

## Roe Lee Park Primary School Maths Key Stage 2 Progression Document

<b>Area of Study</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Place Value</b>	<p>Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number</p> <p>Recognise the place value of each digit in a three-digit number (hundreds, tens, and ones).</p> <p>Compare and order numbers up to 1000</p> <p>Identify, represent and estimate numbers using different representations.</p> <p>Read and write numbers up to 1000 in numerals</p> <p>Read and write numbers up to 1000 in words</p> <p>Solve number problems and practical problems involving these ideas.</p>	<p>Count in multiples of 6, 7, 9, 25 and 1000.</p> <p>Find 1000 more or less than a given number.</p> <p>Count backwards through zero to include negative numbers</p> <p>Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones</p> <p>Order and compare numbers beyond 1000.</p> <p>Identify, represent and estimate numbers using different representations.</p> <p>Round any number to the nearest 10, 100 or 1000.</p> <p>Solve number and practical problems that</p>	<p>Read, write, order and compare numbers up to at least 1,000,000 and determine the value of each digit.</p> <p>Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.</p> <p>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.</p> <p>Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000.</p> <p>Solve number problems and practical problems that involve ordering and comparing numbers up to</p>	<p>Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.</p> <p>Round any whole number to a required degree of accuracy.</p> <p>Use negative numbers in context and calculate intervals across zero.</p> <p>Solve number and practical problems that involve ordering and comparing numbers to 10,000,000, rounding to a required degree of accuracy, using negative numbers and calculating intervals across zero.</p>

		<p>involve all of the above, and with increasingly large positive numbers.</p> <p>Read Roman numerals up to 100 (I to C) and know that, over time, the numeral system changed to include the concept of zero and place value</p>	<p>1,000,000, counting forwards or backwards in steps, interpreting negative numbers and rounding.</p> <p>Read Roman numerals up to 1000 (M) and recognise years written in Roman numerals.</p>	
<h2>Addition and Subtraction</h2>	<p>Add and subtract numbers mentally, including a three-digit number and ones.</p> <p>Add and subtract numbers mentally, including a three-digit number and tens.</p> <p>Add and subtract numbers mentally, including a three-digit number and hundreds.</p> <p>Add numbers with up to three digits using the formal written method of columnar addition.</p> <p>Subtract numbers with up to three digits using the formal written method of columnar subtraction</p>	<p>Add numbers with up to 4 digits using the formal written method of columnar addition.</p> <p>Subtract numbers with up to 4 digits using the formal written method of columnar subtraction.</p> <p>Estimate and use inverse operations to check answers to a calculation.</p> <p>Solve addition and subtraction two-step problems in context, deciding which operations and methods to use and why.</p>	<p>Add and subtract whole numbers with more than 4 digits, 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 with mixed operations to carry out calculations involving the four operations</p> <p>Use knowledge of the order of operations (BODMAS) to carry out calculations involving the four operations</p> <p>Solve multi-step problems in contexts, deciding which operations and methods to use and why.</p> <p>Solve problems involving addition and subtraction.</p> <p>Use estimation to check answers to calculations and determine, in the context of a problem, an</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>Solve balanced equation problems, in all four operations, understanding the meaning of the equals (=) sign.</p>	<p>appropriate degree of accuracy.</p>
<p><b>Multiplication and Division</b></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 he/she knows, including for two-digit numbers times one-digit numbers, using mental methods and progressing to formal written methods.</p> <p>Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and</p>	<p>Recall multiplication and division facts for multiplication tables up to 12 x 12</p> <p>Use place value, and known and derived facts, to multiply and divide mentally, including multiplying by 0 and 1, dividing by 1, multiplying together three 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 a formal written layout.</p>	<p>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two 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 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 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>Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where</p>

	<p>correspondence problems in which n objects are connected to m objects.</p>	<p>Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit numbers, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.</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 1000</p> <p>Solve problems involving multiplying and division including using their knowledge of factors and multiples, squares and cubes.</p> <p>Solve problems involving multiplying and division, including scaling by simple fractions and problems involving simple rates</p> <p>Solve balanced equation problems</p>	<p>appropriate, interpreting remainders according to 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>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, 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> <p>Solve problems involving BODMAS</p>
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<h2 style="margin: 0;">Fractions</h2>	<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 fractions with the same denominator within one whole e.g. <math>\frac{5}{7} + \frac{1}{7} = \frac{6}{7}</math>.</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 one hundred and dividing tenths by ten</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 hundredths.</p>	<p>Compare and order fractions whose denominators are multiples of the same number.</p> <p>Identify and name equivalent fractions of a given fraction, represented visually, including tenths and hundredths.</p> <p>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 <math>&gt; 1</math> as a mixed number e.g. <math>\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1</math> and <math>\frac{1}{5}</math>.</p> <p>Add and subtract fractions with the same denominator and</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 <math>&gt; 1</math></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 e.g. <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math>.</p> <p>Divide proper fractions by whole numbers e.g. <math>\frac{1}{3} \div 2 = \frac{1}{6}</math>.</p> <p>Associate a fraction with division and calculate decimal fraction equivalents e.g. 0.375 for a simple fraction e.g. <math>\frac{3}{8}</math>.</p>

	<p>Subtract fractions with the same denominator within one whole e.g. <math>\frac{6}{7} - \frac{1}{7} = \frac{5}{7}</math>.</p> <p>Compare and order unit fractions, and fractions with the same denominators.</p> <p>Solve fraction problems.</p>	<p>Recognise and write decimal equivalents of <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, <math>\frac{3}{4}</math>.</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 one decimal place to the nearest whole number.</p> <p>Compare numbers with the same number of decimal places (up to two decimal places).</p> <p>Solve simple measure and money problems involving fractions, and decimals with up to two decimal places.</p>	<p>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 e.g. <math>0.71 = \frac{71}{100}</math>.</p> <p>Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.</p> <p>Round decimals with two decimal places to the nearest whole number and to one decimal place.</p> <p>Read, write, order and compare numbers with up to three decimal places.</p> <p>Solve problems involving numbers with up to three decimal places.</p>	<p>Identify the value of each digit in numbers given to three decimal places.</p> <p>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>Solve problems that require answers to be rounded to specified degrees of accuracy.</p> <p>Use written division methods in cases where the answer has up to two decimal places.</p> <p>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p>
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<p><b>Properties of shape</b></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 two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify</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 two 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</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 (<math>^{\circ}</math>).</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>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>respect to a specific line of symmetry.</p> <p>Begin to recognise where angles are greater than two right angles. Know the term straight angle, referring to two right angles together.</p> <p>Begin exploring line symmetry with two lines of symmetry.</p>	<p>Identify angles at a point and one whole turn (total <math>360^\circ</math>).</p> <p>Identify angles at a point on a straight line and <math>1/2</math> a turn (total 180)</p> <p>I can identify other multiples of <math>90^\circ</math>. 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>Use properties of rectangles to deduce related facts and find missing lengths and angles</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>
<b>Measurement</b>	<p>Measure, compare, add and subtract lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).</p> <p>Add and subtract amounts of money to give</p>	<p>Convert between different units of measure e.g. kilometre to metre, hour to minute</p> <p>Estimate, compare and calculate different</p>	<p>Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and</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>change, using both £ and p in practical contexts</p> <p>Tell the time from an analogue clock; 12-hour and 24-hour clocks.</p> <p>Write the time using an analogue clock; 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, a.m./p.m., 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 e.g. calculate the time taken by particular events or tasks.</p>	<p>measures, including money in pounds and pence.</p> <p>Read, write and convert time between analogue and digital 12- and 24-hour clocks and using Roman Numerals</p> <p>Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.</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>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), and including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and estimate the area of irregular shapes.</p> <p>Estimate volume e.g. using 1cm<sup>3</sup> blocks to build cuboids (including cubes) and capacity e.g. using water.</p> <p>Solve problems involving converting between units of time.</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 up to three decimal places</p> <p>Convert between miles and kilometres.</p> <p>Recognise that shapes with the same area can have different perimeters and vice versa.</p> <p>Recognise when it is possible to use formulae for the area and volume of shapes.</p> <p>Calculate the area of parallelograms and triangles.</p> <p>Calculate, estimate and compare the volume of cubes and cuboids using standard units, including cubic centimetres (cm<sup>3</sup>)</p>
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	Measure the perimeter of simple 2-D shapes		Use all four operations to solve problems involving measure e.g. length, mass, volume, money, using decimal notation, including scaling	and cubic metres (m <sup>3</sup> ), and extending to other units e.g. mm <sup>3</sup> and km <sup>3</sup> .
<b>Statistics</b>	<p>Interpret and present data using bar charts, pictograms and tables.</p> <p>Solve one-step and two-step questions e.g. 'How many more?' and 'How many fewer?', using information presented in scaled bar charts, 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>
<b>Position and direction</b>		<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>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 axis.</p>

		Plot specified points and draw sides to complete a given polygon		
<b>Ratio and proportion</b>				<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 e.g. of measures, 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>
<b>Algebra</b>	Solve problems including missing number problems.	Solve problems including missing number problems	Solve problems including missing number problems	<p>Use simple formulae.</p> <p>Generate and describe linear number sequences.</p>

				<p>Express missing number problems algebraically.</p> <p>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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