



Subject: Maths

OUR COMMON PURPOSE

All children will reach their full educational potential and look back at their time at Riverview Junior School with absolute admiration irrespective of gender, race, disability or background.

Rationale:

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solutions to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary in most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, and a sense of enjoyment and curiosity about the subject. National Curriculum 2013.

As a school we want to promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion providing maths lessons that pupils look forward to, in which they can maximise their potential. Our focus is on raising standards - working together to show what pupils are capable of and to find effective ways to enable every child to succeed. We do not believe that mathematics should be used to identify those who appear to be naturally more or less able, but rather that all children have the potential to become 'able' mathematicians.

Aims and objectives

- To ensure that all pupils become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time
- To provide opportunities for all children to develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- To ensure that all pupils reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- To ensure that all pupils can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.
- To ensure that all pupils make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems
- To ensure all pupils can apply their mathematical knowledge to science and other subjects
- To enable all pupils to achieve and make good progress in mathematics
- To challenging those who grasp concepts rapidly through offering rich and sophisticated problems before any acceleration through new content
- To support those who are not sufficiently fluent with earlier material by consolidating their understanding, including through additional practise, before moving on
- To ensure that Maths teaching is at least good across all year groups and there is a consistent approach to the learning and teaching of mathematics across the whole school
- To ensure the correct balance of learning and teaching time is given for number, geometry, measure and statistics in all year groups.
- To promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion



Skills and Knowledge Progression

Area of Study: Number - Place Value

Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<p>Count in steps of 2, 3 and 5 from 0, and in tens from any number, forward and backward.</p>	<p>Count from 0 in multiples of 4, 8, 50 and 100</p> <p>Find 10 or 100 more or less than a given number.</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>Count forwards or backwards in steps of powers of 10 for any given number up to 1000000.</p> <p>I can keep multiplying a number by 10 or 100 up to 1,000,000 and count back.</p> <p>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero.</p> <p>I can use negative numbers in context when looking at temperature or money; counting forwards and backwards through 0.</p>	<p>Use negative numbers in context, and calculate intervals across zero.</p> <p>I can use negative numbers in context when looking at temperature or money; counting in jumps forwards and backwards through 0.</p> <p>I can show an understanding of place value including decimals.</p>	
<p>Recognise the place value of each digit in a two digit number (tens, ones)</p> <p>Compare and order numbers from 0 up to 100; use $>$ $<$ and $=$ signs.</p>	<p>Recognise the place value of each digit in a three-digit number (hundreds, tens, ones).</p> <p>Compare and order numbers up to 1000.</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>Round any number to the nearest 10, 100 or 1000.</p>	<p>Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit.</p> <p>I can round numbers up to 1,000,000 to the nearest 10, 100, 1000, 10,000 or 100,000.</p>	<p>Read, write, order and compare numbers to at least 10 000 000 and determine the value of each digit.</p> <p>Round any whole number to a required degree of accuracy.</p>	<p>Understand and use place value for decimals, measures and integers of any size</p> <p>Order positive and negative integers, decimals and fractions</p> <p>Use the symbols $=$, \neq, $<$, $>$, \leq, \geq to make order statements about positive and negative integers, decimals and fractions</p>



CURRICULUM PROGRESSION STRAND MAP MATHS

					Round numbers and measures to different degrees of accuracy, for example to the nearest whole number or to one decimal place
Identify, represent and estimate numbers using different representations including the number line. Read and write numbers to at least 100 in numerals and in words.	Identify, represent and estimate numbers using different representations. I can find, show and estimate numbers using objects and pictures. 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 Roman numerals to 1000 (M) and recognise years written in Roman numerals. Recognise the use of square numbers and cube numbers and the notation for squared and cubed		Use square, cube, square root and cube root
Use place value and number facts to solve problems.	Solve number and practical problems involving these ideas. I can solve number and word problems.	Solve number and practical problems that involve comparing, rounding and place value.	I can solve number and practical problems that involve ordering and comparing numbers to 1 000 000, counting forwards or backwards in steps, negative numbers and rounding.	Solve number and practical problems with increasingly large numbers. Solve number and practical problems that involve numbers to at least 1000000 I can 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. I can solve problems which require answers to be rounded to specified degrees of accuracy.	



CURRICULUM PROGRESSION STRAND MAP MATHS

				I can explain the place value of any digit in a number with up to 3 decimal places and multiply or divide these by 10, 100 or 1000.	
Curriculum goals: pupils will be precise in using and understanding place value to 100	Curriculum goals: pupils will be precise in using and understanding place value to 1000	Curriculum goals: pupils will be precise in using and understanding place value to 10 000	Curriculum goals: pupils will be precise in using and understanding place value to 100 000	Curriculum goals: pupils will be precise in using and understanding place value to 1 000 000	Curriculum goals: Pupils will be precise in using and understanding place value for decimals, measures and integers of any size
Outcomes for this area are embedded across all the following areas of study including the enrichment activities.					



Skills and Knowledge Progression

Area of Study: Number - Addition and Subtraction

Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<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 the addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.</p>	<p>Add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three digit number and hundreds.</p> <p>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.</p> <p>I can add numbers with up to three digits using formal written methods.</p> <p>I can add and subtract numbers in my head, including a three digit number and ones.</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>I can use a bar model diagram to represent information in an addition or subtraction problem.</p>	<p>Add and subtract numbers mentally with increasingly large numbers.</p> <p>I can add and subtract 2 and 3 digit numbers in my head.</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.</p> <p>Use their knowledge of the order of operations to carry out calculations involving the four operations.</p> <p>I can mentally calculate using a mix of the four operations.</p>	<p>Use conventional notation for the priority of operations, including brackets</p> <p>Recognise and use relationships between the operations +, -, ×, ÷, including inverse operations</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>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</p>	<p>Solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why.</p>	<p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why.</p> <p>I can solve addition and subtraction word and practical problems.</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>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>I can apply my knowledge to solve a real-life problem.</p>	<p>Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>	<p>Use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy.</p>	<p>Round numbers and measures to an appropriate degree of accuracy, for example to the nearest whole number or to one decimal place.</p>



CURRICULUM PROGRESSION STRAND MAP MATHS

	I can use estimating and inverse operations to check my answers.				Use approximation, through rounding to the nearest whole number or to one decimal place, to estimate answers
Curriculum goals: Pupils will know and be able to use the number bonds to 20	Curriculum goals: Pupils will add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	Curriculum goals: Pupils will add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	Curriculum goals: Pupils will add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	Curriculum goals: Pupils will solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	Curriculum goals: Pupils will recognise and use relationships between the operations $+$, $-$, \times , \div , including inverse operations



Skills and Knowledge Progression

Area of Study: Number - Multiplication and Division

Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<p>Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers.</p>	<p>Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.</p>	<p>Recall and use multiplication and division facts for multiplication tables up to 12×12.</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>Identify common factors, common multiples and prime numbers.</p>	<p>Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple</p>
<p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals ($=$) sign.</p> <p>Show that the multiplication of two numbers is commutative and division is not</p>	<p>Write and calculate mathematical statements for multiplication and division using the multiplication tables they know, including for two-digit numbers times one-digit numbers, using mental methods</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 three numbers</p> <p>Recognise and use factor pairs and commutativity in mental calculations.</p>	<p>Multiply and divide numbers mentally drawing upon known facts.</p> <p>I can mentally multiply and divide numbers using the times tables.</p> <p>Multiply and divide whole numbers by 10, 100 and 1000.</p> <p>I can multiply and divide whole and decimal numbers by 10, 100 and 1000</p>	<p>Perform mental calculations, including with mixed operations and large numbers.</p> <p>I can mentally calculate using a mix of the four operations and increasingly large numbers.</p>	
	<p>Progress to formal written methods for calculations as above.</p> <p>I can show multiplication and division facts as arrays.</p>	<p>Multiply two digit and three digit numbers by a one digit number using formal written layout.</p> <p>I can use the grid or expanded method to multiply numbers.</p>	<p>Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2 digit numbers.</p>	<p>Multiply multi-digit number up to 4 digits by a 2-digit number using the formal written method of long multiplication.</p>	



CURRICULUM PROGRESSION STRAND MAP MATHS

	<p>I can use the grid method to multiply a single digit by a 2-digit number.</p> <p>I can use short division to calculate a 2 or 3-digit number divided by a single digit number.</p> <p>I can calculate multiplication and division problems, both mentally and in writing, using the times tables, including two digit numbers times one digit numbers.</p> <p>I can solve problems, including missing number problems, involving multiplication and division, including factors and ratio.</p>	<p>I can use short division to divide one number by another.</p> <p>I can use a bar model diagram to represent information in a multiplication or division problem.</p> <p>I can multiply or divide numbers by 10, 100 and 1000.</p> <p>I can divide one and two digit numbers by 10 and 100 and can explain the effect this has on place value.</p> <p>I can solve multiplication and division problems.</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>I can divide numbers with up to 4 digits by a one digit number using formal written methods and can explain remainders.</p> <p>I can use formal written methods for division and multiplication.</p> <p>I can problem solve using division and multiplication.</p>	<p>Divide numbers up to 4 digits by a 2-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding as appropriate.</p> <p>Divide numbers up to 4 digits by a 2-digit number using the formal written method of short division, interpreting remainders according to the context.</p> <p>I can divide numbers of up to 4 digits by a two-digit number using a formal written method of long division, showing remainders, fractions or rounding as appropriate.</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>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 objectives.</p>	<p>Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.</p> <p>I can apply multiplication facts when looking at area and perimeter.</p>	<p>I can identify and use square numbers and their notation.</p> <p>I can identify and use cube numbers and their notation.</p> <p>Solve problems involving multiplication and division using their knowledge of factors and multiples, squares and cubes.</p> <p>Solve problems involving multiplication and division, including scaling by simple</p>	<p>Use their knowledge of the order of operations to carry out calculations involving the four operations.</p> <p>I can use the order of importance of the four operations when answering questions.</p> <p>Solve addition and subtraction multi-step problems in contexts deciding which operations and methods to use and why</p>	<p>Use approximation, through rounding to the nearest whole number or to one decimal place, to estimate answers</p>



CURRICULUM PROGRESSION STRAND MAP MATHS

		<p>I can solve problems involving multiplication and addition, including the distributive law such as $3 \times (12 + 14) = 3 \times 12 + 3 \times 14$</p> <p>I can apply multiplication and division skills to solve a variety of problems.</p>	<p>fractions and problems involving simple ratios.</p> <p>I can solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.</p> <p>I can solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.</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>I can solve problems involving addition, subtraction, multiplication and division.</p> <p>I can use estimating to check answers and problem solving.</p> <p>I can use written division methods for numbers with up to two decimal places.</p> <p>I can solve problems involving unequal sharing and grouping. I can use my knowledge of fractions and multiples to do this.</p> <p>I can solve problems that involve the relative sizes of two things where the missing number can be found by multiplying or dividing by whole numbers.</p>	
<p>Curriculum goals: Children will make connections between arrays, number patterns, and counting in 2s, 5s and 10s.</p>	<p>Curriculum goals: Recall and use timetable facts (including 3, 4 and 8) develop efficient mental and reliable written methods for multiplication and division (2 digit by 1 digit)</p>	<p>Curriculum goals: Recall and use timetable facts to develop efficient mental and written methods for multiplication (3 digit by 2 digit) and division</p>	<p>Curriculum goals: Recall and use timetable facts to develop efficient mental and written methods for multiplication (4 digit by 2 digit) and division (4 digit by 1 digit)</p>	<p>Curriculum goals: Recall and use timetable facts to develop efficient mental and written methods for multiplication (4 digit by 2 digit) and division (4 digit by 2 digit)</p>	<p>Curriculum goals:</p>



Skills and Knowledge Progression

Area of Study: Number - Fractions including decimals and percentages

Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<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>Count up and down in tenths</p> <p>Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10</p> <p>I can find and use fractions of numbers such as $\frac{1}{4}$ of 8 = 2 and $\frac{3}{4}$ of 8 = 6</p> <p>I can count up and down in tenths and know that tenths are made from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10.</p>	<p>Count up and down in hundredths.</p> <p>Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.</p> <p>I can count up and down in hundredths and know that dividing an object by 100 creates hundredths and by 10 creates tenths.</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</p> <p>I can identify mixed numbers and improper fractions and convert from one to another such as $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1 \frac{1}{5}$</p>		
	<p>I can identify and show equivalent fractions.</p> <p>Compare and order unit fractions, and fractions with the same denominators.</p> <p>Recognise and show, using diagrams, equivalent fractions with small denominators.</p>	<p>Recognise and show, using diagrams, families of common equivalent fractions.</p>	<p>Compare and order fractions whose denominators are 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>I can find and name equivalent fractions of a given fraction including tenths and hundredths.</p>	<p>I can identify common factors, multiples and prime numbers.</p> <p>Use common factors to simplify fractions</p> <p>Use common multiples to express fractions in the same denomination.</p> <p>Compare and order fractions, including fractions > 1</p>	



CURRICULUM PROGRESSION STRAND MAP MATHS

			<p>I can write equivalent fractions of a given fraction including tenths and hundredths.</p> <p>I can use common factors and multiples to simplify fractions and express fractions in the same denomination.</p>		
	<p>Recognise, find and write fractions of a discrete set of objects: unit 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>I can write and find fractions of a set of data and can recognise fractions with small denominators.</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>I can solve problems involving fractions to calculate quantities and fractions to divide quantities.</p>			
<p>Write simple fractions for example, $1/2$ of 6 = 3 and recognise the equivalence of $2/4$ and $1/2$.</p>	<p>Add and subtract fractions with the same denominator within one whole.</p>	<p>Add and subtract fractions with the same denominator.</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>I can multiply fractions by whole numbers using objects and pictures.</p>	<p>Add and subtract fractions with different denominations 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 $1/4 \times 1/2 = 1/8$]</p>	<p>multiply proper and improper fractions, and mixed numbers, all both positive and negative</p>



CURRICULUM PROGRESSION STRAND MAP MATHS

				<p>Divide proper fractions by whole numbers [for example $1/3 \div 2 = 1/6$]</p>	
		<p>Recognise and write decimal equivalents of any number of tenths or hundredths.</p> <p>Recognise and write decimal equivalents to $1/4$, $1/2$ and $3/4$</p> <p>Find the effect of dividing a one or two digit number by 10 or 100, identifying the value of the digits in the answer as ones, tenths and hundredths.</p>	<p>Read and write decimal numbers as fractions.</p> <p>I can read and write decimal numbers as fractions such as $0.71 = 71/100$</p>	<p>Identify the value of each digit in numbers given to 3 decimal places.</p> <p>I can link a fraction with division and work out decimal fractions such as knowing that 7 divided by 21 is the same as $7/21$ and that this is equal to $1/3$, and 0.378 is $3/8$ as a simple fraction.</p> <p>I can multiply numbers less than 10 with up to 2 decimal places by whole numbers.</p>	<p>work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and $7/2$ or 0.375 and $3/8$)</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>Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.</p> <p>I can identify and use thousandths and can explain how they relate to tenths and hundredths and their decimal equivalents.</p> <p>Round decimals with two decimal places to the nearest whole number and to one decimal place.</p> <p>I can round numbers with two decimal places.</p>		



CURRICULUM PROGRESSION STRAND MAP MATHS

			Read, write, order and compare numbers with up to three decimal places.		
				<p>Multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places.</p> <p>Multiply one-digit numbers with up to 2 decimal places by whole numbers.</p> <p>Use written division methods in cases where the answer has up to 2 decimal places.</p>	
			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>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>I can solve problems involving the calculation of percentages.</p> <p>I can use percentages for comparisons.</p>	define percentage as 'number of parts per hundred', and know their decimal and fraction equivalents
	<p>Solve problems that involve all of the above.</p> <p>I can solve fraction problems.</p>	Solve simple measure and money problems involving fractions and decimals to two decimal places.	<p>Solve problems involving number up to three decimal places.</p> <p>Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.</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>	



CURRICULUM PROGRESSION STRAND MAP MATHS

				I can use equivalences between simple fractions, decimals and percentages to help me solve problems.	
Curriculum goals: Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$	Curriculum goals: Recognise, find, name and use fractions including $\frac{1}{8}$ and $\frac{1}{10}$ - linking $\frac{1}{10}$ to place value	Curriculum goals: Recognise, find, name and use fractions including $\frac{1}{100}$ linking to place value	Curriculum goals: Recognise, find, name and use fractions including improper and mixed number fractions	Curriculum goals: Use fractions including improper and mixed number fractions to calculate using the four operations	Curriculum goals: Work interchangeably with terminating decimals and their corresponding fractions and negative fractions



CURRICULUM PROGRESSION STRAND MAP MATHS

Skills and Knowledge Progression

Area of Study: Number - Algebra

Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
				<p>Use simple formulae.</p> <p>I can create and describe linear number sequences.</p> <p>Express missing number problems algebraically.</p> <p>I can record missing number problems algebraically.</p> <p>Enumerate possibilities of combinations of two variables.</p> <p>I can find pairs of numbers that satisfy / complete an equation with two unknowns.</p> <p>I can create a list of possibilities of the combination of two variables.</p>	<p>Understand and use standard mathematical formulae</p> <p>Use algebraic methods to solve linear equations in one variable</p> <p>Substitute positive integer values into formulae and expressions, including scientific formulae</p> <p>Simplify and manipulate algebraic expressions to maintain equivalence by:</p> <ul style="list-style-type: none"> - collecting like terms - multiplying a single term over a bracket <p>Generate terms of a sequence with a simple linear position-to-term rule (such as 'an expression for the value of the nth term is $n + 2$') from either the term-to-term or the position-to-term rule.</p>
<i>Curriculum goals:</i>	<i>Curriculum goals:</i>	<i>Curriculum goals:</i>	<i>Curriculum goals:</i>	<i>Curriculum goals:</i> Use algebraic formulae to express missing number problems and describe number sequences.	<i>Curriculum goals:</i>



CURRICULUM PROGRESSION STRAND MAP MATHS

Skills and Knowledge Progression

Area of Study: Number - Ratio

Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
				<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 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>	<p>Understand that a multiplicative relationship between two quantities that can be expressed as a ratio of the form 1 : n where n is an integer can also be expressed as the unit fraction $\frac{1}{n}$</p> <p>Use ratio notation, including reduction to simplest form</p> <p>Use scale factors of scale diagrams and maps in everyday contexts</p> <p>Relate dividing a given quantity into two parts in a given part: whole ratio to finding a fraction of a quantity; relate part: part ratios of quantities to the corresponding part: whole ratios.</p>
<i>Curriculum goals:</i>	<i>Curriculum goals:</i>	<i>Curriculum goals:</i>	<i>Curriculum goals:</i>	<i>Curriculum goals:</i> Use multiplication and division facts for scaling.	<i>Curriculum goals:</i>



Skills and Knowledge Progression

Area of Study: Measurement

Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<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>Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)</p> <p>I can measure, compare add and subtract lengths.</p>	<p>Convert between different units of measure.</p> <p>Estimate, compare and calculate different measures, including money in pounds and pence.</p> <p>I can estimate, compare and calculate different measures, including money in pounds and pence.</p> <p>I can convert different units of measurement. e.g. I can convert kilometres into metres or hours into minutes.</p> <p>I can read, write and compare time between analogue and digital 12-hour and 24-hour clocks.</p> <p>I can solve problems where I need to convert units of time such as hours to minutes, minutes to seconds, years to months or weeks to days.</p>	<p>Convert between different units of metric measure.</p> <p>Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.</p> <p>Estimate volume and capacity</p>	<p>I can solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.</p> <p>I can convert between miles and kilometres.</p> <p>I can use, read, write and convert between standard units.</p> <p>I can convert measurement of length, mass, volume and time from a smaller unit to a larger unit and vice versa. I can do this using decimal notation up to the three decimal places.</p>	
	<p>I can measure the perimeter of simple 2-D shapes.</p>	<p>I can find the area of rectilinear shapes by counting squares.</p> <p>I can measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.</p>	<p>I can measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</p>	<p>I can recognise that shapes with the same areas can have different perimeters and vice versa.</p> <p>I can recognise when it is possible to use formulae for area and volume of shapes.</p>	



CURRICULUM PROGRESSION STRAND MAP MATHS

			<p>I can calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes</p> <p>I can measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.</p>	<p>I can calculate the area of parallelograms and triangles</p> <p>I can calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units.</p> <p>I can solve problems involving shapes where the scale factor is known or can be found.</p>	
<p>Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value.</p> <p>Begin to 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>Add and subtract amounts of money to give change, using both £ and p in practical contexts.</p> <p>I can add and subtract money giving change, using pounds and pence. I can do this with real coins and notes.</p>		<p>I can use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling</p>	<p>I can solve problems involving the calculation and conversion of units of measure, using decimal notation up to three places if I need to.</p>	



CURRICULUM PROGRESSION STRAND MAP MATHS

<p>Compare and sequence intervals of time.</p> <p>Begin to tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.</p> <p>Know the number of minutes in an hour and the number of hours in a day.</p>	<p>I can estimate and read the time to the nearest minute.</p> <p>I can record time in seconds, minutes and hours.</p> <p>I can use the words o'clock, a.m., p.m., morning, afternoon, noon and midnight.</p> <p>I can tell you the number of seconds in a minute and how many days there in a month, a year, and in a leap year.</p> <p>I can compare how much time is taken by different events or tasks.</p> <p>I can 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>Record and compare time in terms of seconds, minutes and hours.</p>	<p>I can convert between different units of measure (e.g. Hours to minutes)</p> <p>I can read, write and convert time between analogue and digital 12- and 24-hour clocks.</p> <p>I can solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.</p>	<p>I can solve problems involving converting between units of time.</p>		
<p>Curriculum goals: Pupils will use a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.</p>	<p>Curriculum goals: Pupils will add and subtract a range of measures such as length (to calculate perimeter), mass, capacity/volume, time and money.</p>	<p>Curriculum goals: Pupils will convert between a range of measures including length - to calculate perimeter and area of rectilinear shapes.</p>	<p>Curriculum goals: Pupils will use all four operations, convert between metric and imperial and find perimeter and area or composite shape.</p>	<p>Curriculum goals: Pupils will use all four operations with decimals, convert measures (including miles and km) & use formula to calculate perimeter, area and volume.</p>	<p>Curriculum goals:</p>



Skills and Knowledge Progression

Area of Study: Geometry - properties of shape

Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
(vertices, edges, faces, symmetry)	I can identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	I can confidently identify horizontal and vertical lines and pairs of perpendicular and parallel lines.		Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.	
Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. Compare and sort common 2-D and 3-D shapes and everyday objects.	I can draw 2-D shapes.	I can compare and classify geometric shapes, including quadrilaterals and triangles, based on properties and sizes. I can identify lines of symmetry in 2-D shapes presented in different orientations. I can complete a simple symmetric figure with respect to a specific line of symmetry.	I can use the properties of rectangles to find related facts, missing lengths and missing angles. I can tell the difference between regular and irregular polygons. I can do this using reasoning about equal sides and angles.	Draw 2-D shapes using given dimensions and angles compare and classify geometric shapes based on their properties and sizes.	
Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. Identify 2-D shapes on the surface of 3-D shapes. Compare and sort common 2-D and 3-D shapes and everyday objects.	I can make 3-D shapes using modelling materials • recognise 3-D shapes in different orientations and describe them.		I can identify 3-D shapes, including cubes and other cuboids, from 2-D representations.	Recognise, describe and build simple 3-D shapes, including making nets. Find unknown angles in any triangles, quadrilaterals, and regular polygons.	



CURRICULUM PROGRESSION STRAND MAP MATHS

	<p>I can 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.</p> <p>Begin to identify whether angles are greater or less than right angle.</p>	<p>I can identify acute and obtuse angles and compare and order angles up to two right angles by size.</p>	<p>I can estimate and compare acute, obtuse and reflex angles.</p> <p>I know that angles are measured in degrees.</p> <p>I can draw given angles and measure them in degrees. ($^{\circ}$)</p> <p>I can identify angles at a point and one whole turn (total 360°); at a point on a straight line and $\frac{1}{2}$ a turn (total 180°)</p> <p>I can identify other multiples of 90°.</p> <p>I can estimate and compare acute, obtuse and reflex angles. I know that angles are measured in degrees.</p> <p>I can draw given angles and measure them in degrees.</p>	<p>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</p>	
<p>Curriculum goals: Pupils will recognise, describe, draw, compare and sort different shapes and use the related vocabulary.</p>	<p>Curriculum goals: Pupils will recognise, describe, draw, compare and sort different shapes and use the related vocabulary, including perpendicular and parallel.</p>	<p>Curriculum goals: Pupils will compare and classify different shapes, use the related vocabulary and identify symmetry, acute and obtuse angles.</p>	<p>Curriculum goals: Pupils will find missing lengths and angles of shapes, use the related vocabulary and estimate, compare and draw angles.</p>	<p>Curriculum goals: Pupils will construct different shapes, use the related vocabulary (including the parts of a circle) and understand different types of angles</p>	<p>Curriculum goals:</p>



Skills and Knowledge Progression

Area of Study: Geometry - Position and Direction

Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<p>Use mathematical vocabulary to describe position, direction and movement including movement in a straight line.</p> <p>Distinguishing between rotation as a turn and in terms of right angles for quarter, half and three - quarter turns (clockwise and anti -clockwise).</p> <p>Order and arrange combinations of mathematical objects in patterns and sequences.</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>	
<p>Curriculum goals: Pupils will describe position, direction and movement, including whole, half, quarter and three-quarter turns</p>	<p>Curriculum goals:</p>	<p>Curriculum goals: Pupils will describe and plot positions as coordinates and describe translations: up, right, left and down.</p>	<p>Curriculum goals: Pupils will reflect and translate a shape and use the appropriate language.</p>	<p>Curriculum goals: Pupils will describe and plot positions on a full coordinate grid and draw, translate and reflect across axis.</p>	<p>Curriculum goals:</p>



CURRICULUM PROGRESSION STRAND MAP MATHS

Skills and Knowledge Progression

Area of Study: Statistics

Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.	Interpret and present data using 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 Calculate the mean as an average.	
Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. Ask and answer questions about totalling and comparing categorical data.	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.	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	Solve comparison, sum and difference problems using information presented in a line graph.	Use pie charts and line graphs to solve problems	
Curriculum goals: Interpret and construct simple pictograms, tally charts and block diagrams	Curriculum goals: Interpret and present data using pictograms, bar charts and tables	Curriculum goals: Interpret and present discrete and continuous data using bar charts, time graphs and tables.	Curriculum goals: Interpret and present data using timetables and line graphs.	Curriculum goals: Interpret and construct pie charts and line graphs and calculate mean as average.	Curriculum goals: