Maths Learning Progression

F2 to Y6

Place Value							
Key Area	**EYFS**	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**
Counting	Verbally count beyond 20, recognizing the pattern of the counting system.	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Count to 100 in numerals; count in multiples of twos, fives and tens.	Count in steps of 2, 3, and 5 from 0, and in tens from any given number, forward and backward.	Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.	Count in multiples of 6, 7, 9, 25 and 1000. Count backwards through 0 to include negative numbers.	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. Count forwards and backwards with positive and negative whole numbers, including through 0.	
Represent	Have a deep understanding of number to 10, including the composition of each number.	Identify and represent numbers using objects and pictorial representations. Read and write numbers to 100 in numerals. Read and write numbers from 1 to 20 in numerals and words.	Read and write numbers to at least 100 in numerals and words. Identify, represent and estimate numbers using different representations, including the number line.	Identify, represent and estimate numbers using different representations. Read and write numbers up to 1000 in numerals and in words.	Identify, represent and estimate numbers using different representations. Read Roman numerals to 100 (I to C) and know that over time, the numeral system changes to include the concept of zero and place value.	Read, write, (order and compare) numbers to at least 1 000 000 and determine the value of each digit. 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.

Use PV and Compare	Subitise up to 5. Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.	Given a number, identify one more and one less.	Recognise the place value of each digit in a two-digit number. (tens, ones) Compare and order numbers from 0 up to 1000; use <,> and = signs.	Recognise the place value of each digit in a three-digit number. (hundreds, tens, ones) Compare and order numbers up to 1000.	Find 1000 more or less than a given number. Recognise the place value of each digit in a four-digit number. (thousands, hundreds, tens, ones) Order and compare numbers beyond 1000.	(Read, write) order and compare numbers to at least 1 000 000 and determine the value of each digit.	(Read, write) order and compare numbers to at least 10 000 000 and determine the value of each digit.
Rounding					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 and 100 000.	Sound any whole number to a required degree of accuracy.
Negative Numbers						Interpret negative numbers in context.	Use negative numbers in context, and calculate intervals across zero.
Problems			Use place value and number facts to solve problems.	Solve number problems and practical problems involving these ideas.	Solve number and practical problems that involve all of the above and with increasingly large positive numbers.	Solve number problems and practical problems that involve all of the above.	Solve number and practical problems that involve all of the above.
Addition and Subtraction							
Recall, Represent, Use	Automatically recall (without reference to rhymes, counting or other aids)	Read, write and interpret mathematical statements involving addition +, subtraction -,	Recall and use addition and subtraction facts to 20 fluently, and derive and use	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.	

	number bonds to 5 (including subtraction facts) and some number bonds to 10, including double facts.	and equals = signs. Represent and use number bonds and related subtraction facts within 20.	related facts up to 100. Show that addition of two numbers can be done in any order (commutative) and 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.				
Calculations	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.	Add and subtract one-digit and two-digit numbers to 20, including zero.	Add and subtract numbers using concrete objects, pictorial representations and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers and adding three one-digit numbers.	Add and subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens and a three-digit number and hundreds Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.	Add and subtract whole numbers with more than 4 digits, including formal written methods. Add and subtract numbers mentally with increasingly large numbers.	Perform mental calculations, including with mixed operations and large numbers. Use their knowledge of the order of calculations to carry out calculations involving four operations.

Solve Problems		Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.	Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures. Solve problems with addition and subtraction applying their increasing knowledge of mental and written methods.	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	Solve addition and subtractions multi-step problems in contexts, deciding which operations and methods to use and why. Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
Multiplication and Division							
Recall, Represent, Use	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be evenly distributed.		Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.	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 12x12. 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. Recognise and use factor pairs and	Identify multiples and factors, including finding all the factor pairs of a number, and common factors of two numbers. Know and use the vocabulary of prime numbers, prime factors and composite numbers. Establish whether a number up to 100 is prime and recall prime numbers up to 19.	Identify common factors, common multiples and prime numbers. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

					commutativity in mental calculations.	Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}).	
Calculations			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 that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.	Multiply numbers up to 4 digits by a one-digit or two-digit number using normal written method, including long multiplication for two-digit numbers. Multiply and 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. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.	Multiply multi-digit numbers up to 4 digits by a two-digit number using the formal written method of long multiplication. Divide numbers up to 4 digits by a two-digit whole number using the formal written method od long division, and interpret remainders as 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. Perform mental calculations, including with mixed operations and large numbers.
Solve Problems		Solve problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations, and arrays with the support of the teacher.	Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and 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 the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects and connected to m objects.	Solve problems involving multiplication and division including using knowledge of factors and multiples, squares and cubes. Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	Solve problems involving addition, subtraction, multiplication and division.
Combined operations						Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.	Use their knowledge of the order of operations to carry out calculations involving the four operations.

Fractions, Decimals and Percentages							
Fractions Recognise and Write		Recognise, find and name a half as one of two equal parts of an object, shape or quantity. Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	Recognise, find, name and writing factions 1/3, 1/4, 2/4, and 3/4 of a length, shape, set of objects or quantity.	Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.	Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number.	
Fractions Compare			Recognise the equivalence of 2/4 and 1/2.	Recognise and show, using diagrams, equivalent fractions with small denominators. Compare and order unit fractions, and fractions with the same denominator.	Recognise and show, using diagrams, families of common equivalent fractions.	Compare and order factions whose denominators are all multiples of the same number.	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. Compare and order fractions, including fractions >1.
Fractions Calculations			Write simple fractions, 1/2 of 6 = 3.	Add and subtract fractions with the same denominator within one whole.	Add and subtract fractions with the same denominator.	Add and subtract fractions with the same denominator and denominators	Add and subtract fractions with different denominators and mixed numbers, sing

						that are multiples of the same number. Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	the concept of equivalent fractions. Multiply simple pairs of proper fractions, writing the answer in its simplest form. Divide proper fractions by whole numbers.
Fractions Solve problems				Solve problems that involve the above.	Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.		
Decimals Recognise and Write					Recognise and write decimal equivalents of any number of tenths or hundredths. Recognise and write decimal equivalents to 1/4, 1/2, 3/4	Read and write decimals numbers as fractions. Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	Identify the value of each digit in numbers given to three decimal places.
Decimals Round and Compare					Round decimals with one decimal place to the nearest whole number. Compare numbers with the same	Round decimals with two decimal places to the nearest whole number and to one decimal place.	

					number of decimal places up to two decimal places.	Read, write, order and compare numbers with up to three decimal places.	
Decimals Calculations and problems					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 one, tenths and hundredths.	Solve problems involving number up to three decimal places.	Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. Multiply one-digit numbers with up to two decimal places by whole numbers. Use written division methods in cases where the answer has up to two decimal places. Solve problems which require answers to be rounded to specifies degrees of accuracy.
FDP					Solve simple measure and money problems involving fractions and decimals to two decimal places.	Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.	Associate a fraction with division and calculate decimal equivalents for a simple fraction. Recall and use equivalences between simple fractions, decimals and percentages,

						Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25.	including in different contexts.
Ratio and Proportion							
Ratio and proportion							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 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							
Algebra		*Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.	*Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	*Solve missing number problems.			Use simple formulae. Generate and describe linear number sequences. Express missing number problems algebraically. Find pairs of numbers that satisfy an equation with two unknowns. Enumerate possibilities of combinations of two variables.
NOTE	*Although algebraic notation is not introduced until Y6, algebraic thinking tarts much earlier as exemplified by the 'missing number' objectives from Y1/2/3.						
Measurement							
Using measures	Develop special reasoning skills across all areas of mathematics including shape, space and measures.	Compare, describe and solve practical problems for: lengths and heights (long/short, longer/shorter, tall/short), mass/weight (heavy/light,	Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm), mass (kg/g), temperature ('C) and capacity (l,ml) to the nearest appropriate unit, using scales,	Measure, compare, add and subtract: lengths (m/cm/mm), mass (kg/g) and volume/capacity (l/ml).	Convert between different units of measure.	Convert between different units of metric measure. Understand and use approximate equivalences between metric units an common imperial units such as inches, pounds and pints.	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.

		heavier than, lighter than), capacity and volume (full/empty, more than, less than, full, half full) and time (quicker/slower, earlier, later). Measure and begin to record the following: lengths and heights, mass/weight, capacity and volume and time (hours, minutes, seconds).	rulers, thermometers and measuring vessels. Compare and order lengths, mass, volume/capacity and record the results using <,> and =.			Use all four operations to solve problems involving measure, including decimal notation, including scaling.	Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places. Convert between miles and kilometres.
Money		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 particular values. Find different combinations of coins that equal the same amounts of money. Solve simple problems in a practical context	Add and subtract amount of money to give change, using both £ and p in practical context.	Estimate, compare and calculate different measures, including in pounds and pence.	Use all four operations to solve problems involving measure.	

			involving addition and subtraction of money of the same unit, including giving change.				
Time		Sequence events in chronological order using language (before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening). Recognise and use language relating to dates, including days of the week, weeks, months, and years. Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	Compare and sequence intervals of time. Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. Know the number of minutes in an hour and the number of hours in a day.	Tell and write the time from an analogue clock, including using roman numerals from I to XII, and 12-hour and 24-hour clocks. 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, am/pm, morning, afternoon, noon an midnight. Know the number of seconds in a minute and the number of days in each month, year and leap year. Compare durations of events.	Read, write and convert time between analogue and digital 12 and 24-hour clocks. Solve problems involving converting from hours to minutes, minutes to seconds, years to months and weeks to days.	Solve problems involving converting between units of time.	Use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit and vice versa.
Perimeter, Area and Volume				Measure the perimeter of simple 2-D shapes.	Measure and calculate the perimeter of a rectilinear figure	Measure and calculate the perimeter of composite rectilinear	Recognise that shapes with the same areas can have

					(including squares) in centimetres and metres. Find the area of rectilinear shapes by counting squares.	shapes in centimetres and metres. Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes. Estimate volume (using cm^3) and capacity.	different perimeters and vice verca. Recognise when it is possible to use formulae for area and volume of shapes. Calculate the area of parallelograms and triangles. Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units (e.g. mm^3, km^3)
Geometry							
2-D shapes	Develop special reasoning skills across all areas of mathematics including shape, space and measures.	Recognise and name common 2-D shapes (e.g. rectangles, squares, circles and triangles).	Identify and describe the properties of 2-D shapes, including the number of sides and line of symmetry in a vertical line. Identify 2-D shapes on the surface of 3-D shapes (e.g. a circle on a cylinder and a triangle of pyramid).	Draw 2-D shapes.	Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. Identify lines of symmetry in 2-D shapes presented in	Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. Use the properties of rectangles to deduce related facts and find missing lengths and angles.	Draw 2-D shapes given dimensions and angles. Compare and classify geometric shapes based on their properties and sizes. Illustrate and name parts of circles, including radius,

			Compare and sort common 2-D shapes and everyday objects.		different orientations.		diameter and circumference and know that the diameter it twice the radius.
3-D shapes		Recognise and name 3-D shapes (e.g. cuboids, cubes, pyramids and spheres).	Recognise and name common 3-D shapes (e.g. cuboids, cubes, pyramids and spheres). Compare and sort common 3-D shapes and everyday objects.	Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them.		Identify 3-D shapes, including cubes and cuboids from 2-D representations.	Recognise, describe and build simple 3-D shapes, including making nets.
Angles and lines				Recognise angles as a property of shape or a description of a turn. Identify right angles, recognise that two right angles make a half-tern, 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 horizontal and vertical lines and pairs of perpendicular and parallel lines.	Identify acute and obtuse angles and compare and order angles up to two right angles by size. Identify lines of symmetry in 2-D shapes presented in different orientations. Complete a simple symmetric figure with respect to a specific line of symmetry.	Know angles are measured in degrees, estimate and compare acute, obtuse and reflex angles. Draw given angles and measure them in degrees. Identify: angles at a point and one whole turn, angles at a point on a straight line and 1/2 a turn and other multiples of 90 degrees.	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.

Position and Direction		Describe position, direction and movement, including whole, half, quarter and three-quarter turns.	Order and arrange combinations of mathematical objects in patterns and sequences. 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).		Describe positions on a 2-D grid as coordinates in the first quadrant. Describe movements between positions as translations of a given unit to the left/right and up/down. Plot specified points and draw sides to complete a given polygon.	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.	Describe positions on the full coordinate grid (all four quadrants). Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
Statistics							
Present and Interpret			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. c	Complete, read and interpret information in tables, including timetables.	Interpret and construct pie charts and line graphs and use these to solve problems.
Solve problems			Ask and answer simple questions by counting the number of objects in each category an sorting	Solve one-step and two-step questions (e.g. 'how many more? How many fewer?') using information presented	Solve comparison sum and difference problems using information presented in bar charts, pictograms,	Solve comparison, sum and difference problems using information presented in a line graph.	Calculate and interpret the mean as an average.

			the categories by quantity. Ask and answer questions about totalling and comparing categorical data.	in scaled bar charts and pictograms and tables.	tables and other graphs.		