

Mathematics Skills and Knowledge Progression

Strands	Developing Curriculum	Broadening Curriculum	Blended Curriculum	Pathway
Number & Place Value	<p>Count up to 5 and beyond.</p> <ol style="list-style-type: none"> Engage in counting-like behaviour Put numbers in order, some of which are in the right order (ordinality) Point or touch (tags) each item, saying one number for each item, using the stable order of 1,2,3,4,5. Recognise numerals 0 to 10 <p>Have a deep understanding of numbers up to 5 (representing, comparison, composition).</p> <ol style="list-style-type: none"> Count up to five items, recognising that the last number said represents the total counted so far (cardinal principle) Link numerals with amounts up to 5. Subitise up to 3 objects Compare and recognise changes in numbers of things, using words like more, lots or 'same' Compare two small groups of up to 5 objects, 	<p>Count to and across 20.</p> <ol style="list-style-type: none"> Recite numbers from 0 to 20 Count back from 20 to 0 Has an understanding of 1:1 correspondence in different arrangements Put numerals in order 0 to 20 (ordinality) Count up to 20 objects from a larger group <p>Have a deep understanding of numbers up to 10 (representing, comparison, composition).</p> <ol style="list-style-type: none"> Engage in subitising numbers up to 6 in regular arrangements (Cardinality) Match numerals to quantities (up to 10) Use number names and symbols when comparing numbers and quantities Begin to estimate of numbers of things, showing understanding of relative size 	<p>Count to and across 100.</p> <ol style="list-style-type: none"> Count forwards up to 100 beginning from any number Count backwards from 100 Count across 100 forwards and backwards, recognising the patterns in ones, tens Compare and order numbers to 100 and beyond Recognise the place value of each digit in a 3-digit number Partition 2 digit and then 3-digit numbers into hundreds, tens and ones using structured resources (e.g.: Base ten, abacus) <p>Have a deep understanding of number to 20, including representing and composition.</p> <ol style="list-style-type: none"> Can write and read numbers to 20 and beyond Can identify and represent numbers using objects and pictorial 	<p>Understand the relationship between powers of 10 from 1 hundredth to 10 million</p> <ol style="list-style-type: none"> Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10 Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100 Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1 Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01 Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01 <p>Recognise the place value of each digit in numbers up to 10 million, including decimal fractions</p> <ol style="list-style-type: none"> Recognise the place value of each digit in four-digit numbers Read, write, order and compare numbers up to 1

	identifying when there are the same number of objects in each group	5. Show awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wide range of objects	representations including the number line 3. Use the language of equal to	000 000 and determine the value of each digit 3. Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit 4. Round any whole number to a required degree of accuracy 5. Use negative numbers in context, and calculate intervals across zero 6. Recognise the place value of each digit in numbers with up to 2 decimal places 7. Compose and decompose numbers with up to 2 decimal places using standard and nonstandard partitioning 8. Reason about the location of any number up to 10 million in the linear number system
Addition & Subtraction	Begin to combine and separate concrete objects and start noticing the change. 1. Show interest in number rhymes where the number of objects increases or decreases 2. Help combining 2 groups of objects	Automatically recall number bonds to 10. 1. Separate a group of up to 10 objects in different ways, beginning to recognise that the total is still the same	Read, write and solve mathematical statements involving addition (+), subtraction (-) and equals (=) signs. 1. Can identify addition, subtraction and equal signs	Use arithmetic properties, inverse relationships, and place-value understanding to explore calculations 1. Add up to four-digit numbers using column methods

	<p>3. Show interest in taking concrete objects away from a group</p> <p>4. Begin to demonstrate that numbers are made up (composed) of smaller numbers</p>	<p>2. Recall number bonds up to 5 (including subtraction facts)</p> <p>3. Identify 1 more and 1 less</p> <p>5. Recall number bonds to 10</p> <p>6. Help to find missing numbers within number bonds to 10</p>	<p>2. Read and write addition and subtraction equations</p> <p>3. Solve mixed addition and subtraction questions</p> <p>4. Demonstrate understanding of inverse relationship of addition and subtraction</p> <p>5. Solve 1 step problems with addition and subtraction and missing numbers</p> <p>Represent and use mental recall of number bonds and related subtraction facts within 10 and some number bonds to 20.</p> <p>1. Has a part/part/ whole understanding</p> <p>2. Know number bonds to 10 and can find corresponding facts for number bonds to 20</p> <p>3. Has initial understanding of fact families – addition and subtraction bonds within 20</p> <p>4. Use a number line/ bar model to find/check the answers</p> <p>Add and subtract up to 3 digit numbers, including using column method</p>	<p>2. Subtract up to four-digit numbers using column methods</p> <p>3. Manipulate the additive relationship (Understand the inverse relationship between addition and subtraction, and how both relate to the part-part-whole structure)</p> <p>4. Understand and use the commutative property of addition, and understand the related property for subtraction</p> <p>5. Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p> <p>6. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy</p>
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Multiplication & Division		<p>Explores and represents patterns within numbers up to 10.</p> <ol style="list-style-type: none"> 1. Explore patterns, counting in steps of 2 up to 10 2. Identify even and odd numbers up to 10 3. Identify doubling facts up to 10 4. Help to distribute quantities equally between 2 groups, using concrete apparatus 	<p>Can count in multiples of twos, fives and tens up to 100.</p> <ol style="list-style-type: none"> 1. Count in 2s up to 100 2. Count in 5s up to 100 3. Can count in 10s up to 100 4. Identify the pattern in counting in steps of 2,5,10 5. Use a number line to find/check the answers <p>Recall multiplication and corresponding division facts in the 10, 5, 2 tables</p>	<p>Understand that 2 numbers can be related multiplicatively, and quantify multiplicative relationships (by a whole number)</p> <ol style="list-style-type: none"> 1. Apply known multiplication facts to solve real-life problems 2. Apply known division facts to solve real-life problems, including quotitive (grouping) and partitive (sharing) division 3. Multiply and divide whole numbers by 10 and 100 (keeping to whole

			<ol style="list-style-type: none"> 1. Recall and use multiplication and division facts for the 10, 5, 2 tables 2. Solve one- step problems involving multiplication, by calculating the answer using repeated addition, mental methods, arrays and a calculator 3. Solve one- step problems involving division, by calculating the answer using repeated subtraction, arrays and a calculator 4. Show that multiplication of two numbers can be done in any order (commutative law) and division cannot <p>Recall multiplication and corresponding division facts in the 3, 4, and 8 tables</p> <ol style="list-style-type: none"> 1. Recall and use multiplication and division facts for the 3, 4, 8 tables 2. Solve one- step problems involving multiplication, by 	<p>numbers, e.g. no decimal points)</p> <ol style="list-style-type: none"> 4. Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size <p>Use a given multiplicative calculation to complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding</p> <ol style="list-style-type: none"> 1. Manipulate multiplication and division equations, to demonstrate the commutative property 2. Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors 3. Understand and apply the distributive property of multiplication <p>To multiply and divide numbers using informal and formal written methods.</p> <ol style="list-style-type: none"> 1. Multiply any whole number with up to 4 digits by any
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			<p>calculating the answer using repeated addition, mental methods, arrays and a calculator</p> <ol style="list-style-type: none"> Solve one- step problems involving division, by calculating the answer using repeated subtraction, arrays and a calculator Show that multiplication of two numbers can be done in any order (commutative law) and division cannot 	<p>one-digit number using a formal written method.</p> <ol style="list-style-type: none"> Divide a number with up to 4 digits by a one-digit number using a formal written method. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
Fractions, Decimals & Percentages		<p>Start practically cutting shapes in half or folding them to make 2 equal parts.</p> <ol style="list-style-type: none"> Has initial understanding that half is one of 2 equal parts Identify 2 equal parts to make a whole Identify half of an object 	<p>Can recognise, find and name a half of an object, shape or quantity.</p> <ol style="list-style-type: none"> Understand that a half is one of two equal parts Identify halves of objects, shapes and quantities Practically dividing objects, shapes and quantities into 2 equal parts Explain whether two parts of a whole are equal Write simple fractions, eg $1/2$ of $8 = 4$ <p>Recognise, find and name a quarter as one of four equal</p>	<p>Recognise when fractions can be simplified and use common factors to simplify fractions.</p> <ol style="list-style-type: none"> Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts Find unit fractions of quantities using known division facts (multiplication tables fluency) Find non-unit fractions of quantities <p>Compare fractions with different denominators, including fractions greater than 1 (using reasoning, and</p>

			<p>parts of an object, shape or quantity.</p> <ol style="list-style-type: none"> 1. Understand that a quarter is one of 4 equal parts for the objects, shapes and quantities 2. Identify quarters of objects, shapes and quantities 3. Practically divide objects, shapes and quantities into half and half again to find 4 equal parts 4. Write simple fractions, eg $\frac{1}{4}$ of 8 = 2 5. Recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ 	<p>choose between reasoning and common denomination as a comparison strategy).</p> <ol style="list-style-type: none"> 1. Reason about the location of any fraction within 1 in the linear number system 2. Express fractions in a common denomination 3. Use this to compare fractions that are similar in value 4. Reason about the location of mixed numbers in the linear number system 5. Find equivalent fractions and understand that they have the same value and the same position in the linear number system <p>Add and subtract fractions and convert them into decimals and percentages</p> <ol style="list-style-type: none"> 1. Add and subtract fractions with the same denominator, within 2. Convert mixed numbers to improper fractions and vice versa 3. Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers. 4. Recall decimal fraction equivalents for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$
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				<p>and , and $\frac{1}{10}$ for multiples of these proper fractions</p> <p>5. 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</p> <p>6. Recall and use equivalences between simple fractions, decimals and percentages including in different contexts</p> <p>7. Solve problems which require answers to be rounded to specified degrees of accuracy</p> <p>Solve problems with ratio and proportion</p> <p>1. Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</p> <p>2. Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and use percentages for comparison</p>
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				<p>3. Solve problems involving similar shapes where the scale factor is known or can be found</p> <p>4. Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples</p>
Measurement	<p>Shows an interest in exploring capacity, size and length and weight.</p> <ol style="list-style-type: none"> 1. Identify big and small objects 2. Identify full and empty containers 3. Identify heavy and light objects 	<p>Compare capacity and volume, length, mass and weight.</p> <ol style="list-style-type: none"> 1. Compare volume of containers e.g. full or empty 2. Compare length of objects by physically aligning objects e.g. longer or shorter 3. Compare objects by their mass <p>Recognise coins.</p> <ol style="list-style-type: none"> 1. Match coins 2. Recognise 1p, 2p and 5p coins 3. Recognise 10p, 20p, 50p, £1, £2 <p>Show understanding of time-related language</p> <ol style="list-style-type: none"> 1. Understand that things might happen now and next in routine 2. Help with changing Now and Next board 	<p>Use standard metric units to measure to the nearest appropriate unit and read scales for length (m/cm/mm) mass/weight (kg/g), capacity and volume (l/ml) and temperature (C).</p> <ul style="list-style-type: none"> • Compare, describe and order containers by their volume and capacity • Compare, describe and order objects by length and height • Compare, describe and order objects by their mass • Compare, describe and start measuring temperature (only positive) <ol style="list-style-type: none"> 3. Start using standard equipment and metric units of measure 4. Read scales in divisions in a variety of 	<p>Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.</p> <ol style="list-style-type: none"> 1. Divide 100 into 2, 4, 5 and 10 equal parts and read corresponding scales 2. Divide 1,000 into 2, 4, 5 and 10 equal parts, and read corresponding scales/number lines 3. Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts. 4. Convert between units of measure, including using common decimals and fractions 5. Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three

		<p>3. Help with setting visual timetable for each day of the week</p> <p>4. Sow interest in sand timers and understand that they measure a period of time</p>	<p>5. Record the results for length, mass, capacity and temperature using the correct unit of measure</p> <p>6. Solve practical problems for length, mass and volume</p> <p>Compare, describe and solve practical problems for time.</p> <ol style="list-style-type: none"> 1. Sequence events in chronological order using language e.g.: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening 2. Recognise and use language relating to dates, including days of the week, weeks, months and years 3. Tell the time to the nearest hour and to the half past the hour 4. Tell time to quarter past/to the hour and draw hands on a clock face to show these times 5. Tell and write time to five minutes 6. Read analogue and digital clocks. 7. Knows the number of minutes in an hour, 	<p>decimal places where appropriate</p> <p>6. 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</p> <p>7. Convert between miles and kilometres</p> <p>Solve problems with measure</p> <ol style="list-style-type: none"> 1. Solve problems involving converting between units of time 2. Recognise that shapes with the same areas can have different perimeters and vice versa 3. Recognise when it is possible to use the formulae for area and volume of shapes 4. Calculate the area of parallelograms and triangles 5. Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³),
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			<p>number of hours in a day</p> <p>Solve simple practical addition and subtraction problems with money, using the same unit, including giving change</p> <ol style="list-style-type: none"> 1. Recognise and explain the value of all coins 2. Recognise and explain the value of all notes 3. Calculate the total value of the coins in a set 4. Combine amounts to make a particular value up to £1 5. Find different combinations of coins that equal the same amounts of money 6. Solve simple practical addition and subtraction problems with money 	<p>and extending to other units [for example, mm³ and km³]</p>
<p>Properties of Shapes</p>	<p>Responds to both informal language and common shape names.</p> <ol style="list-style-type: none"> 1. Match 2D shapes to pictures 2. Match some 2D shapes with different sizes and orientations 	<p>Recognise common 2D and 3D shapes presented in different orientations.</p> <ol style="list-style-type: none"> 1. Identify 2D shapes in everyday objects 2. Name and describe some common 2D shapes in different orientations 	<p>Recognise 2D shapes presented in different orientations.</p> <ol style="list-style-type: none"> 1. Identify, discuss and compare 2D shape, including heptagons, octagons and nonagons 2. Sort 2D shapes according to their 	<p>Solve problems involving missing angles.</p> <ol style="list-style-type: none"> 1. Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles 2. Draw given angles, and measure them in degrees (°)

	<p>3. Recognizes some common 2D shapes in familiar orientation</p> <p>4. Sort contrasting shapes into two groups, e.g. circles and squares</p>	<p>3. Identify 3D shapes in the environment</p> <p>4. Name and describe some common 3D shapes in different orientations</p> <p>Identify and manipulate shapes to create pictures or different shapes.</p> <ol style="list-style-type: none"> 1. Copy a picture using 2D shapes to make the picture 2. Put several 2D shapes together to make a picture of their own composition 3. Combine shapes to make a different shape 4. Copy a picture using 3D shapes 	<p>properties, including number of sides and corners</p> <p>3. Recognise lines of symmetry in simple 2D shapes</p> <p>4. Recognise right angles as a property of shape or a description of a turn e.g. turn 90 degrees, and identify right angles in 2D shapes presented in different orientations.</p> <p>5. Draw polygons by joining marked points, and identify parallel and perpendicular sides</p> <p>Recognise and describe 3D shapes presented in different orientations.</p> <ol style="list-style-type: none"> 1. Identify, discuss and compare 3D shapes, including prisms and pyramids 2. Sort 3D shapes according to their properties including the number of edges, vertices and faces 3. Recognise the nets of common 3D shapes <p>Compose 2D and 3D shapes from different shapes to match an example, including manipulating shapes to place</p>	<p>3. identify:</p> <ol style="list-style-type: none"> a. angles at a point and one whole turn (total 360°) b. angles at a point on a straight line and ½ a turn (total 180°) other multiples of 90° <p>4. Use the properties of rectangles to deduce related facts and find missing lengths and angles</p> <p>5. Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</p> <p>6. Compare, estimate and measure angles in degrees (°)</p> <p>Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.</p> <ol style="list-style-type: none"> 1. Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, 2. Draw 2-D shapes using given dimensions and angles
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			<p>them in particular orientations.</p> <ol style="list-style-type: none"> 1. Copy and then compose tangram images 2. Identify 2D shapes within 3D shapes 3. Investigate ways of combining 3D shapes to make different 3D shapes 4. Compose polygons from smaller shapes. 	<ol style="list-style-type: none"> 3. Recognise, describe and build simple 3-D shapes including making nets 4. Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons 5. Illustrate and name parts of circle, including radius, diameter and circumference and know that the diameter is twice the radius 6. Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal 7. Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant <p>Use the relationship between side-length and perimeter, and between side-length and area to calculate unknown values.</p> <ol style="list-style-type: none"> 1. Find the perimeter of regular and irregular polygons
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				<p>2. Compare areas and calculate the area of rectangles (including squares) using standard units</p> <p>Solve problems with the lines of symmetry in 2D shapes in different orientations.</p> <ol style="list-style-type: none"> 1. Identify line symmetry in common 2D shapes 2. Identify lines of symmetry in polygons presented in different orientations 3. Reflect shapes in a line of symmetry 4. Complete a symmetric figure or pattern with respect to a specified line of symmetry
<p>Position & Direction</p>	<p>Respond to simple spatial, directional and positional language.</p> <ol style="list-style-type: none"> 1. Create a “mental map” - can remember where objects belong and can retrieve them and put them away 2. Copy simple instructions with spatial vocabulary, such as in, on, under 3. Follow the language of up and down 	<p>Follow and use positional and directional language cross-curricular, throughout the day.</p> <ol style="list-style-type: none"> 1. Understand and follow the language of position, direction and motion, including left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, forwards and backwards, inside and outside 	<p>Describe position, direction and movement, including whole, half, quarter and three-quarter turns.</p> <ol style="list-style-type: none"> 1. Describe direction and movement of a whole turn 2. Describe direction and movement of a half a turn 3. Describe direction and movement of a quarter and three-quarter turns 4. Make whole, half, quarter and three-quarter turns in both directions and 	<p>Identify and describe the results of translations, rotations and reflections</p> <ol style="list-style-type: none"> 1. Identify the position of a shape following a reflection or translation, and know that the shape has not changed 2. Describe positions on the full coordinate grid (all four quadrants) 3. Draw and translate simple shapes on the coordinate plane and reflect them in the axes.

		2. Use the language of position, direction and motion, including left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, forwards and backwards, inside and outside	connect turning clockwise with movement on a clock face	
Pattern	<p>Explore and add to simple linear patterns of two or three repeating items, e.g. stick, leaf (AB) or stick, leaf, stone (ABC).</p> <ol style="list-style-type: none"> 1. Show some interest in patterns in the environment 2. Match AB pattern using real objects 3. Match ABC pattern using concrete objects 4. Continue an AB pattern using concrete objects 	<p>Choose familiar objects to create and recreate repeating patterns beyond AB patterns and begin to identify the unit of repeat.</p> <ol style="list-style-type: none"> 1. Continue repeated pattern; e.g. AAB, ABB, AABB 2. Make own repeated patterns 3. Identify which part of the pattern is repeating (the rule) 	<p>Investigate, create and describe more complex patterns.</p> <ol style="list-style-type: none"> 1. Compose pattern block images 2. Copy, extend and develop repeating and radiating pattern block patterns 3. Describe complex patterns 4. Investigate complex patterns 	
Statistics			<p>Solve problems using bar charts, pictograms and simple tables</p> <ol style="list-style-type: none"> 1. Interpret and construct simple pictograms, tally charts, block diagrams and simple tables 2. Ask and answer simple questions by counting the number of objects in each 	<p>Solve comparison problems using information presented in graphs and tables</p> <ol style="list-style-type: none"> 1. Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and line graphs

			<p>category and sorting the categories by quantity</p> <p>3. Ask and answer questions about totaling and comparing categorical data</p> <p>4. Interpret and present data using bar charts, pictograms and tables</p> <p>5. Solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables</p>	<p>2. Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs</p> <p>3. Complete, read and interpret information in tables, including timetables</p> <p>4. Interpret and construct pie charts and line graphs and use these to solve problems</p>
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