of the order of operations to carry out calculations involving the 4 operations. • Calculate intervals across zero. • Add fractions with different denominators and mixed numbers, using the concept of equivalent fractions.

				• a two-digit number and 10s • 2 two-digit numbers • adding 3 one-digit numbers • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	• Add fractions with the same denominator within 1 whole. • Calculate the time taken by particular events or tasks.		numbers of decimal places, and complements of 1 • Add fractions with the same denominator, and denominators that are multiples of the same number.	

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Subtraction	• Subitise to 3 • Count how many • Make numbers to 5 • Take 1 away (through songs and rhymes) Begin to have an understanding of numbers to 5 • We recommend focusing on noticing and representing small quantities, perceptual subitising and counting	• Conceptually subitise to 5 • 1 less • Notice the composition of numbers within 10 • Partition • Take away 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 (and some subtraction facts) and some number bonds to 10, including double facts.	• Find a part • Take away • Bonds within 10 • Related facts within 20 • Missing numbers Read, write and interpret mathematical statements involving subtraction (–) and equals (=) signs. • Represent and use number bonds and related subtraction facts within 20 • Subtract one-digit and two-digit numbers to 20, including zero. • Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = – 9	• Subtract 1s from any number (related facts) • Subtract across a 10 • Subtract multiples of 10 • Subtract 10s from any number • Subtract two 2-digit numbers (not across a ten) • Subtract two 2-digit numbers (across a ten) • Missing numbers Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100 • Subtract numbers using concrete objects, pictorial representations, and mentally, including: • a two-digit number and 1s	• Subtract 1s, 10s and 100s from a 3-digit number • Subtract two numbers (no exchange) • Subtract two numbers across a 10 or 100 • Complements to 100 • Subtract fractions with the same denominator within 1 whole Subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds. • Subtract numbers with up to three digits, using formal written methods. • Subtract fractions with the same denominator within 1 whole.	• Subtract 1s, 10s, 100s and 1,000s from a 4-digit number • Subtract up to two 4-digit numbers • Subtract decimal numbers in the context of money • Subtract fractions and mixed numbers with the same denominator Subtract numbers with up to 4 digits using a formal written method. • Solve simple measure and money problems involving fractions and decimals to 2 decimal places. • Subtract fractions with the same denominator.	• Subtract whole numbers with more than 4 digits • Subtract using mental strategies • Subtract decimals with up to 2 decimal places • Complements to 1 • Subtract fractions with denominators that are a multiple of one another Subtract whole numbers with more than 4 digits. • Subtract numbers mentally with increasingly large numbers. • Subtract decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and	• Subtract integers up to 10 million • Subtract decimals with up to 3 decimal places • Order of operations • Negative numbers • Subtract fractions Subtract larger numbers, using the formal written methods of columnar subtraction. • Use their knowledge of the order of operations to carry out calculations involving the 4 operations. • Calculate intervals across zero. • Subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.

				• a two-digit number and 10s • 2 two-digit numbers • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.			complements of 1 • Subtract fractions with the same denominator, and denominators that are multiples of the same number.	

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Multiplication	• Continue with counting and subitising skills as a foundation for later work on equal groups. (see addition and subtraction sections)	• Double to 10 • Make equal groups 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 and some number bonds to 10, including double facts.	• Count in 2s, 5s and 10s • Add equal groups • Make arrays • Make doubles Count in multiples of twos, fives and tens. • Solve one-step problems involving multiplication, using concrete objects, pictorial representations and arrays with the support of the teacher.	• Link repeated addition and multiplication • Use arrays • Double • The 2 times-table • The 10 times-table • The 5 times-table • Missing numbers Recall and use multiplication facts for the 2, 5 and 10 multiplication tables. • Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (×) and equals (=) signs. • Show that multiplication of two numbers can be done in any order (commutative).	• The 3 times-table • The 4 times-table • The 8 times-table • Related facts • Multiply a 2-digit number by a 1-digit number - no exchange • Multiply a 2-digit number by a 1-digit number - with exchange • Scaling • Correspondence problems Recall and use multiplication facts for the 3, 4 and 8 multiplication tables. • Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit	• Times-table facts to 12 × 12 • Multiply by 1 and 0 • Multiply 3 numbers • Factor pairs • Multiply by 10 and 100 • Related facts • Mental strategies • Multiply a 2 or 3-digit number by a 1-digit number • Scaling • Correspondence problems Recall multiplication facts for multiplication tables up to 12 × 12 • Use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1; multiplying together three numbers.	• Multiples and factors • Square and cube numbers • Multiply numbers up to 4 digits by a 1-digit number • Multiply numbers up to 4 digits by a 2-digit number • Multiply by 10, 100 and 1,000 • Mental strategies • Multiply fractions by a whole number • Multiply mixed numbers by a whole number • Find the whole Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers • Recognise and use square numbers and cube numbers,	• Multiply numbers up to 4 digits by a 2-digit number • Multiply by 10, 100 and 1,000 • Order of operations • Multiply decimals by integers • Multiply fractions by fractions • Find the whole • Calculations involving ratio Identify common factors and common multiples. • Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. • Multiply numbers by 10, 100 and 1,000

		• Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.			numbers, using mental and progressing to formal written methods. • Solve problems, including missing number problems, involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	• Recognise and use factor pairs and commutativity in mental calculations. • Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. • 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.	and the notation for squared (^{2}) and cubed (^{3}) • 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 numbers mentally drawing upon known facts. • Multiply whole numbers and those involving decimals by 10, 100 and 1000 • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	• Multiply one-digit numbers with up to two decimal places by whole numbers. • Use their knowledge of the order of operations to carry out calculations involving the 4 operations. • Multiply simple pairs of proper fractions, writing the answer in its simplest form. • 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 of percentages.

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Division	• Continue with counting and subitising skills as a foundation for later work on equal groups. (see addition and subtraction sections)	• Sharing • Grouping 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 and some number bonds to 10, including double facts. • Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.	• Make equal groups – grouping • Make equal groups – sharing • Find a half • Find a quarter Solve simple one-step problems involving division, using concrete objects, pictorial representations and arrays with the support of the teacher. • Recognise, find and name a half as one of two equal parts of a quantity. • Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	• Divide by 2 • Divide by 10 • Divide by 5 • Missing numbers • Unit fractions • Non-unit fractions Recall and use division facts for the 2, 5 and 10 multiplication tables. • Calculate mathematical statements for division within the multiplication tables and write them using the division (÷) and equals (=) signs. • Recognise, find, name and write fractions 1 , 1 , 2 and of a quantity	• Divide by 3 • Divide by 4 • Divide by 8 • Related facts • Divide a 2-digit number by a 1-digit number - no exchange • Divide a 2-digit number by a 1-digit number - with remainders • Unit fractions of a set of objects • Non-unit fractions of a set of objects Recall and use division facts for the 3, 4 and 8 multiplication tables.	• Division facts to 12 × 12 • Divide a number by 1 and itself • Related facts • Divide a 2 or 3-digit number by a 1-digit number • Divide by 10 and 100 Recall division facts for multiplication tables up to 12 × 12 • Use place value, known and derived facts to divide mentally, including: dividing by 1 • Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.	• Mental strategies • Divide numbers up to 4 digits by a 1-digit number • Divide by 10, 100 and 1,000 • Fraction of an amount 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. • Divide whole numbers and those involving decimals by 10, 100 and 1,000	• Short division • Mental strategies • Long division • Order of operations • Divide by 10, 100 and 1,000 • Divide decimals by integers • Decimal and fraction equivalents • Divide a fraction by an integer • Fraction of an amount • Calculate percentages • Calculations involving ratio Perform mental calculations, including with mixed operations and large numbers. • Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as

					• Write and calculate mathematical statements for 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. • Recognise, find and write fractions of a discrete set of objects: unit fractions and nonunit fractions with small denominators.			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. • Divide numbers by 10, 100 and 1,000 giving answers up to three decimal places. • Use written division methods in cases where the answer has up to two decimal places. • Associate a fraction with division and calculate decimal fraction equivalents.

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								• Divide proper fractions by whole numbers [for example, 1 ÷ 2 = 1] • Solve problems involving the calculation of percentages.
2D shape	Recognise circles, triangles, squares and rectangles. Make simple pictures using 2D shapes.		Continue to recognise circles, triangles, squares and rectangles. Sort 2D shapes according to their properties	As Year One and: Recognise pentagons and hexagons and Count vertices on 2D shapes Recognise lines of symmetry	As Year Two and: Draw polygons	As Year Three and: Recognise and draw quadrilaterals Identify scalene, right angle, equilateral and isosceles triangles Complete symmetrical figures	As Year Four and: Classify regular and irregular polygons	As Year Five and: Radius, diameter and circumference of a circle. Draw shapes accurately
3D shape	Recognise spheres, cylinders, cubes and cuboids. Make simple constructions using 3D shapes		Recognise cones, pyramids and sort them according to their properties	As Year One and: Recognise triangular prisms Count vertices on 3D shapes Count edges on 3D shapes	As Year Two and: Count the faces on 3D shapes. Make 3D shapes		Draw 3D shapes accurately using isometric paper	As Year Five and: Create nets of 3D shapes
Patterns	Make ABAB AAB and ABB patterns with objects and images.		Make patterns with 2D and 3D shapes.	Make patterns with 2D and 3D shapes.				

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Angles and lines				Recognise angles as turns Recognise right angles Recognise parallel and perpendicular lines Recognise horizontal and vertical lines	As Year Three and: Recognise acute and obtuse angles	As Year Four and: Estimate and measure angles Draw lines and angles accurately Calculate angles on a point and on a straight line Measure lengths and angles in shapes.	As Year Five and: Measure and classify angles Calculate angles Vertically opposite angles Angles in polygons, quadrilaterals and triangles
Length and height	Use language of taller and shorter to compare length and height	As EYFS and: Measure length and height using objects Compare lengths and heights using centimetres	As Year One and: Measure length and height in metres Order length and height	As Year Two and: Measure in millimetres Equivalent lengths (m, cm and mm)	As Year Three and: Equivalent lengths (m and km)	As Year Four and: Convert lengths Convert between metric and imperial units	As Year Five and: Calculate with imperial and metric measures
Mass, volume and capacity	Use balancing scales to discuss heavier and lighter Use containers and language of full and empty to compare capacity and volume.	As EYFS and: Measure and compare mass Measure and compare capacity Measure volume	As Year One and: Measure in grams and kilograms Measure in millilitres and litres	As Year Two and: Equivalent mass (grams and kilograms) Equivalent capacities (millilitres and litres)		As Year Four and: Convert between metric and imperial units Estimate volume and capacity Cubic centimetres	As Year Five and: Calculate volume by counting cubes
Temperature	Use vocabulary hot, hotter, colder and cold when discussing weather.		As Year One and: Read thermometers in degrees Celsius.			Measure temperature including negative numbers.	

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Perimeter and area					Understand perimeter is the distance around the edge of a shape Measure perimeter Calculate perimeter	As Year Three and: Calculate perimeter of rectilinear shapes Calculate perimeter of regular polygons Count squares to calculate area Compare areas	As Year Four and: Area of rectangles Area of compound shapes Estimate area	As Year Five and: Calculate area of triangles Area of a parallelogram
Money	Use 1p coins during role play activities		Recognise coins Recognise notes Count in coins	As Year One and: Count in pounds and pence Make the same amount Make a pound Give change Calculate with money	As Year Two and: Convert pounds and pence Solve addition and subtraction problems with money	As Year Three and: Write money using decimals Estimate with money		
Time	Use timed songs during transition times Use the language of yesterday, today, tomorrow Understand the days of the week		Hours minutes and seconds Tell the time to the hour and the half hour	As Year One and: Hours in a day Tell the time to the nearest 5 mintues	As Year Two and: Years, months, weeks and days Tell the time to the nearest minute Read digital clock Use AM and PM	As Year Three and: Convert between analogue and digital times Convert 24 hour clock	As Year Four and: Read timetables Convert using timetables	
Position and direction	Follow instructions to move in certain directions Ordinal numbers		As EYFS and: Describe turns Left and right Forwards and backwards Above and below	As Year One and: Describe movement and turns Shape patterns with turns		Plot co-ordinates Draw 2D shapes on a grid Translations	As Year Four and: Problem solving with co-ordinates Lines of symmetry Reflection in horizontal and vertical lines	As Year Five and: Exploring the first quadrant

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