Luckington Community School
Skills and Knowledge Progression
Mathematics

Intent: to ensure that all children have mastered the key mathematical skills and concepts and have the ability to reason mathematically.

Place Value

EYFS	KS1		KS2			
Development Matter Early Learning Goals	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To count objects, actions and sounds To subitise To link the number symbol (numeral) with its cardinal number value To count beyond ten To compare numbers To understand the one more/less relationship between consecutive numbers. Have a deep understanding of number to ten including the composition of each number. To subitise up to 5 To verbally count beyond 20 recognising the pattern of the number system	To count to and across 100, forwards and backwards, beginning with 0 or 1, or from an given number To count numbers to 100 in numerals; count in multiples of twos, fives and tens	To count in steps of 2,3 and 5 from 0 and in tens from any number, forwards and backward	To count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.	To count in multiples of 6,7,9,25 and 1000 To count backwards through zero to include negative numbers.	To count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 To count forwards and backwards with positive and negative whole numbers including through zero	To read, write(order and compare) numbers up to 10,000,000 and determine the value of each digit
	To identify and represent numbers using objects and pictorial representations To read and write numbers to 100 in numerals To read and write numbers from 1 to 20 in numerals and words	To read and write numbers to at least 100 in numerals and in words To identify, represent and estimate numbers using different representations, including the number line	To identify, represent and estimate numbers using different representations To read and write numbers up to 1000 in numerals and words	To identify, represent and estimate numbers using different representations To read Toan numbers to 100 and know that over time, the numeral system changed to include the concept of zero and place value	To read, write, (order and compare) numbers to at least 1,000,000 and determine the value of each digit To read Roman numerals to 1000 and recognise years written in Roman Numerals	
	To identify one more or one less than a number	To recognise the place value of each digit in a a two-digit number To compare and order numbers from 0 up to 100; use <, > and = signs	To recognise the place value of each digit in a three-digit number (HTO) o compare and order numbers up to 1000	To find 1000 more ore less than a given number To recognise the place value of each digit in a 4 digit number To order and compare numbers beyond 1000	To (read, write) order and compare numbers to at least 1,000,000 and determine the value of each digit	To (read,write) order and compare numbers up to 10,000,000 and determine the value of each digit
		To use place value and number facts to solve problems	To solve number problems and practical problems involving these ideas	To round any number to the nearest 10, 100 or 1000 To solve number and practical problems that involve all of the above with increasingly large numbers	To interpret negative numbers in context To round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000, and 100,000 To solve number problems and practical problems that involve all of the above	To round any whole number to a required degree of accuracy. To use negative numbers in context and calculate intervals across zero To solve number and practical problems that involve all of the above

Addition and Subtraction

EYFS	KS1		KS2			
Development matters Early Learning Goals	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To explore the composition of numbers to 10 To automatically recall number bonds for numbers 0-5 and some to 10 To automatically recall number bonds up to 5 and some up to 10 including double facts To compare quantities up to 10 in different contexts recognising when one quantity is greater than, less than or the same as the other quantity. To explore and represent patterns within numbers up to 10 including evens and odds, double facts and how quantities can be distributed equally.	To read, write and interpret mathematical statements involving addition, subtraction and equal signs To represent and use number bonds and related subtraction facts within 20	To recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100 To show that addition of two numbers can be done in any order and subtraction of one number from another cannot To recognise and use the inverse relationship between addition and subtraction of one number from another cannot To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems	To estimate the answer to a calculation and use inverse operations to check answers	To estimate and use inverse operations to check answers to a calculation	To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	
	To add and subtract one-digit and two-digit numbers to 20, including zero	To add and subtract numbers using concrete objects, pictorial representations and mentally, including: a two digit number and ones/tens; two two digit numbers; adding three one digit numbers	To add and subtract numbers mentally, including: a three digit number and ones/tens/hundreds To add and subtract numbers up to three digits using formal written methods of columnar addition and subtraction	To add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	To add and subtract whole numbers with more than 4 digits, including formal written methods To add and subtract numbers mentally with increasingly large numbers	To perform mental calculations, including with mixed operations and large numbers To use their knowledge of the order of operations to carry out calculations involving the four operations
	To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations and missing number	To solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures; applying their increasing knowledge of mental and written methods	To solve problems including missing number problems, using number facts, place value and more complex addition and subtraction	To solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why	To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why To solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equal sign	To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Multiplication and Division

EYFS	KS1		KS2			
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		To recall and use multiplication and division facts for 2,5 and 10 tables, including recognising odd and even numbers To show that multiplication of the two numbers can be done in any order and division of one number by another cannot	To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	To recall multiplication and division facts for tables to 12 x 12 To 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.	To identify multiples and factors, including finding factor pairs of a number, and common factors of two numbers To know and use the vocabulary of prime numbers, factors, and composite numbers	To identify common factors, common multiples and prime numbers To use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of

				To recognise and use factor pairs and commutativity in mental calculations	To establish whether a number up to 100 is prime and recall all prime numbers up to 19. To recognise and use square numbers and cube numbers, and the notation for squared and cubed.	accuracy.
		To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the correct signs	To 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	To multiply two digit and three digit numbers by a one digit number using formal written method.	To 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 To multiply and divide numbers mentally drawing upon known number facts. To divide numbers up to 4 digits by one-digit numbers using the formal written method of short division and interpret remainders appropriately for the context To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication To divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for context To 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 To perform mental calculations, including with mixed operations and large numbers
	To solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	To 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	To 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	To solve problems involving addition, subtraction, multiplication and division and a combination of these including understanding the meaning of the equals sign	To use their knowledge of the order of operations to carry out calculations involving the four operations
					To solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	To use their knowledge of the order of operations to carry out calculations involving the four operations

Fractions						
EYFS	KS1		KS2			
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	To recognise, find and name a half as one of two equal parts of an object, shape or quantity. To recognise, find and name a quarter as one of four equal parts of an object shape or quantity	To recognise, find, name and write fractions ⅓, ¼, 2/4, and ¾ of a length, shape, set of objects or quantity	To 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 To recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators	To count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing by ten.	To identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths To recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statement >1 as a mixed number	

			To recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators			
		To recognise the equivalence of 2/4 and ½	To recognise and show using diagrams, equivalent fractions with small denominators To compare and order unit fractions, and fractions with the same denominator	To recognise and show, using diagrams, families of common equivalent fractions	To compare and order fractions whose denominators are all multiples of the same number	To use common factors to simplify fractions; use common multiples to express fractions in the same denomination To compare and order fractions including fractions greater than 1
		To write simple fractions for example ½ of 6 = 3	To add and subtraction fractions with the same denominator within one whole	To add and subtract fractions with the same denominator	To add and subtract fractions with the same denominator and denominators that are multiples of the same number To multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	To add and subtraction fractions with different denominators and mixed numbers, using the concept of equivalent fractions To multiply simple pairs of proper fractions writing the answer in its simplest form To divide proper fractions by whole numbers
			To solve problems that involve all of the above	To 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		

Fractions, Decimals and Percentages

EYFS	KS1		KS2			
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				To recognise and write decimal equivalents of any number of tenths or hundredths To recognise and write decimal equivalents to ¼, ½ and ¾	To read and write decimal numbers as fractions To recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	To identify the value of each digit in numbers given to three decimal places
				To round decimals with one decimal place to the nearest whole number. To compare numbers with the same number of decimal places up to two decimal places	To round decimals with two decimal places to the nearest whole number and to one decimal place To read, write, order and compare numbers with up to three decimal places	
				To 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	To solve problems involving numbers up to three decimal places	To multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places To multiply one digit numbers with up to two decimal places by whole numbers To use written division methods in cases where the answer has up to two decimal places To solve problems which require answers to be rounded to specified degrees of accuracy
				To solve simple measure and money problems involving fractions and decimals to two decimal places	To recognise the percent symbol and understand that per cent relates to 'number of parts per hundred' and write percentages as a fraction with	To associate a fraction with division and calculate decimal fraction equivalents To recall and use equivalences between simple fractions,

					denominator 100 and as a decimal To solve problems which require knowing percentage and decimal equivalents and those fractions with a denominator of a multiple of 10 or 25	decimals and percentages, including in different contexts

Ratio and Proportion						
EYFS	KS1		KS2			
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						To solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. To solve problems involving the calculation of percentages and use percentages for comparison. To solve problems involving similar shapes where the scale factor is known or can be found To solve problems involving unequal sharing and grouping using knowledge of fractions and multiples

Algebra						
EYFS	KS1		KS2			
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems	To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems	To solve problems including missing number problems			To use simple formulae To generate and describe linear number sequences To express missing number problems algebraically To find pairs of numbers that satisfy an equation with two unknowns To enumerate possibilities of combinations of two variables

Measurement

EYFS	KS1		KS2			
Development matters Early Learning Goals	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To compare length, weight and capacity.	To compare, describe and solve practical problems for: lengths and heights, mass and weight, capacity and volume, time. To measure and begin to record the following: lengths and heights, mass/weight, capacity and volume, time	To choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (C) ; capacity (l/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels To compare and order lengths, mass, volume/capacity and record the results using <> =	To measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume capacity (l/ml)	To convert between different units of measures To estimate, compare and calculate different measures.	To convert between different units of metric measure To understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints To use all four operations to solve problems involving measure using decimal notation, including scaling.	To solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate To use, read, write and convert between standard units, converting measurements of length, mass and 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 To convert between miles and kilometres
	To recognise and know the value of different denominations of coins and notes	To recognise and use symbols and pounds and pence; combine amounts to make a particular value To find different combinations of coins that equal the same amounts of money To solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	To add and subtract amounts of money to give change, using £ and p in practical contexts	To estimate, compare and calculate different measures, including money in pounds and pence	To use all four operations to solve problems involving measure	
	To sequence events in chronological order using language (for example: before,, after, next, tomorrow) To recognise and use language relating to dates, days of the week, months, weeks and years To tell the time to the hour and half past the hour and draw the hands on a clock face to show these times	To compare and sequence intervals of time To 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 To know the number of minutes in an hour and the number of hours in a day	To tell and write the time from an analogue clock, including using Roman numerals from I to XII and 12/24 hour clocks To estimate and read time with increasing accuracy to the nearest minute; record and compare time in seconds, minutes and hours; use vocabulary such as o'clock, am/pm, noon, midnight, morning, afternoon To know the number of seconds ina minute and the number of days in each month, year and leap year To compare durations of events	To read, write and convert time between analogue and digital 12/24 hour clocks To solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days	To solve problems involving converting between units of time	To use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a large unit and vice versa
			To measure the perimeter of simple 2D shapes	To measure and calculate the perimeter of a rectilnear figure in centimetres and metres To find the area of rectilinear shapes by counting squares	To measure and calculate the perimeter of composite rectilinear shapes in cm and m To calculate and compare the area of rectangles and including using standard units, square cm, square m and estimate the area of irregular shapes To estimate volume (for examples, using blocks to	To recognise that shapes with the same areas can have different perimeters and vice versa To recognise when it is possible to use formulae for area and volume of shapes To calculate the area of parallelograms

					build cuboids) and capacity (for example using water)	and triangles To calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic cm, m and to other units such as mm, km cubed

Geometry

EYFS	KS1		KS2			
Development Matters Early Learning Goals	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To select, rotate and manipulate shapes to develop spatial reasoning skills. To compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can. To continue, copy and create repeating patterns.	To recognise and name common 2D shapes	To identify and describe the properties of 2D shapes, including number of sides and lines of symmetry in a vertical line To identify 2D shapes on the surface of 3D shapes To compare and sort common 2D shapes and everyday objects	To draw 2D shapes	Tc compare and classify geometric shapes, including quadrilaterals and triangles based on their properties and sizes To identify lines of symmetry in 2D shapes presented in different orientations	To distinguish between regular and irregular polygons based on reasoning about equal sides and angles To use the properties of rectangles to deduce related facts and find missing lengths and angles	To draw 2D shapes using given dimensions and angles To compare and classify geometric shapes based on their properties and sizes To illustrate and name parts of circles including radius, diameter and circumference and know that the diameter is twice the radius
	To recognise and name common 3D shapes	To recognise, name, compare and sort common 3D shapes and everyday objects	To make 3D shapes using modelling materials; recognise 3D shapes in different orientations and describe them		To identify 3D shapes, including cubes and other cuboids from 2D representations	To recognise, describe and build simple 3D shapes, including making nets
			To recognise angles as a property of shape or a description of a turn To 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 To identify horizontal and vertical lines and pairs of perpendicular and parallel lines	To identify acute and obtuse angles and compare and order angles up to two right angles by size To identity lines of symmetry in 2D shapes presented in different orientations To complete a simple symmetric figure with respect to a specific line of symmetry	To know angles are measured in degrees: estimate and compare, acute, obtuse and reflex angles To draw given angles and measure them in degrees To identify: angles at a point and one whole turn; angles at a point on a straight line and half a turn; other multiples of 90	To find unknown angles in any triangles, quadrilaterals and regular polygons To recognise angles where they meet at a point, are on a straight line, or are vertically opposite and find missing angles
	To describe position, direction and movement, including whole, half, quarter and three quarter turns	To order and arrange combinations of mathematical objects in patterns and sequences To 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)		To describe positions on a 2D grid as coordinates in the first quadrant To describe movements between positions as translations of a given unit to the left/right and up/down To plot specified points and draw sides to complete a given polygon	To 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	To describe positions on the full coordinate grid To draw and translate simple shapes on the coordinate plane and reflect them in the axes

Statistics

EYFS	KS1		KS2			
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		To interpret and construct simple pictograms, tally charts, block diagrams and simple tables	To interpret and present data using bar charts, pictograms and tables	To interpret and present discrete and continuous data using appropriate graphical methods including bar charts and time graphs	To complete, read and interpret information in tables, including timetables	To interpret and construct pie charts and line graphs and use these to solve problems
		To ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity To ask and answer questions about totalling and comparing categorical	To solve one-step and two-step questions presented in scaled bar charts and pictograms and tables	To solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	To solve comparison, sum and difference problems using information presented ina line graph	To calculate and interpret the mean as an average

		data				