

Maths KS2 Progression Map

Maths lessons will start with warm ups/maths meeting in order to keep concepts simmering - going over concepts learnt in the previous lesson, previous week, previous term and previous year. Whilst we use the White Rose and NCETM spines as a guide and resources - we adapt medium term plans according to cohort needs.

	Year 2	Year 3	Year 4	Year 5	Year 6
Place value Counting	Count in steps of 2,3 and 5 from 0 and in tens from any number forward and backwards	Count from 0 in multiples of 4,8, 50 and 100; find 10 or 100 more or less than a given number.	Count in multiples of 6,7,9, 25 and 1000 Count backwards through zero to include negative numbers	Count forwards or backwards in steps of powers of 10 for any given number up to 1000000	
Place value Represent	Read and write numbers to at least 100 in numerals and words Identify, represent and estimate numbers using different representations, including the number line.	Identify, represent and estimate numbers using different representations. Read and write numbers up to 1000 in numerals and in words	Identify, represent and estimate numbers using different representations. Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value	Read, write, (order and compare) numbers to at least 1 00 000 and determine the value of each digit. Read Roman numerals to 1000 (M) and recognise years written in Roman numerals	Read, write (order and compare) numbers up to 10 000 000 and determine the value of each digit
Place value Use PV and compare	Recognise the place value of each digit in a two- digit number (tens, ones) Compare and order numbers from 0 up to 100; use < > and = signs.	Recognise the place value of each digit a three-digit number (hundreds, tens, ones) Compare and order numbers to 1000	Find 1000 more or less than a given number Recognise the place value of each digit in a four- digit number (thousands, hundreds, tens and ones) Order and compare numbers beyond 1000	(read, write) order and compare numbers to at least 1 000 000 and determine the value of each digit	(read, write) order and compare numbers to at least 10 000 000 and determine the value of each digit

<p>Place value Problems and rounding</p>	<p>Use place value and number facts to solve problems</p>	<p>Solve number problems and practical problems involving these ideas</p>	<p>Round any number to the nearest 10, 100 or 1000 Solve number and practical problems that involve all of the above and with increasingly large positive numbers</p>	<p>Interpret negative numbers in context Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 Solve number problems and practical problems that involve all of the above</p>	<p>Round any whole number to a required degree of accuracy Use negative numbers in context and calculate intervals across zero Solve number and practical problems that involve all of the above</p>
<p>Addition and Subtraction Recall, represent and use</p>	<p>Recall and use addition and subtraction facts to 20 fluently and derive and use related facts to 100 Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems</p>	<p>Estimate the answer to a calculation and use inverse operations to check answers</p>	<p>Estimate and use inverse operations to check answers to a calculation</p>	<p>Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>	
<p>Addition and subtraction Calculations</p>	<p>Add and subtract numbers using concrete pictorial representations and mentally including: a two-digit number and ones</p>	<p>Add and subtract numbers mentally including: a three digit number and ones a three digit numbers and tens</p>	<p>Add and subtract whole numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</p>	<p>Add and subtract whole numbers with more than 4 digits including using formal written methods (columnar addition and subtraction)</p>	<p>Perform mental calculations including with mixed operations and large numbers. Use their knowledge of the order of operations to carry out calculations</p>

	a two digit number and tens two two digit numbers adding three one digit numbers	a three digit numbers and hundreds Add and subtract numbers with up to three digits using formal written methods of columnar addition and subtraction.		Add and subtract numbers mentally with increasingly large numbers	involving the four operations.
Addition and Subtraction Solve problems	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	solve problems including missing numbers using number facts, place value and more complex addition and subtraction	Solve addition and subtraction two-step problems in context, deciding which operations and methods to use and why	Solve addition and subtraction two-step problems in context, deciding which operations and methods to use and why	Solve addition and subtraction two-step problems in context, deciding which operations and methods to use and why
Multiplication and division Recall, represent and use	Recall and use multiplication and division facts for the 2,5 and 10 times tables Show that multiplication can be done in any order (commutative) and division cannot	Recall and use multiplication and division facts for the 3,4 and 8 times tables	Recall and use multiplication and division facts up to 12 x12 Use place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1 and dividing by 1 and multiplying together three numbers Recognise and use factor pairs and commutativity in mental calculations.	Identify multiples and factors, including all factor pairs of a number and common factors of two numbers. Know and use the vocabulary of prime numbers and composite (non prime) numbers. Establish whether a number up to 100 is prime and recall numbers up to 19 Recognise and use square numbers and	Identify common factors, common multiples and prime numbers Use estimation to check answers to calculations and determine in the context of a problem an appropriate degree of accuracy.

				cube numbers and the notation for squared ² and cubed ³ numbers.	
Multiplication and division Calculations	Calculate mathematical statements for multiplication and division within the multiplication tables and write them using multiplication (x) and division (÷) and equals (=) signs	Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one digit numbers, using mental and progressing to formal written methods.	Multiply two-digit and three-digit numbers by a one-digit number using a formal written layout	Multiply numbers up to 4 digit by a one digit or two digit numbers using a formal method, including long multiplication for two digit numbers Divide numbers up to 4 digit by a one-digit number using the formal method of short division and interpret remainders appropriately for the context Multiply and divide whole numbers and those involving decimals by 10,100,1000	Multiply multi digit numbers up to 4 digits by a two digit whole number using the formal written method of long multiplication Divide numbers up to 4 digits by two digit whole number using the formal written method of long division and interpret remainders as whole number remainders, fractions or by rounding appropriate to context Divide numbers up to 4 digit by 2 digit number using the formal written method interpreting remainders to context Perform mental calculations including mixed operations and large numbers
Multiplication and division Solve problems	solve problems involving multiplication and division, using materials, arrays and repeated addition, mental methods and multiplication and	Solve problems including missing number problems involving multiplication and division including positive integer scaling problems and	Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling	Solve problems involving multiplication and division including using their knowledge of factors, multiples, square and cubes.	Solve problems involving addition, subtraction multiplication and division.

	division facts including problems in context.	correspondence problems such as n objects are connected to m objects	problems and harder correspondence problems such as n objects are connected to m objects.	Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates	
Multiplication and division Combined operations				Solve problems involving addition, subtraction, multiplication and division and a combination of these including understanding the meaning of the equals sign	Use their knowledge of the order of operations to carry out calculations involving the four operations.
Fractions Recognise and write	Recognise, find, name and write fractions $\frac{1}{3}, \frac{1}{4}, \frac{2}{4}, \frac{3}{4}$ of a length, shape set of objects or quantity	count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal part and in dividing one digit numbers or quantities by 10 Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.			

Fractions Compare	Recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$	Recognise and show using diagrams, equivalent fractions with small denominators Compare and order unit fractions, and fractions with the same denominator.	Recognise and show using diagrams, families of common equivalent fractions.	Compare and order fractions whose denominators are all multiples of the same number	Use common factors to simplify fractions use common multiples to express fractions in the same denomination Compare and order fractions, including fractions > 1
Fractions Calculations	Write simple fractions for example $\frac{1}{2}$ of 6 = 3	Add and subtract fractions with the same denominator within one whole e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$	Add and subtract fractions with the same denominator	Add and subtract fractions with the same denominator and denominators that are multiples of the same number Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	Add and subtract fractions with different denominators and mixed numbers using the concept of equivalent fractions. Multiply simple pairs of proper fractions writing the answer in its simplest form e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ Divide proper fractions by whole numbers e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$
Fractions Solve problems		Solve problems that involve all of the above	Solve problems involving increasingly harder fractions to calculate quantities and fractions to divide quantities, including non-unit fractions where the answer is a whole number		
Decimals Recognise and write			Recognise and write decimal equivalents of any number of tenths and hundredths Recognise and write decimal equivalents for $\frac{1}{4}$ $\frac{1}{2}$ $\frac{3}{4}$	Read and write decimal numbers as fractions. e.g.g $0.71 = \frac{71}{100}$ Recognise and use thousandths and relate them to tenths,	Identify the value of each digit in numbers given to three decimal places

				hundredths and decimal equivalent	
Decimals Compare			Round decimal with one decimal place to the nearest whole number. Compare numbers with the same number of decimal places up to two decimal places.	Round decimals with two decimal places to the nearest whole number and to one decimal place. Read, write, order and compare numbers with up to three decimal places.	
Decimals Calculations and problems			Find the effect of dividing a one or two digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.	Solve problems involving number up to three decimal places	Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. Multiply one digit numbers with up to decimal places by whole numbers. Use written division methods in cases where the answer has up to two decimal places. Solve problems which require answers to be rounded to specified degrees of accuracy
Fractions, Decimals and percentages			Solve simple measure and money problems involving fractions and decimals to two decimal places	Recognise the percent sign % and understand that percent relates to 'number of parts per hundred' and write percentages as a fraction with a denominator 100 as a decimal Solve problems which require knowing	Associate a fraction with division and calculate decimal fraction equivalents e.g. 0.375 for a simple fractions $\frac{3}{8}$ Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

				percentage and decimal equivalents of $\frac{1}{2}$ $\frac{1}{4}$ $\frac{1}{5}$ $\frac{2}{5}$ $\frac{3}{5}$ and those fractions with a denominator of a multiple of 10 or 25	
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 and percentages e.g. 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 (notation not until Yr 6 but algebraic thinking earlier)	Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	Solve problems including 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>

					Enumerate possibilities of combinations of two variables
Measurements Using measures	Choose and use appropriate standard units to estimate and measure length/height in any direction(m/cm) mass (kg/g) temperature(°C) capacity/litres (litres/ml) to the nearest appropriate unit. using rulers, scales, thermometers and measuring vessels Compare and order length, mass, volume/capacity and record the results using >< and =	Measure, compare, add and subtract lengths (m/cm/mm) mass (kg/g) volume/capacity (l/ml)	Convert between different units of metric measures e.g. kilometre to metre hour to minute Estimate, compare and calculate different measures.	Convert between different units of metric measure e.g. kilometre to metre centimetre to metre and to millimetre, gram to kilogram and litre to millilitres Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints Use all four operations to solve problems involving measures e.g. length, mass, volume, and money using decimal notation including scaling.	Solve problems involving the calculation and conversion of units of measure , using decimal notation up to three decimal places where appropriate 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 and vice versa, using decimal notation to up to three decimal places Convert between miles and kilometres.
Measurement Using money	Recognise and use symbols for pounds £ and pence p combine amounts to make a particular value Find different combinations of coins that equal the same amounts of money	Add and subtract amounts of money to give change, using both £ and p in practical contexts	Estimate, compare and calculate different measures including money in pounds and pence	Use all four operations to solve problems involving measure-money	

	Solve simple problems in a context involving addition and subtraction of money of the same unit, including giving change				
Measurement Time	<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 the 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>Tell and write the time from an analogue clock including using Roman Numerals from I to XII and 12 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 such as to calculate the taken by particular events or tasks.</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 month; weeks to dya</p>	<p>Solve problems involving converting between units of time</p>	<p>Use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit and vice versa</p>
Measurement Area, perimeter volume		Measure the perimeter of simple 2D shapes	Measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m)	Measure and calculate the perimeter of composite and rectilinear shapes in cm and m	

			Find the area of rectilinear shapes by counting squares	Calculate and compare the area of rectangles (including squares) and including using standard units, square cm (cm ²) and m (m ²) and estimate the area of irregular shapes Estimate volume	
Geometry 2D shapes	Identify and describe the properties of 2D shapes including the number of sides and line symmetry in a vertical line Identify 2D shapes on the surface of 3D shapes such as a circle on a cylinder and a triangle on a pyramid Compare and sort common 2D shapes and everyday objects	Draw 2D shapes	Compare and classify geometric shapes, including quadrilaterals and triangles based on their properties and sizes. Identify lines of symmetry in 2D shapes presented in different orientations	Distinguish between regular and irregular polygons based on reasoning about equal sides and angles Use the properties of rectangles to deduce related facts and find missing length and angles.	Draw 2D shapes using given dimensions and angles Compare and classify geometric shapes based on their properties and sizes Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the size of the radius.
Geometry 3D shapes	Recognise and name common 3D shapes such as cuboids cubes, pyramids and spheres. Compare and sort common 3D shapes and everyday objects	Make 3D shapes using modelling materials; recognise 3D shapes in different orientations and describe them		Identify 3D shapes including cubes and cuboids from 2D representations	Recognise, describe and build simple 3D shapes including making nets.
Geometry Angles and lines		Recognise angles as a property of a shape or a description of a turn Identify right angles, recognise that two right angles make a half-turn three make three	Identify acute and obtuse angles and compare and order angles up to two right angles by size Identify lines of symmetry in 2D shapes	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	Find unknown angles in any triangles, quadrilaterals and regular polygons Recognise angles where they meet at a point, are on a straight line, or are

		quarter turn and four a complete turn; identify whether angles are greater or less than a right angle. Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	presented in different orientations Complete a simple symmetric figure with respect to a specific line of symmetry	Draw given angles, and measure them in degrees Identify angles at a point and one whole turn (360°) Identify angles at a point on a straight line and ½ a turn (total 180°) Other multiples of 90°.	vertically opposite and find missing angles.
Geometry Position and direction	Order and arrange combinations of mathematical objects in patterns and sequences. Use mathematical vocabulary to describe position, direction and movement in a straight line and distinguishing between rotation as a turn in terms of right angles for quarter, half and three quarter turns - anticlockwise and clockwise.		Describe positions on a 2D grid as coordinates in the first quadrant. Describe movements between positions as translations of a given unit to the left/right and up and down. Plot specified points and draw sides to complete a given polygon.	Identify, describe and represent the position of a shape following a reflection or translation using the appropriate language, and know that the shape has not changed.	Describe positions on the full coordinate grid (all four quadrants). Draw and translate simple shapes on the coordinate plane and reflect them in the axes.
Statistics Present and interpret	interpret and construct simple pictograms, tally charts, block diagrams and simple tables.	interpret and present bar charts pictograms and tables.	interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	complete, read and interpret information in tables including timetables.	Interpret and construct pie charts and line graphs and use these to solve problems.
Statistics Solve problems	Ask and answer simple questions by counting the number of objects in each category and	Solve one step and two step questions e.g. How many more? How many fewer? using information presented	Solve comparison, sum and difference problems using information presented in bar charts,	Solve comparison, sum and difference problems using information presented in a line graph.	Calculate and interpret the mean as an average.

	<p>sorting the categories by quantity. Ask and answer questions about totalling and comparing categorical data.</p>	<p>in scaled bar charts and pictograms and tables.</p>	<p>pictograms tables and other graphs.</p>		
Vocabulary	<p>To read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.</p>	<p>To read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.</p>	<p>To read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.</p>	<p>To read, spell and pronounce mathematical vocabulary correctly.</p>	<p>To read, spell and pronounce mathematical vocabulary correctly.</p>