



Esher Church School – Progression of skills in Maths

EYFS	<p>Number:</p> <ul style="list-style-type: none"> * Have a deep understanding of number to 10, including the composition of each number * Subitise (recognise quantities without counting) up to 5 * Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts <p>Numerical patterns:</p> <ul style="list-style-type: none"> *Verbally count beyond 20, recognising the pattern of the counting system *Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity *Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.
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	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
NUMBER Number and Place Value	<ul style="list-style-type: none"> *count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number *count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens *given a number, identify one more and one less *identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least *read and write numbers from 1 to 20 in numerals and words 	<ul style="list-style-type: none"> *count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward *recognise the place value of each digit in a two-digit number (tens, ones) *identify, represent and estimate numbers using different representations, including the number line *compare and order numbers from 0 up to 100; use and = signs *read and write numbers to at least 100 in numerals and in words *use place value and number facts to solve problems 	<ul style="list-style-type: none"> *count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number *recognise the place value of each digit in a 3-digit number (100s, 10s, 1s) *compare and order numbers up to 1,000 *identify, represent and estimate numbers using different representations *read and write numbers up to 1,000 in numerals and in words *solve number problems and practical problems involving these ideas 	<ul style="list-style-type: none"> *count in multiples of 6, 7, 9, 25 and 1,000 *find 1,000 more or less than a given number *count backwards through 0 to include negative numbers *recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s) *order and compare numbers beyond 1,000 *identify, represent and estimate numbers using different representations *round any number to the nearest 10, 100 or 1,000 *solve number and practical problems that involve all of the above and with increasingly large positive numbers *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 	<ul style="list-style-type: none"> *read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit *count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 *interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0 *round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 *solve number problems and practical problems that involve all of the above *read Roman numerals to 1,000 (M) and recognise years written in Roman numerals 	<ul style="list-style-type: none"> *read, write, order and compare numbers up to 10,000,000 and determine the value of each digit *round any whole number to a required degree of accuracy *use negative numbers in context, and calculate intervals across 0 *solve number and practical problems that involve all of the above

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NUMBER Addition and Subtraction	<p>*read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</p> <p>*represent and use number bonds and related subtraction facts within 20</p> <p>*add and subtract one-digit and two-digit numbers to 20, including zero</p> <p>*solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \quad - 9$.</p>	<p>*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</p> <p>*recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</p> <p>*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; adding three one-digit numbers</p> <p>*show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot</p> <p>*recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems</p>	<p>*add and subtract numbers mentally, including:</p> <ul style="list-style-type: none"> -a three-digit number and 1s -a three-digit number and 10s -a three-digit number and 100s <p>*add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction</p> <p>*estimate the answer to a calculation and use inverse operations to check answers</p> <p>*solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction</p>	<p>*add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</p> <p>*estimate and use inverse operations to check answers to a calculation</p> <p>*solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why</p>	<p>*add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</p> <p>*add and subtract numbers mentally with increasingly large numbers</p> <p>*use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</p> <p>*solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p>	<p>*perform mental calculations, including with mixed operations and large numbers</p> <p>*use their knowledge of the order of operations to carry out calculations involving the 4 operations</p> <p>*solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p> <p>*solve problems involving addition, subtraction</p> <p>*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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NUMBER Multiplication and Division	<p>*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</p>	<p>*recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</p> <p>*calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals ($=$) signs</p> <p>*show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</p> <p>*solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts</p>	<p>*recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</p> <p>*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</p> <p>*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</p>	<p>*recall multiplication and division facts for multiplication tables up to 12×12</p> <p>*use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers</p> <p>*recognise and use factor pairs and commutativity in mental calculations</p> <p>*multiply two-digit and three-digit numbers by a one-digit number using formal written layout</p> <p>*solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects</p>	<p>*identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers</p> <p>*know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p> <p>*establish whether a number up to 100 is prime and recall prime numbers up to 19</p> <p>*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</p> <p>*multiply and divide numbers mentally, drawing upon known facts</p> <p>*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</p> <p>*multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000</p> <p>*recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)</p> <p>*solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes</p> <p>*solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</p> <p>*solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates</p>	<p>*multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</p> <p>*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</p> <p>*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 the context</p> <p>*perform mental calculations, including with mixed operations and large numbers</p> <p>*identify common factors, common multiples and prime numbers</p> <p>*use their knowledge of the order of operations to carry out calculations involving the 4 operations</p> <p>*solve problems involving multiplication and division</p> <p>*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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NUMBER Fractions	<p>*recognise, find and name a half as one of two equal parts of an object, shape or quantity</p> <p>*recognise, find and name a quarter as one of four equal parts of an object, shape or quantity</p>	<p>*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</p> <p>*write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$</p>	<p>*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</p> <p>*recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators</p> <p>*recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators</p> <p>*recognise and show, using diagrams, equivalent fractions with small denominators</p> <p>*add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]</p> <p>*compare and order unit fractions, and fractions with the same denominators</p> <p>*solve problems that involve all of the above</p>	<p>*recognise and show, using diagrams, families of common equivalent fractions</p> <p>*count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10</p> <p>*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</p> <p>*add and subtract fractions with the same denominator</p> <p>*recognise and write decimal equivalents of any number of tenths or hundreds</p> <p>*recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$</p> <p>*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</p> <p>*round decimals with 1 decimal place to the nearest whole number</p> <p>*compare numbers with the same number of decimal places up to 2 decimal places</p> <p>*solve simple measure and money problems involving fractions and decimals to 2 decimal places</p>	<p>*compare and order fractions whose denominators are all multiples of the same number</p> <p>*identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</p> <p>*recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{3}{5} + \frac{2}{5} = \frac{6}{5} = 1 \frac{1}{5}$]</p> <p>*add and subtract fractions with the same denominator, and denominators that are multiples of the same number</p> <p>*multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</p> <p>*read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$]</p> <p>*recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</p> <p>*round decimals with 2 decimal places to the nearest whole number and to 1 decimal place</p> <p>*read, write, order and compare numbers with up to 3 decimal places</p> <p>*solve problems involving number up to 3 decimal places</p> <p>*recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction</p> <p>*solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{3}{5}$, $\frac{2}{5}$ and those fractions with a denominator of a multiple of 10 or 25</p>	<p>*use common factors to simplify fractions; use common multiples to express fractions in the same denomination</p> <p>*compare and order fractions, including fractions > 1</p> <p>*add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</p> <p>*multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$]</p> <p>*divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]</p> <p>*associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$]</p> <p>*identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places</p> <p>*multiply one-digit numbers with up to two decimal places by whole numbers</p> <p>*use written division methods in cases where the answer has up to two decimal places</p> <p>*solve problems which require answers to be rounded to specified degrees of accuracy</p> <p>*recall and use equivalences between simple fractions, decimals and percentages, including in different contexts</p>

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Ratio and Proportion						<p>*solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</p> <p>*solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison</p> <p>*solve problems involving similar shapes where the scale factor is known or can be found</p> <p>*solve problems involving unequal sharing and grouping using knowledge of fractions and multiples</p>
Algebra						<p>*use simple formulae</p> <p>*generate and describe linear number sequences *express missing number problems algebraically *find pairs of numbers that satisfy an equation with two unknowns</p> <p>*enumerate possibilities of combinations of two variables</p>

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Measurement	<p>*compare, describe and solve practical problems for: lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]; mass/weight [for example, heavy/light, heavier than, lighter than]; capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]; time [for example, quicker, slower, earlier, later]</p> <p>*measure and begin to record the following: lengths and heights; mass/weight; capacity and volume; time (hours, minutes, seconds)</p> <p>*recognise and know the value of different denominations of coins and notes</p> <p>*sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]</p> <p>*recognise and use language relating to dates, including days of the week, weeks, months and years</p> <p>*tell the time to the hour and half past the hour and draw the hands on a clock face to show these times</p>	<p>*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</p> <p>*compare and order lengths, mass, volume/capacity and record the results using >, < and =</p> <p>*recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</p> <p>*find different combinations of coins that equal the same amounts of money</p> <p>*solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</p> <p>*compare and sequence intervals of time</p> <p>*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</p> <p>*know the number of minutes in an hour and the number of hours in a day</p>	<p>*measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)</p> <p>*measure the perimeter of simple 2-D shapes</p> <p>*add and subtract amounts of money to give change, using both £ and p in practical contexts</p> <p>*tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks</p> <p>*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 and midnight</p> <p>*know the number of seconds in a minute and the number of days in each month, year and leap year</p> <p>*compare durations of events [for example, to calculate the time taken by particular events or tasks]</p>	<p>*convert between different units of measure [for example, kilometre to metre; hour to minute]</p> <p>*measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</p> <p>*find the area of rectilinear shapes by counting squares</p> <p>*estimate, compare and calculate different measures, including money in pounds and pence</p> <p>*read, write and convert time between analogue and digital 12- and 24-hour clocks</p> <p>*solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days</p>	<p>*convert between different units of metric measure [for example, kilometre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]</p> <p>*understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints</p> <p>*measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</p> <p>*calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm²) and square metres (m²), and estimate the area of irregular shapes</p> <p>*estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water]</p> <p>*solve problems involving converting between units of time</p> <p>*use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling</p>	<p>*solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</p> <p>*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>*convert between miles and kilometres</p> <p>*recognise that shapes with the same areas can have different perimeters and vice versa</p> <p>*recognise when it is possible to use formulae for area and volume of shapes</p> <p>*calculate the area of parallelograms and triangles</p> <p>*calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³]</p>

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GEOMETRY Properties of Shapes	<p>*recognise and name common 2-D and 3-D shapes, including: 2-D shapes [for example, rectangles (including squares), circles and triangles] and 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]</p>	<p>*identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line</p> <p>*identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</p> <p>*identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]</p> <p>*compare and sort common 2-D and 3-D shapes and everyday objects</p>	<p>*draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them</p> <p>*recognise angles as a property of shape or a description of a turn</p> <p>*identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; identify whether angles are greater than or less than a right angle</p> <p>*identify horizontal and vertical lines and pairs of perpendicular and parallel lines</p>	<p>*compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes</p> <p>*identify acute and obtuse angles and compare and order angles up to 2 right angles by size</p> <p>*identify lines of symmetry in 2-D shapes presented in different orientations</p> <p>*complete a simple symmetric figure with respect to a specific line of symmetry</p>	<p>*identify 3-D shapes, including cubes and other cuboids, from 2-D representations</p> <p>*know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</p> <p>*draw given angles, and measure them in degrees (°)</p> <p>*identify:</p> <ul style="list-style-type: none"> -angles at a point and 1 whole turn (total 360°) -angles at a point on a straight line and half a turn (total 180°) -other multiples of 90° <p>*use the properties of rectangles to deduce related facts and find missing lengths and angles</p> <p>*distinguish between regular and irregular polygons based on reasoning about equal sides and angles</p>	<p>*draw 2-D shapes using given dimensions and angles</p> <p>*recognise, describe and build simple 3-D shapes, including making nets</p> <p>*compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</p> <p>*illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</p> <p>*recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</p>
GEOMETRY Position and Direction	<p>*describe position, direction and movement, including whole, half, quarter and three-quarter turns</p>	<p>*order and arrange combinations of mathematical objects in patterns and sequences</p> <p>*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 anticlockwise)</p>		<p>*describe positions on a 2-D grid as coordinates in the first quadrant</p> <p>*describe movements between positions as translations of a given unit to the left/right and up/down</p> <p>*plot specified points and draw sides to complete a given polygon</p>	<p>*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</p>	<p>*describe positions on the full coordinate grid (all four quadrants)</p> <p>*draw and translate simple shapes on the coordinate plane, and reflect them in the axes</p>

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Statistics		<p>*interpret and construct simple pictograms, tally charts, block diagrams and simple tables</p> <p>*ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</p> <p>*ask and answer questions about totalling and comparing categorical data</p>	<p>*interpret and present data using bar charts, pictograms and tables</p> <p>*solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables</p>	<p>*interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs</p> <p>*solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs</p>	<p>*solve comparison, sum and difference problems using information presented in a line graph</p> <p>*complete, read and interpret information in tables, including timetables</p>	<p>*interpret and construct pie charts and line graphs and use these to solve problems</p> <p>*calculate and interpret the mean as an average</p>