Progression in Skill, Knowledge and Vocabulary

In the national curriculum, objectives are given for each year group. If a child is not achieving an objective, it may be necessary to refer back to previous learning in order to identify and fix and gaps in understanding.

Objectives in bold are considered Key Performance Indicators (NAHT). Example calculations, notes and guidance regarding non-statutory requirements can be found in the progression ladders (saved in staff resources – maths – progression ladders). In some places, the objective has been included twice – this is to align progression in similar objectives horizontally across the chart.

Number: Number and Place Value					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Count to and across 100, forwards and backwards, beginning with 0 or 1, from any given number.	Count in steps of 2, 3 and 5 from 0, and in tens from any number, forward and backward.	**Count from 0 in multiples of 4, 8, 50 and 100.**	**Count backwards through 0 to include negative numbers.**	**Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0.**	**Use negative numbers in context, and calculate intervals across 0.**
Count, read and write numbers to 100 in numerals.	Recognise the place value of each digit in a 2-digit number (tens, ones).	**Recognise the place value of each digit in a 3-digit number (hundreds, tens, ones).**	Recognise the place value of each digit in a 4-digit number (thousands, hundreds, tens, ones).	**Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit.**	
Count in multiples of twos, fives and tens.	Count in steps of 2, 3 and 5 from 0.	**Count from 0 in multiples of 4, 8, 50 and 100**	**Count in multiples of 6, 7, 9, 25 and 1000.**	Count backwards and forwards in steps of powers of 10 for any given number up to 1,000,000.	
Given a number, identify one more or one less.	Compare and order numbers from 0 up to 100; use <, > and = signs.	Compare and order numbers up to 1000. **Find 10 or 100 more or less than a given number.**	**Compare and order numbers beyond 1000**. Find 1000 more or less than a given number.		
Read and write numbers from 1 to 20 in numerals and words.	Read and write numbers to at least 100 in numerals and words.	Read and write numbers up to 1000 in numerals and words.	Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value.	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.
Identify and represent numbers using objects and pictorial representations (including a number line).	Identify, represent and estimate numbers using different representations (including a number line).	Identify, represent and estimate numbers using different representations.	Identify, represent and estimate numbers using different representations.		
Use the language: equal to, more than, less than (fewer), most, least.	Use place value and number facts to solve problems.	**Solve number problems and practical problems involving these ideas.**	Solve number problems and practical problems that involve all of the above with increasingly large positive numbers.	Solve number problems and practical problems that involve all of the above.	Solve number problems and practical problems that involve all of the above.
			Round any number to the nearest 10, 100 or 1000.	Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10 000 or 100 000.	**Round any number to a required degree of accuracy**.

Number: Addition and Subtraction					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6***
Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.					Use their knowledge of the order of operations (BIDMAS) to carry out calculations involving the 4 operations.
Represent and use number bonds and related subtraction facts within 20.	**Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100**.				
Add and subtract 1-digit and 2-digit numbers to 20, including 0.	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: • a 2-digit number and ones • a 2-digit number and tens • two 2-digit numbers • adding three 1-digit numbers				
Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ -9.	**Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures.**	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	**Solve addition and subtraction 2-step problems in contexts, deciding which operation to use and why.**	Solve addition and subtraction multi-step problems in contexts, deciding which operations to sue and why.	**Solve addition and subtraction multi-step problems in contexts, deciding which operations to sue and why. Solve problems involving addition, subtraction, multiplication and division.**
	Solve problems with addition and subtraction applying their increasing knowledge of mental methods.	**Add and subtract numbers mentally, including:** • **A 3-digit number and ones** • **A 3-digit number and tens** • **A 3-digit number and hundreds**		**Add and subtract numbers mentally with increasingly large numbers.**	Perform mental calculations, including with mixed operations and large numbers.
	Solve problems with addition and subtraction applying their increasing knowledge of written methods.	Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction.	Add and subtract numbers with up to 4 digits, including using formal written methods of columnar addition and subtraction where appropriate.	**Add and subtract numbers with more than 4 digits, including using formal written methods of columnar addition and subtraction.**	
	Show that addition of two numbers can be done in any order (commutative) but that the subtraction of one number from another cannot.				
	Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	Estimate the answer to a calculation and use inverse operations to check answers.	Estimate and use inverse operations to check answers to a calculation.	Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.	**Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.**

*In Year 6, this domain merges as 'Number – addition, subtraction, multiplication and division'.

Number: Multiplication and Division					
Year 1	**Year 2**	**Year 3****	**Year 4****	**Year 5****	**Year 6***
Solve 1-step problems involving multiplication, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	**Solve problems involving multiplication using materials, arrays, repeated addition, mental methods, and multiplication/division facts, including problems in contexts.**		Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.	Multiply and divide numbers mentally drawing upon known facts. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.	Perform mental calculations, including with mixed operations and large numbers.
Solve 1-step problems involving division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	**Solve problems involving division using materials, arrays, repeated addition, mental methods, and multiplication/division facts, including problems in contexts.**	Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which *n* objects are connected to *m* objects.	Solve problems involving multiplying and adding, including using the distributive law to multiply 2-digit numbers by 1-digit, integer scaling problems and harder correspondence problems such as *n* objects are connected to *m* objects	Solve problems involving +, -, x and ÷ (and a combination of these) including the meaning of the equals sign. **Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.**	**Solve addition and subtraction multi-step problems in contexts, deciding which operations to use and why.** Solve problems involving addition, subtraction, multiplication and division.
	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.	**Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.**	**Recall multiplication and division facts for multiplication tables up to 12 x 12.**		
	Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs.	**Write and calculate mathematical statements for multiplication and division using the multiplication tables they know, including for 2-digit numbers times 1-digit.**		Multiply numbers up to 4-digits by a 1 or 2-digit number using a formal written method, including long multiplication for 2-digit numbers. Divide numbers up to 4-digits by a 1-digit number using the formal written method of short division and interpret remainders appropriately for the context.	**Multiply multi-digit numbers up to 4-digits by a 2-digit whole number using the formal written method of long multiplication.** **Divide numbers up to 4-digits by a 2-digit whole number using the formal written methods of short/long division as appropriate, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.**
	Show that multiplication of 2 numbers can be done in any order (commutative) but that the division of one number by another cannot.		Recognise and use factor pairs and commutativity in mental calculations.	**Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.** **Solve x and ÷ problems including their knowledge of factors and multiples, squares and cubes.**	Use their knowledge of the order of operations (BIDMAS) to carry out calculations involving the 4 operations.
				Know and use the vocabulary of prime numbers, prime factors and composite (no-prime) numbers. Establish whether a number up to 100 is prime and recall prime numbers up to 19.	**Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.**

*In Year 6, this domain merges as 'Number – addition, subtraction, multiplication and division'.

** See Times Tables termly planner.

Times Tables Termly Planner						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 3	Count in multiples of 3 to 12x3 in order from 0.	Recall multiples of 3 up to 12x3 in any order, including missing numbers and related division facts. Count in multiples of 4 up to 12x4 in order from 0. Introduce (relating to x4) and begin to count in multiples of 8 from 0 to 12x8.	Recall multiples of 3 up to 12x3 in any order, including missing numbers and related division facts. Count in multiples of 4 to 12x4 in order from 0. Count in multiples of 8 to 12x8 in order from 0.	Recall multiples of 4 up to 12x4 in any order, including missing numbers and related division facts. Count in multiples of 8 to 12x8 in order from 0.	Recall multiples of 4 up to 12x4 in any order, including missing numbers and related division facts. Recall multiples of 8 up to 12x8 in any order, including missing numbers and related division facts.	Recall multiples of 8 up to 12x8 in any order, including missing numbers and related division facts.
Year 4	Recall multiples of 3, 4 and 8 up to 12x in any order, including missing numbers and related division facts. Count in 6s in order up to 12x6, using multiples of 3 to support.	Recall multiples of 6 up to 12x6 in any order, including missing numbers and related division facts. Count in 7s in order up to 12x7.	Recall multiples of 6 up to 12x6 in any order, including missing numbers and related division facts. Recall multiples of 7 up to 12x7 in any order, including missing numbers and related division facts.	Recall multiples of 7 up to 12x7 in any order, including missing numbers and related division facts. Count in 9s in order up to 12x9. Count in 11s in order up to 12x11.	Recall multiples of 9 up to 12x7 in any order, including missing numbers and related division facts (using 10x and adjusting by 1 group to find 9x as a strategy). Recall multiples of 11 up to 12x11 in any order, including missing numbers and related division facts. Count in 12s in order up to 12x12.	Recall multiples of 9 up to 12x7 in any order, including missing numbers and related division facts. Recall multiples of 12 up to 12x12 in any order, including missing numbers and related division facts (using 10x and adjusting by adding 2 more groups).
Year 5	Recall multiples of 12 up to 12x12 in any order, including missing numbers and related division facts. Recall multiples of all times tables up to 12x12 in any order, including missing numbers and related division facts.					

Number: Fractions

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise, find and name a half as one of two equal parts of an object, shape or quantity.	**Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity.**	**Recognise, find and write fractions of a discrete set of objects; unit fractions and non-unit fractions with small denominators.**	Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$.	**Read and write decimal numbers as fractions (for example 0.71 = $\frac{71}{100}$).**	Associate a fraction with division and calculate decimal fraction equivalents for a simple fraction (for example $\frac{3}{8}$ = 0.375).
Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	**Write simple fractions ($\frac{1}{2}$ of 6 = 3) and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.**	**Recognise and show, using diagrams, equivalent fractions with small denominators.**	**Recognise and show, using diagrams, families of common equivalent fractions.**	Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.
		Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.		Recognise mixed numbers and improper fractions and convert from one form to the other, writing mathematical statements >1 as a mixed number.	
		Add and subtract fractions with the same denominator within one whole (for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$).	Add and subtract fractions with the same denominator.	Add and subtract fractions with the same denominator and denominators that are multiples of the same number.	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
		Compare and order unit fractions, and fractions with the same denominators.		**Compare and order fractions whose denominators are all multiples of the same number.**	Compare and order fractions, including fractions >1.
		Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing 1-digit numbers or quantities by 10.	**Count up and down in hundredths; recognise that hundredths arise from dividing an object by 100 and dividing tenths by 10.** Recognise and write decimal equivalents of any number of tenths or hundredths.	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. Recognise the per cent symbol (%) and understand that % relates to 'number of parts per hundred' and write percentages as a fraction with a denominator 100, and as a decimal.	**Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.**
		Solve problems that involve all of the above.	Solve problems involving increasingly harder fractions to calculate quantities, including non-unit fractions where the answer is a whole number. **Solve simple measure and money problems involving fractions and decimals to two decimal places.**	**Solve problems involving number up to 3 decimal places.** **Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.**	**Solve problems which require answers to be rounded to specified degrees of accuracy.**
			Find the effect of dividing a 1 or 2-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.		Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places.
			Round decimals with one decimal place (dp) to the nearest whole number.	Round decimals with two decimal places to the nearest whole number and to one decimal place.	
			Compare numbers with the same number of decimal places up to two decimal places.	**Read, write and compare numbers with up to 3 decimal places.**	Identify the value of each digit in numbers given to three decimal places.
				Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	Multiply simple pairs of proper fractions, writing the answer in its simplest form. Divide proper fractions by whole numbers.
					Multiply 1-digit numbers with up to 2 dp by whole numbers. **Use written division methods in cases where the answer has up to two dp.**

Measurement					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Compare, describe and solve practical problems for: lengths and heights; mass weight); capacity and volume; time.	Compare and order lengths, mass, volume/capacity and record the results using >, < and =.		**Convert between different units of measure (km to m; hours to minutes).** Estimate, compare and calculate different measures, including money in pounds and pence.	**Convert between different units of metric measure.**	**Use, read and convert between standard units of measure, converting measurements of length, mass, volume and time from a smaller unit to a larger unit (and vice versa) using decimal notation (up to 3 decimal places).**
Measure and begin to record the following: lengths and heights; mass/weight; capacity/volume.	Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.	**Measure, compare, add and subtract; lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).**		Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.	Convert between miles and kilometres.
Sequence events in chronological order using language (before and after; next, first, last; yesterday, today, tomorrow; morning, afternoon, evening).	Compare and sequence intervals of time.	Compare durations of events (for example calculate the time taken by particular tasks).			
Recognise and know the value of different denominations of coins and notes.	Recognise and use symbols for pounds (£) and pence (P); combine amounts to make a particular value. Find different combinations of coins that equal the same amounts of money. **Solve simple problems in a practical context involving + and – of money of the same unit, including giving change.**	**Add and subtract amounts of money to give change using both £ and p in practical contexts.**			
Recognise and use language relating to dates including days of the week, weeks, months and years. Time (hours, minutes, seconds)	Know the number of minutes in an hour and the number of hours in a day.	Know the number of seconds in a minute and the number of days in each month, year and leap year. Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m.; morning/afternoon/ noon/midnight.	Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	Solve problems involving converting between units of time.	
Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	Tell the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.	**Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.**	Read, write and convert time between analogue and digital 12- and 24-hour clocks.		
		Measure the perimeter of simple 2D shapes.	Measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m.	**Measure and calculate the perimeter of composite rectilinear shapes in cm and m.**	Recognise that shapes with the same areas can have different perimeters and vice versa.
			Find the area of rectilinear shapes by counting squares.	**Calculate and compare the area of rectangles using standard units (cm^2, m^2); estimate the area of irregular shapes.**	Recognise when it is possible to use formulae for area and volume of shapes. Calculate the area of parallelograms and triangles.
				Estimate volume (e.g. using cubes to build cuboids) and capacity (e.g. using water).	Calculate, estimate and compare volume of cubes and cuboids using standard units (cm^3, m^3, mm^3, km^3).
				Use all 4 operations to solve problems involving measure using decimal notation, including scaling.	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places.

Geometry: Properties of Shapes					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Recognise and name common 2D shapes including, for example, rectangles (including squares), circles and triangles.	Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line.		**Identify lines of symmetry in 2D shapes presented in different orientations.** Complete a simple symmetric figure with respect to a specific line of symmetry.		
Recognise and name common 3D shapes including, for example, cuboids (including cubes), pyramids and spheres.	Identify and describe the properties of 3D shapes, including the number of edges, vertices and faces.			Identify 3D shapes, including cubes and other cuboids, from 2D representations.	Recognise, describe and build simple 3D shapes, including making nets.
	Identify 2D shapes on the surface of 3D shapes (for example a circle on a cylinder; a triangle on a pyramid).				
	Compare and sort common 2D and 3D shapes and everyday objects.	Draw 2D shapes and make 3D shapes using modelling materials; recognise 3D shapes in different orientations and describe them.	**Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.**	Use the properties of rectangles to deduce related facts and find missing lengths and angles. **Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.**	**Compare and classify geometric shapes based on their properties and sizes.**
		Recognise angles as a property of a shape or a description of a turn. **Identify right angles, recognise that two right angles make a half turn; three make three quarters of a turn and four a complete turn.** **Identify whether angles are greater than or less than a right angle.**	Identify acute and obtuse angles and compare and order angles up to two right angles by size.	Know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles. **Draw given angles, and measure them in degrees (^{0}).** Identify angles at a point and one whole turn (360^0); angles at a point on a straight line and ½ a turn (total 180^0); other multiples of 90^0.	Draw 2D shapes using given dimensions and angles. Find unknown angles in any triangles, quadrilaterals and regular polygons. Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
		Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.			
					Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.

Geometry: Position and Direction					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Describe position, direction and movement, including whole, half, quarter and three-quarter turns.	**Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).**	No statutory requirement in the 2014 curriculum.	Describe movements between positions as translations of a given unit to the left/right and up/down.	Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.	**Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.**
	Order and arrange combinations of mathematical objects in patterns and sequences.				
			Describe positions on a 2D grid as coordinates in the first quadrant.		Describe positions on the full coordinate grid (all four quadrants).
			Plot specified points and draw sides to complete a given polygon.		

Statistics					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
No statutory requirement in the 2014 curriculum.	Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.	**Interpret and present data using bar charts, pictograms and tables.**	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	**Complete, read and interpret information in tables, including timetables.**	Interpret and construct pie charts and line graphs and use these to solve problems. Calculate and interpret the mean as an average.
	Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. Ask and answer questions about totaling and comparing categorical data.	Solve 1- and 2-step questions using information presented in scaled bar charts and pictograms and tables.	**Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.**	Solve comparison, sum and difference problems using information provided in a line graph.	

Ratio and Proportion					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
No statutory requirement in the 2014 curriculum.	No statutory requirement in the 2014 curriculum.	No statutory requirement in the 2014 curriculum.	No statutory requirement in the 2014 curriculum.	No statutory requirement in the 2014 curriculum.	Solve problems involving the relative sizes of two quantities where missing values can be found using integer multiplication and division facts.
					Solve problems involving the calculation of percentages and the use of percentages for comparison.
					Solve problems involving similar shapes where the scale factor is known or can be found.
					Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Algebra					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
No statutory requirement in the 2014 curriculum.	No statutory requirement in the 2014 curriculum.	No statutory requirement in the 2014 curriculum.	No statutory requirement in the 2014 curriculum.	No statutory requirement in the 2014 curriculum.	**Use simple formulae.**
					Generate and describe linear number sequences.
					Express missing number problems algebraically.
					Find pairs of numbers that satisfy an equation with 2 unknowns.
					Enumerate possibilities of combinations of 2 variables.