

ST. MARY'S CATHOLIC  
PRIMARY SCHOOL

PROGRESSION IN  
KNOWLEDGE AND  
SKILLS

MATHEMATICS

## Intent

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology, and engineering, and necessary for financial literacy. Crucially, a sound knowledge of mathematics is vital for young people seeking employment and securing a qualification in mathematics is a fundamental requirement for most employers. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

In line with the National Curriculum Objectives for Mathematics, our intent is that all pupils:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- 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

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning, and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

### Number – number and place value

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Counting</b>	<u>verbally count beyond 20, recognising the pattern of the counting system</u>	<u>count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number</u>  count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens  <u>given a number, identify one more and one less</u>	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	count from 0 in multiples of 4, 8, 50 and 100;  <u>find 10 or 100 more or less than a given number</u>	count backwards through zero to include negative numbers  count in multiples of 6, 7, 9, 25 and 1000  <u>find 1000 more or less than a given number</u>	<u>interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</u>  <u>count forwards or backwards in steps of powers of 10 for any given number up to 1000000</u>	<u>use negative numbers in context, and calculate intervals across zero</u>
<b>Comparing numbers</b>	<u>compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as</u>	<u>use the language of: equal to, more than, less than (fewer), most, least</u>	<u>compare and order numbers from 0 up to 100; use &lt;, &gt; and = signs</u>	<u>compare and order numbers up to 1000</u>	<u>order and compare numbers beyond 1000</u>  <u>compare numbers with the same number of decimal places up to two decimal places</u>	<u>read, write, order and compare numbers to at least 1000000 and determine the value of each digit</u> (appears also in Reading and Writing Numbers)	<u>read, write, order and compare numbers up to 10 000000 and determine the value of each digit</u> (appears also in Reading and Writing Numbers)

	<u>the other quantity</u>				<i>(copied from Fractions)</i>		
<b>Identifying, representing and estimating numbers</b>	<p>subitise (recognise quantities without counting) up to 5</p> <p><u>explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally</u></p>	<u>identify and represent numbers using objects and pictorial representations including the number line</u>	<u>identify, represent and estimate numbers using different representations, including the number line</u>	<u>identify, represent and estimate numbers using different representations</u>	<u>identify, represent and estimate numbers using different representations</u>		
<b>Reading and writing numbers</b>	<p><u>link the number symbol (numeral) with its cardinal number value</u></p> <p><i>(Development Matters: Non-statutory curriculum guidance)</i></p>	read and write numbers from 1 to 20 in numerals and words	read and write numbers to at least 100 in numerals and in words	<p>read and write numbers up to 1000 in numerals and in words</p> <p><i>tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks</i></p> <p><i>(copied from Measurement)</i></p>	<p><u>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</u></p>	<p><u>read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</u></p> <p><i>(appears also in Comparing Numbers)</i></p> <p><u>read Roman numerals to 1000 (M) and recognise years written in Roman numerals</u></p>	<p><u>read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</u></p> <p><i>(appears also in Understanding Place Value)</i></p>
<b>Understanding place value</b>	<u>have a deep understanding of number to 10, including the composition of each number</u>		<u>recognise the place value of each digit in a two-digit number (tens, ones)</u>	<u>recognise the place value of each digit in a three-digit number (hundreds, tens, ones)</u>	<p><u>recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)</u></p> <p><u>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 units, tenths and hundredths</u></p> <p><i>(copied from Fractions)</i></p>	<p><u>read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</u></p> <p><i>(appears also in Reading and Writing Numbers)</i></p> <p><u>recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</u></p> <p><i>(copied from Fractions)</i></p>	<p><u>read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</u></p> <p><i>(appears also in Reading and Writing Numbers)</i></p> <p><u>identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places</u></p> <p><i>(copied from Fractions)</i></p>
<b>Rounding</b>					<p><u>round any number to the nearest 10, 100 or 1000</u></p> <p><u>round decimals with one decimal place to the nearest whole number</u></p>	<p><u>round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</u></p>	<p><u>round any whole number to a required degree of accuracy</u></p> <p><u>solve problems which require answers to be rounded to</u></p>

					(copied from Fractions)	<u>round decimals with two decimal places to the nearest whole number and to one decimal place</u> (copied from Fractions)	<u>specified degrees of accuracy</u> (copied from Fractions)
<b>Problem solving</b>			<u>use place value and number facts to solve problems</u>	<u>solve number problems and practical problems involving these ideas</u>	<u>solve number and practical problems that involve all of the above and with increasingly large positive numbers</u>	<u>solve number problems and practical problems that involve all of the above</u>	<u>solve number and practical problems that involve all of the above</u>
<b>Number – addition and subtraction</b>							
	<b>EYFS</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Number bonds</b>	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	<u>represent and use number bonds and related subtraction facts within 20</u>	<u>recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</u>				
<b>Mental calculation</b>		<u>add and subtract one-digit and two-digit numbers to 20, including zero</u>  <u>read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</u> (appears also in Written Methods)	<u>add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</u> * <u>a two-digit number and ones</u> * <u>a two-digit number and tens</u> * <u>two two-digit numbers</u> <u>adding three one-digit numbers</u>  <u>show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot</u>	<u>add and subtract numbers mentally, including:</u> * <u>a three-digit number and ones</u> * <u>a three-digit number and tens</u> * <u>a three-digit number and hundreds</u>		<u>add and subtract numbers mentally with increasingly large numbers</u>	<u>perform mental calculations, including with mixed operations and large numbers</u>  <u>use their knowledge of the order of operations to carry out calculations involving the four operations</u>
<b>Written methods</b>	<u>understand the ‘one more than/one less than’ relationship between consecutive numbers</u> (Development Matters:	<u>read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</u>		<u>add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</u>	<u>add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and</u>	<u>add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar</u>	

	Non-statutory curriculum guidance)	<i>(appears also in Mental Calculation)</i>			<u>subtraction where appropriate</u>	<u>addition and subtraction)</u>	
<b>Inverse operations, estimating and checking answers</b>			<u>recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems</u>	<u>estimate the answer to a calculation and use inverse operations to check answers</u>	<u>estimate and use inverse operations to check answers to a calculation</u>	<u>use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</u>	<u>use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy</u>
<b>Problem solving</b>		<u>solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square - 9</math></u>	<u>solve problems with addition and subtraction:</u> * <u>using concrete objects and pictorial representations, including those involving numbers, quantities and measures</u> <u>applying their increasing knowledge of mental and written methods</u>  <u>solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</u> <i>(copied from Measurement)</i>	<u>solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction</u>	<u>solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why</u>	<u>solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</u>	<u>solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</u>  <u>solve problems involving addition, subtraction, multiplication and division</u>

### Number – multiplication and division

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Multiplication and division facts</b>	automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, <b>including double facts</b> <i>(copied from Number – addition and subtraction)</i>  <u>explore and represent patterns within numbers</u>	<i>count in multiples of twos, fives and tens (copied from Number and Place Value)</i>	<u>count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward</u> <i>(copied from Number and Place Value)</i>  <u>recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</u>	<i>count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value)</i>  <u>recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</u>	<i>count in multiples of 6, 7, 9, 25 and 1000 (copied from Number and Place Value)</i>  recall multiplication and division facts for multiplication tables up to $12 \times 12$	<u>count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</u> <i>(copied from Number and Place Value)</i>	

	<u>up to 10, including evens and odds, double facts and how quantities can be distributed equally</u> <i>(copied from Number and Place Value)</i>						
<b>Mental calculation</b>			<u>show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</u>	<u>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</u> <i>(appears also in Written Methods)</i>	<u>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</u>  <u>recognise and use factor pairs and commutativity in mental calculations</u> <i>(appears also in Properties of Numbers)</i>	<u>multiply and divide numbers mentally drawing upon known facts</u>  <u>multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</u>	<u>perform mental calculations, including with mixed operations and large numbers</u>  <u>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>)</u> <i>(copied from Fractions)</i>
<b>Written calculation</b>			<u>calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (<math>=</math>) signs</u>	<u>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</u> <i>(appears also in Mental Methods)</i>	<u>multiply two-digit and three-digit numbers by a one-digit number using formal written layout</u>	<u>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</u>  <u>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</u>	<u>multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</u>  <u>divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context 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</u>  <u>use written division methods in cases where the answer has up to two decimal places</u> <i>(copied from Fractions (including decimals))</i>

<p><b>Properties of numbers: multiples, factors, primes, square and cube numbers</b></p>	<p>explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally <i>(copied from Number and Place Value)</i></p>				<p><u>recognise and use factor pairs and commutativity in mental calculations</u></p>	<p><u>identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</u></p> <p><u>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</u></p> <p><u>establish whether a number up to 100 is prime and recall prime numbers up to 19</u></p> <p><u>recognise and use square numbers and cube numbers, and the notation for squared (<math>^2</math>) and cubed (<math>^3</math>)</u></p>	<p><u>identify common factors, common multiples and prime numbers</u></p> <p><u>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</u> <i>(copied from Fractions)</i></p> <p><u>calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (<math>\text{cm}^3</math>) and cubic metres (<math>\text{m}^3</math>), and extending to other units such as <math>\text{mm}^3</math> and <math>\text{km}^3</math></u> <i>(copied from Measures)</i></p>
<p><b>Order of operations</b></p>							<p><u>use their knowledge of the order of operations to carry out calculations involving the four operations</u></p>
<p><b>Inverse operations, estimating and checking answers</b></p>				<p><u>estimate the answer to a calculation and use inverse operations to check answers</u> <i>(copied from Addition and Subtraction)</i></p>	<p><u>estimate and use inverse operations to check answers to a calculation</u> <i>(copied from Addition and Subtraction)</i></p>		<p><u>use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy</u></p>
<p><b>Problem solving</b></p>		<p><u>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</u></p>	<p><u>solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts</u></p>	<p><u>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</u></p>	<p><u>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</u></p>	<p><u>solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes</u></p> <p><u>solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding</u></p>	<p><u>solve problems involving addition, subtraction, multiplication and division</u></p> <p><u>solve problems involving similar shapes where the scale factor is known or can be found</u> <i>(copied from Ratio and Proportion)</i></p>

						<p>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>	
Number – fractions (including decimals and percentages)							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Counting in fractional steps				count up and down in tenths	count up and down in hundredths		
Recognising 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 <math>\frac{1}{2}, \frac{1}{4}, \frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity</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 that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10</p> <p>recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators</p>	<p>recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten</p>	<p>recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents <i>(appears also in Equivalence)</i></p>	

Comparing fractions				<u>compare and order unit fractions, and fractions with the same denominators</u>		<u>compare and order fractions whose denominators are all multiples of the same number</u>	<u>compare and order fractions, including fractions &gt;1</u>
Comparing decimals					<u>compare numbers with the same number of decimal places up to two decimal places</u>	<u>read, write, order and compare numbers with up to three decimal places</u>	<u>identify the value of each digit in numbers given to three decimal places</u>
Rounding including decimals					<u>round decimals with one decimal place to the nearest whole number</u>	<u>round decimals with two decimal places to the nearest whole number and to one decimal place</u>	<u>solve problems which require answers to be rounded to specified degrees of accuracy</u>
Equivalence (including fractions, decimals and percentages)			write simple fractions e.g. $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ .	<u>recognise and show, using diagrams, equivalent fractions with small denominators</u>	<u>recognise and show, using diagrams, families of common equivalent fractions</u>  <u>recognise and write decimal equivalents of any number of tenths or hundredths</u>  <u>recognise and write decimal equivalents to</u> $\frac{1}{4}; \frac{1}{2}; \frac{3}{4}$	<u>identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</u>  <u>read and write decimal numbers as fractions (e.g. <math>0.71 = \frac{71}{100}</math>)</u>  <u>recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</u>  <u>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 as a decimal fraction</u>	<u>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</u>  <u>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>)</u>  <u>recall and use equivalences between simple fractions, decimals and percentages, including in different contexts</u>

<p><b>Addition and subtraction of fractions</b></p>				<p>add and subtract fractions with the same denominator within one whole (e.g. <math>\frac{5}{7} + \frac{1}{7} = \frac{6}{7}</math>)</p>	<p>add and subtract fractions with the same denominator</p>	<p>add and subtract fractions with the same denominator and multiples of the same number</p> <p><u>recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements &gt; 1 as a mixed number (e.g. <math>\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}</math>)</u></p>	<p><u>add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</u></p>
<p><b>Multiplication and division of fractions</b></p>						<p><u>multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</u></p>	<p><u>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>)</u></p> <p><u>multiply one-digit numbers with up to two decimal places by whole numbers</u></p> <p><u>divide proper fractions by whole numbers (e.g. <math>\frac{1}{3} \div 2 = \frac{1}{6}</math>)</u></p>
<p><b>Multiplication and division of decimals</b></p>					<p><u>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</u></p>		<p><u>multiply one-digit numbers with up to two decimal places by whole numbers</u></p> <p>multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places</p> <p><u>identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places</u></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>use written division methods in cases where the answer has up to two decimal places</p>
<b>Problem solving</b>				<p>solve problems that involve all of the above</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>solve simple measure and money problems involving fractions and decimals to two decimal places</p>	<p>solve problems involving numbers up to three decimal places</p> <p>solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{2}{5}, \frac{4}{5}</math> and those with a denominator of a multiple of 10 or 25</p>	

Measurement

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Comparing and estimating</b>	<p><u>compare length, weight and capacity</u> (Development Matters: Non-statutory curriculum guidance)</p>	<p><u>compare, describe and solve practical problems for:</u></p> <ul style="list-style-type: none"> <li>* <u>lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half]</u></li> <li>* <u>mass/weight [e.g. heavy/light, heavier than, lighter than]</u></li> <li>* <u>capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter]</u></li> </ul>	<p><u>compare and order lengths, mass, volume/capacity and record the results using &gt;, &lt; and =</u></p> <p><u>compare and sequence intervals of time</u></p>	<p><u>compare durations of events, for example to calculate the time taken by particular events or tasks</u></p> <p><u>estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and</u></p>	<p><u>estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring)</u></p>	<p><u>calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and estimate the area of irregular shapes (also included in measuring)</u></p> <p><u>estimate volume (e.g. using 1 cm<sup>3</sup> blocks to build cubes and cuboids)</u></p>	<p><u>calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units such as mm<sup>3</sup> and km<sup>3</sup></u></p>

		<p><u>time [e.g. quicker, slower, earlier, later]</u></p> <p><u>sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]</u></p>		<p><u>midnight (appears also in Telling the Time)</u></p>		<p><u>and capacity (e.g. using water)</u></p>	
<p><b>Measuring and calculating</b></p>		<p><u>measure and begin to record the following:</u></p> <ul style="list-style-type: none"> <li>* <u>lengths and heights</u></li> <li>* <u>mass/weight</u></li> <li>* <u>capacity and volume</u></li> <li>* <u>time (hours, minutes, seconds)</u></li> </ul> <p><u>recognise and know the value of different denominations of coins and notes</u></p>	<p><u>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</u></p> <p><u>recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</u></p> <p><u>find different combinations of coins that equal the same amounts of money</u></p> <p><u>solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</u></p>	<p><u>measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)</u></p> <p><u>measure the perimeter of simple 2-D shapes</u></p> <p><u>add and subtract amounts of money to give change, using both £ and p in practical contexts</u></p>	<p><u>estimate, compare and calculate different measures, including money in pounds and pence</u> <i>(appears also in Comparing)</i></p> <p><u>measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</u></p> <p><u>find the area of rectilinear shapes by counting squares</u></p>	<p><u>use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling</u></p> <p><u>measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</u></p> <p><u>calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and estimate the area of irregular shapes</u></p> <p><u>recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³)</u> <i>(copied from Multiplication and Division)</i></p>	<p><u>solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</u> <i>(appears also in Converting)</i></p> <p><u>recognise that shapes with the same areas can have different perimeters and vice versa</u></p> <p><u>calculate the area of parallelograms and triangles</u></p> <p><u>calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units [e.g. mm<sup>3</sup> and km<sup>3</sup>]</u></p> <p><u>recognise when it is possible to use formulae for area and volume of shapes</u></p>
<p><b>Telling the time</b></p>		<p><u>tell the time to the hour and half past the hour and draw the hands on a clock face to show these times</u></p>	<p><u>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.</u></p>	<p><u>tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks</u></p>	<p><u>read, write and convert time between analogue and digital 12 and 24-hour clocks</u> <i>(appears also in Converting)</i></p>	<p><u>solve problems involving converting between units of time</u></p>	

		<a href="#">recognise and use language relating to dates, including days of the week, weeks, months and years</a>	know the number of minutes in an hour and the number of hours in a day. <i>(appears also in Converting)</i>	<a href="#">estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight</a> <i>(appears also in Comparing and Estimating)</i>	<a href="#">solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days</a> <i>(appears also in Converting)</i>		
<b>Converting</b>			<i>know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)</i>	know the number of seconds in a minute and the number of days in each month, year and leap year	<a href="#">convert between different units of measure (e.g. kilometre to metre; hour to minute)</a>  <a href="#">read, write and convert time between analogue and digital 12 and 24-hour clocks</a> <i>(appears also in Converting)</i>  <a href="#">solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days</a> <i>(appears also in Telling the Time)</i>	<a href="#">convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)</a>  <a href="#">solve problems involving converting between units of time</a>  <a href="#">understand and use equivalences between metric units and common imperial units such as inches, pounds and pints</a>	<a href="#">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</a>  <a href="#">solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</a> <i>(appears also in Measuring and Calculating)</i>  <a href="#">convert between miles and kilometres</a>

**Geometry – properties of shapes**

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Identifying shapes and their properties</b>	<a href="#">select, rotate and manipulate shapes to develop spatial reasoning skills</a> <i>(Development Matters: Non-statutory curriculum guidance)</i>	<a href="#">recognise and name common 2-D and 3-D shapes, including:</a> * <a href="#">2-D shapes [e.g. rectangles (including squares), circles and triangles]</a>	<a href="#">identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line</a>		<a href="#">identify lines of symmetry in 2-D shapes presented in different orientations</a>	<a href="#">identify 3-D shapes, including cubes and other cuboids, from 2-D representations</a>	<a href="#">recognise, describe and build simple 3-D shapes, including making nets</a> <i>(appears also in Drawing and Constructing)</i>

		* <u>3-D shapes [e.g. cuboids (including cubes), pyramids and spheres]</u>	<u>identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</u>  <u>identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]</u>				<u>illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</u>
<b>Drawing and constructing</b>	<u>compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can</u> <i>(Development Matters: Non-statutory curriculum guidance)</i>			<u>draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them</u>	<u>complete a simple symmetric figure with respect to a specific line of symmetry</u>	<u>draw given angles, and measure them in degrees (<math>^{\circ}</math>)</u>	<u>draw 2-D shapes using given dimensions and angles</u>  <u>recognise, describe and build simple 3-D shapes, including making nets (appears also in Identifying Shapes and Their Properties)</u>
<b>Comparing and classifying</b>			<u>compare and sort common 2-D and 3-D shapes and everyday objects</u>		<u>compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes</u>	<u>use the properties of rectangles to deduce related facts and find missing lengths and angles</u>  <u>distinguish between regular and irregular polygons based on reasoning about equal sides and angles</u>	<u>compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</u>
<b>Angles</b>				<u>recognise angles as a property of shape or a description of a turn</u>  <u>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 whether angles are greater than or less than a right angle</u>  <u>identify horizontal and vertical lines and pairs</u>	<u>identify acute and obtuse angles and compare and order angles up to two right angles by size</u>	<u>know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles</u>  <u>identify:</u> * <u>angles at a point and one whole turn (total <math>360^{\circ}</math>)</u> * <u>angles at a point on a straight line and <math>\frac{1}{2}</math> a turn (total <math>180^{\circ}</math>)</u> * <u>other multiples of <math>90^{\circ}</math></u>	<u>recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</u>

					<a href="#">of perpendicular and parallel lines</a>		
<b>Geometry – position and direction</b>							
	<b>EYFS</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Position, direction and movement</b>		<a href="#">describe position, direction and movement, including half, quarter and three-quarter turns</a>	<a href="#">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 anti-clockwise)</a>		<a href="#">describe positions on a 2-D grid as coordinates in the first quadrant</a>  <a href="#">describe movements between positions as translations of a given unit to the left/right and up/down</a>  <a href="#">plot specified points and draw sides to complete a given polygon</a>	<a href="#">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</a>	<a href="#">describe positions on the full coordinate grid (all four quadrants)</a>  <a href="#">draw and translate simple shapes on the coordinate plane, and reflect them in the axes</a>
<b>Pattern</b>	<a href="#">continue, copy and create repeating patterns</a> <i>(Development Matters: Non-statutory curriculum guidance)</i>		<a href="#">order and arrange combinations of mathematical objects in patterns and sequences</a>				
<b>Statistics</b>							
	<b>EYFS</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Interpreting, constructing and presenting data</b>			<a href="#">interpret and construct simple pictograms, tally charts, block diagrams and simple tables</a>  <a href="#">ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</a>  <a href="#">ask and answer questions about totalling and comparing categorical data</a>	<a href="#">interpret and present data using bar charts, pictograms and tables</a>	<a href="#">interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs</a>	<a href="#">complete, read and interpret information in tables, including timetables</a>	<a href="#">interpret and construct pie charts and line graphs and use these to solve problems</a>
<b>Solving problems</b>				<a href="#">solve one-step and two-step questions [e.g. 'How many more?' and</a>	<a href="#">solve comparison, sum and difference problems using information</a>	<a href="#">solve comparison, sum and difference problems using information</a>	<a href="#">calculate and interpret the mean as an average</a>

				'How many fewer?'] using information presented in scaled bar charts and pictograms and tables	presented in bar charts, pictograms, tables and other graphs	presented in a line graph	
<u>Ratio and proportion</u>							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Statements only appear in Year 6 but should be connected to previous learning, particularly fractions and multiplication and division							<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>
<u>Algebra</u>							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Equations</b>		<i>solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square - 9</math></i> (copied from Addition and Subtraction)	<i>recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.</i> (copied from Addition and Subtraction)  <i>recall and use addition and subtraction facts to 20</i>	<i>solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction</i> (copied from Addition and Subtraction)		<i>use the properties of rectangles to deduce related facts and find missing lengths and angles</i> (copied from Geometry: Properties of Shapes)	<p>express missing number problems algebraically</p> <p>find pairs of numbers that satisfy number sentences involving two unknowns</p> <p>enumerate all possibilities of combinations of two variables</p>

		<u>represent and use number bonds and related subtraction facts within 20</u> (copied from Addition and Subtraction)	<u>fluently, and derive and use related facts up to 100</u> (copied from Addition and Subtraction)	<u>solve problems, including missing number problems, involving multiplication and division, including integer scaling</u> (copied from Multiplication and Division)  <u>solve problems, including missing number problems, involving multiplication and division, including integer scaling</u> (copied from Multiplication and Division)			
<b>Formulae</b>							<u>use simple formulae</u>  <u>recognise when it is possible to use formulae for area and volume of shapes</u> (copied from Measurement)
<b>Sequences</b>		<u>sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening</u> (copied from Measurement)	<u>compare and sequence intervals of time</u> (copied from Measurement)  <u>order and arrange combinations of mathematical objects in patterns</u> (copied from Geometry: position and direction)				<u>generate and describe linear number sequences</u>

### Mathematical Vocabulary - taken from the calculation policy

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Addition</b>	add, more, make, sum, total, altogether, double, how many, how many more to make, odd and even	+, add, more, plus, make, sum, total, altogether, score, double, near double, one more, two more... ten more... <b>How many more to</b>	+, add, addition, more, plus, make, sum, total, altogether, score, double, near double, one more, two more... ten more...	+, add, addition, more, plus, make, sum, total, altogether, score, double, near double, one more, two more... ten more...	add, addition, more, plus, increase, sum, total, altogether, score, double, near double, <b>How many more to make...?</b>	add, addition, more, plus, increase, sum, total, altogether, score, double, near double, <b>How many more to make...?</b>	add, addition, more, plus, increase, sum, total, altogether, score, double, near double, <b>How many more to make...?</b>

<p><b>Basic to subject specific (Beck's Tiers):</b></p>		<p>make...? How many more is... than...? How much more is...?</p>	<p>one hundred more... how many more to make...? How many more is... than...? How much more is...?</p>	<p>one hundred more, How many more to make...? How many more is... than...? How much more is...?</p>			
<p><b>NFER— language of tests and questions</b></p>		<p>match, tick, draw, complete, write, circle, share, jumps, count on, use a ruler</p>	<p>tick, match, count, tick two, circle, write, draw, complete, use these numbers, shade, write, make, choose, circle the three, complete, write, tick all, complete the number sentence, put a digit, How many...?</p>	<p>estimate, write...in order, complete, circle, estimate, tick, draw, draw two, draw the arrow, show your working, use the..., what number, complete, shade, write in, true or false, tick two, circle all, write a possible, use a ruler, What numbers could be? How many are left? What is next...? What is...? How many...? Which of these</p>	<p>write, order, complete, draw three, write...in the boxes, show your working, use the method, write the missing, shade, write in order, tick, write your answer as..., write the letter (can be used more than once), describe, write one word, write your answer in, match, to make...you need, draw four, on which, calculate, write these numbers, use the coordinates to draw, estimate, in each box, write these values, circle the best, complete the table, round each number, draw one line, circle all, tick three, plot, Who takes...? How many? What is...? What number?</p>	<p>complete the sequence, circle the same as, draw four lines, circle the, circle the number that is not, circle two, write yes or no to a statement, circle all, write the, write the missing, circle the incorrect, show your method, show your working, circle three, by how much, calculate, estimate, shade, write the missing, use the diagram, complete the table, circle the number that is both, write a, b, c, d, label, true or false, order, draw a line, write the missing digits, circle true and false, What number is? Which is the closest? Which one of these must also? Who gets the most? What is the total number?</p>	<p>which expression, write three, complete, draw the, explain why, write each number, show your method, tick the, calculate, increase by, complete the tables, circle all, calculate, What was the...? What is the difference? How much? What are...? What is...? What could...? What number is...? Which of these...?</p>
<p><b>Subtraction</b>  <b>Basic to subject specific (Beck's Tiers):</b></p>	<p>make, how many, how many are left, how many have gone?, one less, two less, ten less, the difference between, odd and even</p>	<p>take away, distance between, difference between, less than, subtract, take (away), minus, leave, one less, two less, ten less... difference, halve, equals, sign, is the same as, How many more? How much greater? How many fewer? How much more is...? How many are left/left over? How many have gone? How many fewer is... than...? How much less is...?</p>	<p>subtract, subtraction, take (away), minus leave, one less, two less... ten less... one hundred less, difference, halve, equals, sign, is the same as, tens boundary, difference, partition, rearrange, inverse, place value, How many are left/left over? How many fewer is... than...? How much less is...?</p>	<p>subtract, subtraction, take (away), minus, leave, one less, two less... ten less... one hundred less...difference between, half, halve = equals, sign, is the same as tens boundary, hundreds boundary, exchange, carried digits, How many are left/left over? How many fewer is...than...? How much less is...?</p>	<p>subtract, subtraction, take (away), minus, decrease, leave, difference between, half, halve, equals, sign, is the same as tens boundary, hundreds boundary, inverse, exchange, carried digits, How many are left/left over? How many more/fewer is...than...? How much more/less is...?</p>	<p>subtract, subtraction, take (away), minus, leave, ten less... one hundred less...difference between, half, halve, = equals, sign, is the same as tens boundary, hundreds boundary, inverse, units boundary, tenths boundary, exchange, carried digits, How many are left/left over? How many fewer is...than...? How much less is...?</p>	<p>subtract, subtraction, take (away), minus, decrease, leave, difference between, half, halve, = equals, sign, is the same as tens boundary, hundreds boundary, units boundary, tenths boundary, inverse, How many are left/left over? How many more/fewer is...than...? How much more/less is...?</p>

<p>NFER– language of tests and questions</p>		<p>match, tick, draw, complete, write, circle, share, jumps, count on, use a ruler</p>	<p>tick, match, count, tick two, circle, write, draw, complete, use these numbers, shade, write, make, choose, circle the three, complete, write, tick all, complete the number sentence, put a digit, <b>How many...?</b></p>	<p>estimate, write...in order, complete, circle, estimate, tick, draw, draw two, draw the arrow, show your working, use the, complete, shade, write in, true or false, tick two, circle all, , use a ruler, write a possible, <b>What is...? What is next? How many...? What number...? Which of these? What numbers could be...? How many are left?</b></p>	<p>write, order, complete, draw three, write...in the boxes, show your working, use the method, write the missing, shade, write in order, tick, write your answer as..., write the letter (can be used more than once), describe, write one word, write your answer in, match, to make...you need, draw four, on which, calculate, write these numbers, use the coordinates to draw, estimate, in each box, write these values, circle the best, complete the table, round each number, draw one line, circle all, tick three, plot, check, <b>How many...? What is...? How much? What number...? Who takes...?</b></p>	<p>complete the sequence, circle the same as, draw four lines, circle the, circle the number that is not, circle two, circle two, write yes or no to a statement, circle all, write the, write the missing, circle the incorrect, show your method, show your working, circle three, by how much, calculate, estimate, shade, write the missing, use the diagram, complete the table, circle the number that is both, write a, b, c, d, label, true or false, order, draw a line, write the missing digits, circle true and false, tick two, <b>What number is...? Which is the closest? Which one of these must also...? Who gets the most? What is the total number?</b></p>	<p>write three, complete, draw the, explain why, write each number, what is, show your method, tick the, calculate, increase by, complete the tables, circle all, calculate, <b>What was the...? What is the difference? Which expression? How much? What is the difference? What are...? What could...? What number is? Which of these...?</b></p>
<p><u>Multiplication</u>  Basic to subject specific (Beck’s Tiers):</p>	<p>make, total, altogether, double, how many, how many more to make</p>	<p>count in ones, twos... tens... array, groups of, equal groups, odd, even</p>	<p>lots of, groups of <math>\times</math>, times, multiply, multiplied by, multiple of once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition, array, row, column, double, halve, share, share equally</p>	<p>lots of, groups of <math>\times</math>, times, multiply, multiplication, multiplied by multiple of, product once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition, array, row, column, double, halve, share, share equally, one each, two each, three each...</p>	<p>lots of, groups of times, multiply, multiplication, multiplied by, multiple of, product once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition, array, row, column, double, halve, factor, multiple</p>	<p>lots of, groups of times, multiply, multiplication, multiplied by multiple of, product once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition, array, row, column double, halve, share, share equally, factor, multiple, prime, composite</p>	<p>lots of, groups of times, multiply, multiplication, multiplied by, multiple of, product once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition, array, row, column, double, halve, share, share equally, factor, multiple, prime, composite</p>
<p>NFER– language of tests and questions</p>		<p>match, tick, draw, complete, write, circle, share, jumps, count on, use a ruler</p>	<p>tick, match, count, tick two, circle, write, draw, complete, use these numbers, shade, write, make, choose, circle the three, complete, write, tick all, complete the number sentence, put a digit, <b>How many...?</b></p>	<p>estimate, write...in order, complete, circle, estimate, tick, draw, draw two, draw the arrow, show your working, use the, complete, shade, write in, true or false, tick two, circle all, use a ruler, write a possible, <b>What numbers could be? How many are left? What is next...? What</b></p>	<p>write, order, complete, draw three, write...in the boxes, show your working, use the method, write the missing, shade, write in order, tick, write your answer as..., write the letter (can be used more than once), describe, write one word, write your answer in, match, to make...you need, draw four, on which,</p>	<p>complete the sequence, circle the same as, draw four lines, circle the, circle the number that is not, circle two, circle two, write yes or no to a statement, circle all, write the, write the missing, circle the incorrect, show your method, show your working, circle three, who</p>	<p>write three, complete, draw the, explain why, write each number, show your method, tick the, calculate, increase by, complete the tables, circle all, calculate, <b>What was the...? What is the difference? Which expression? How much...? What are...? What is...?</b></p>

				is...? How many...? What number...? Which of these...?	calculate, write these numbers, use the coordinates to draw, estimate, in each box, write these values, circle the best, complete the table, round each number, draw one line, circle all, tick three, plot, check, How many...? What is...? How much...? What number...? Who takes...?	gets the most, by how much, calculate, estimate, shade, write the missing, use the diagram, complete the table, circle the number that is both, write a, b, c, d, label, true or false, order, draw a line, write the missing digits, circle true and false, tick two, What number is? Which is the closest? Which one of these must also? What is the total number...?	What could...? What number is...? Which of these...?
<b>Division</b>	make, how many, how many more to make, equals, share, groups of, halve and half	count in ones, twos... tens... share, groups of, equal groups, dividend, divisor, odd, even	share, share equally, one each, two each, three each... group in pairs, threes... tens equal groups of $\div$ , divide, divided by, divided into left, left over, dividend, divisor	share, share equally one each, two each, three each... group in pairs, threes... tens equal groups of $\div$ , divide, division, divided by, divided into left, left over, remainder	share, share equally one each, two each, three each... group in pairs, threes... tens equal groups of $\div$ , divide, division, divided by, divided into left, left over, remainder, dividend, divisor	equal groups of, divide, division, divided by, divided into, remainder, factor, quotient, divisible by inverse	equal groups of, divide, division, divided by, divided into, remainder, factor, quotient, divisible by inverse, remainders as fractions or decimals
<b>Basic to subject specific (Beck's Tiers):</b>							
<b>NFER— language of tests and questions</b>		match, tick, draw, complete, write, circle, share, jumps, count on, use a ruler	tick, match, count, tick two, circle, write, draw, complete, use these numbers, shade, write, make, choose, circle the three, complete, write, tick all, complete the number sentence, put a digit, How many?	estimate, write...in order, complete, circle, estimate, tick, draw, draw two, draw the arrow, show your working, use the, complete, shade, write in, true or false, tick two, circle all, use a ruler, write a possible, What numbers could be...? How many are left? What is? How many? What number...? What is next? Which of these...?	write, order, complete, draw three, write...in the boxes, show your working, use the method, write the missing, shade, write in order, tick, write your answer as..., write the letter (can be used more than once), describe, write one word, write your answer in, match, to make...you need, draw four, on which, calculate, write these numbers, use the coordinates to draw, estimate, in each box, write these values, circle the best, complete the table, round each number, draw one line, circle all, tick three, plot, check, How many? What is? How much...? What number...? Who takes...?	complete the sequence, circle the same as, draw four lines, circle the, circle the number that is not, circle two, circle two, write yes or no to a statement, circle all, write the, write the missing, circle the incorrect, show your method, show your working, circle three, by how much, calculate, estimate, shade, write the missing, use the diagram, complete the table, circle the number that is both, write a, b, c, d, label, true or false, order, draw a line, write the missing digits, circle true and false, tick two, What number is? Which is the closest? Which one of these must also...? Who gets the	write three, complete, draw the, explain why, what are, write each number, show your method, tick the, calculate, increase by, complete the tables, circle all, calculate, What was the...? What is the difference? Which expression? How much? What is? What could? What number is? Which of these...?

						most...? What is the total number?	
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Mathematical Vocabulary							
	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Number and Place Value</b>	<u>Number</u> zero number one, two, three...to twenty and beyond teens numbers, eleven, twelve... twenty none How many ...?	<u>Number</u> number <u>numeral</u> zero one, two, three ... twenty teens numbers, eleven, twelve ... twenty <u>twenty-one, twenty-two ... one hundred</u> none	<u>Number</u> number numeral zero one, two, three...twenty teens numbers, eleven, twelve...twenty twenty-one, twenty-two... one hundred, <b>two hundred ...one thousand</b> none	<u>Number</u> number numeral zero one, two, three...twenty teens numbers, eleven, twelve ... twenty twenty-one, twenty-two... one hundred, two hundred ...one thousand none	<u>Number</u> number numeral zero one, two, three...twenty teens numbers, eleven, twelve...twenty twenty-one, twenty-two...one hundred, two hundred ...one	<u>Number</u> number numeral zero one, two, three...twenty teens numbers, eleven, twelve ...twenty twenty-one, twenty-two ... one hundred, two hundred ... one thousand ... ten	<u>Number</u> number numeral zero one, two, three...twenty teens numbers, eleven, twelve... twenty twenty-one, twenty-two...one hundred, two hundred...one thousand...ten

<p>count, count (up) to, count on (from, to), count back (from, to)</p> <p>count in ones, twos, fives, tens</p> <p>...is the same as...</p> <p>more, less</p> <p>odd, even</p> <p>few</p> <p>pattern</p> <p>pair</p>	<p>How many...?</p> <p>count, count (up) to, count on (from, to), count back (from, to)</p> <p><b><u>forwards</u></b></p> <p><b><u>backwards</u></b></p> <p>count in ones, twos, fives, tens</p> <p><b><u>equal to</u></b></p> <p><b><u>equivalent to</u></b></p> <p>is the same as</p> <p>more, less</p> <p><b><u>most, least</u></b></p> <p><b><u>many</u></b></p> <p>odd, even</p> <p><b><u>multiple of</u></b></p> <p>few</p> <p>pattern</p> <p>pair</p>	<p>How many...?</p> <p>count, count (up) to, count on (from, to), count back (from, to)</p> <p>forwards, backwards</p> <p>count in ones, twos, fives, tens, <b><u>threes, fours and so on</u></b></p> <p>equal to</p> <p>equivalent to</p> <p>is the same as</p> <p>more, less</p> <p>most, least</p> <p><b><u>tally</u></b></p> <p>many</p> <p>odd, even</p> <p>multiple of</p> <p><b><u>sequence</u></b></p> <p><b><u>continue</u></b></p> <p><b><u>predict</u></b></p> <p>few</p> <p>pattern</p> <p>pair, <b><u>rule</u></b></p> <p><b><u>&gt; greater than</u></b></p> <p><b><u>&lt; less than</u></b></p> <p>next</p> <p>between</p> <p>halfway between</p> <p>above, below</p> <p>guess, estimate</p> <p>enough, not enough</p>	<p>How many...?</p> <p>count, count (up) to, count on (from, to), count back (from, to)</p> <p>forwards, backwards</p> <p>count in ones, twos, fives, tens, threes, fours, <b><u>eights, fifties</u></b> and so on</p> <p>to <b><u>hundreds</u></b></p> <p>equal to</p> <p>equivalent to</p> <p>is the same as</p> <p>more, less</p> <p>most, least</p> <p>tally</p> <p>many</p> <p>odd, even</p> <p>multiple of, <b><u>factor of</u></b></p> <p>sequence</p> <p>continue</p> <p>predict</p> <p>few</p> <p>pattern</p> <p>pair, rule</p> <p><b><u>relationship</u></b></p> <p>&gt; greater than</p> <p>&lt; less than</p> <p><b><u>Roman numerals</u></b></p>	<p>thousand...<b><u>ten thousand, hundred thousand, million</u></b></p> <p>none</p> <p>How many...?</p> <p>count, count (up) to, count on (from, to), count back (from, to) forwards backwards</p> <p>count in ones, twos, fives, tens, threes, fours, eights, <b><u>fifties, sixes, sevens, nines, twenty-fives</u></b> and so on</p> <p>to hundreds</p> <p>thousands</p> <p>equal to</p> <p>equivalent to</p> <p>is the same as</p> <p>more, less</p> <p>most, least</p> <p>tally</p> <p>many</p> <p>odd, even</p> <p>multiple of, factor of</p> <p>sequence</p> <p>continue</p> <p>predict</p> <p>few</p> <p>pattern</p> <p>pair, rule</p> <p>relationship</p> <p><b><u>next, consecutive</u></b></p> <p>&gt; greater than</p> <p>&lt; less than</p> <p>Roman numerals</p> <p><b><u>integer, positive, negative</u></b></p> <p><b><u>above/ below zero, minus</u></b></p> <p><b><u>negative numbers</u></b></p>	<p>thousand, hundred thousand, million</p> <p>none</p> <p>How many...?</p> <p>count, count (up) to, count on (from, to), count back (from, to)</p> <p>forwards, backwards</p> <p>count in ones, twos, fives, tens, threes, fours, eights, fifties, sixes, sevens, nines, twenty-fives and so on</p> <p>to hundreds, thousands</p> <p>equal to</p> <p>equivalent to</p> <p>is the same as</p> <p>more, less</p> <p>most, least</p> <p>tally</p> <p>many</p> <p>odd, even</p> <p>multiple of, factor of</p> <p><b><u>factor pair</u></b></p> <p>sequence</p> <p>continue</p> <p>predict</p> <p>few</p> <p>pattern</p> <p>pair, rule</p> <p>relationship</p> <p>next, consecutive</p> <p>&gt; greater than</p> <p>&lt; less than</p> <p><b><u>≥ greater than or equal to</u></b></p> <p><b><u>≤ less than or equal to</u></b></p> <p>Roman numerals</p> <p>integer, positive, negative</p>	<p>thousand, hundred thousand, million</p> <p>none</p> <p>How many...?</p> <p>count, count (up) to, count on (from, to), count back (from, to)</p> <p>forwards, backwards</p> <p>count in ones, twos, fives, tens, threes, fours, eights, fifties, sixes, sevens, nines, twenty-fives and so on</p> <p>to hundreds, thousands</p> <p>equal to</p> <p>equivalent to</p> <p>is the same as</p> <p>more, less</p> <p>most, least</p> <p>tally</p> <p>many</p> <p>odd, even</p> <p>multiple of, factor of</p> <p>factor pair</p> <p>sequence</p> <p>continue</p> <p>predict</p> <p>few</p> <p>pattern</p> <p>pair, rule</p> <p>relationship</p> <p>next, consecutive</p> <p>&gt; greater than</p> <p>&lt; less than</p> <p>≥ greater than or equal to</p> <p>≤ less than or equal to</p> <p>Roman numerals</p> <p>integer, positive, negative</p> <p>above/ below zero, minus</p> <p>negative numbers</p>
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						above/below zero, minus negative numbers <u>formula</u> <u>divisibility</u> <u>square number</u> <u>prime number</u> <u>ascending/ descending order</u>	formula divisibility square number prime number <u>factorise</u> <u>prime factor</u> ascending/ descending order <u>digit total</u>
	<u>Place Value</u>	<u>Place Value</u>	<u>Place Value</u>	<u>Place Value</u>	<u>Place Value</u>	<u>Place Value</u>	<u>Place Value</u>
	ones tens digit the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more one less, ten less compare order size first, second, third... twentieth last, last but one before, after next between	ones tens digit the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more one less, ten less <u>equal to</u> one more, ten more one less, ten less compare order size first, second, third... twentieth last, last but one before, after next between	ones tens, <u>hundreds</u> digit <u>one-, two- or three-digit number</u> <u>place, place value</u> <u>stands for, represents</u> <u>exchange</u> the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more one less, ten less equal to compare order size first, second, third ... twentieth <u>twenty-first, twenty-second...</u>	ones tens, hundreds digit one-, two- or three-digit number place, place value stands for, represents exchange the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more, <u>one hundred more</u> one less, ten less, <u>one hundred less</u> equal to compare order size first, second, third ... twentieth	ones tens, hundreds digit one-, two- or three-digit number place, place value stands for, represents exchange the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more, one hundred more, <u>one thousand more</u> one less, ten less, one hundred less, <u>one thousand less</u> equal to compare order size first, second, third... twentieth	ones tens, hundreds digit one-, two- or three-digit number place, place value stands for, represents exchange the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more, one hundred more, one thousand more one less, ten less, one hundred less, one thousand less equal to compare order size first, second, third... twentieth	ones tens, hundreds digit one-, two- or three-digit number place, place value stands for, represents exchange the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more, one hundred more, one thousand more one less, ten less, one hundred less, one thousand less equal to compare order size first, second, third... twentieth last, last but one

		<u>half-way between</u> <u>above, below</u>	last, last but one before, after next between halfway between above, below	twenty-first, twenty-second... last, last but one before, after next between halfway between above, below	first, second, third... twentieth twenty-first, twenty-second... last, last but on before, after next between halfway between above, below	twenty-first, twenty-second... last, last but one before, after next between halfway between above, below	before, after next between halfway between above, below
	<u>Estimating</u> guess How many...? estimate nearly close to about the same as just over, just under too many, too few enough, not enough	<u>Estimating</u> guess How many...? estimate nearly <u>roughly</u> close to about the same as just over, just under too many, too few enough, not enough	<u>Estimating</u> guess How many...? estimate nearly roughly close to about the same as just over, just under <u>exact, exactly</u> too many, too few enough, not enough	<u>Estimating</u> guess How many...? estimate nearly roughly close to <u>approximate, approximately</u> about the same as just over, just under exact, exactly too many, too few enough, not enough <u>round, nearest, round to the nearest ten, hundred</u> <u>round up, round down</u>	<u>Estimating</u> guess How many...? estimate nearly roughly close to approximate, approximately about the same as just over, just under exact, exactly too many, too few enough, not enough round, nearest, round to the nearest ten, hundred, <u>thousand</u> round up, round down	<u>Estimating</u> guess How many...? estimate nearly roughly close to approximate, approximately about the same as just over, just under exact, exactly too many, too few enough, not enough round, nearest, round to the nearest ten, hundred, thousand, <u>ten thousand</u> round up, round down	<u>Estimating</u> guess How many...? estimate nearly roughly close to approximate, approximately about the same as just over, just under exact, exactly too many, too few enough, not enough round, nearest, round to the nearest ten, hundred, thousand, ten thousand round up, round down
<b>Addition and subtraction</b>	add, more, and make, sum, total altogether double one more, two more...ten more How many more to make...?	<u>addition</u> add, more, and make, sum, total altogether double <u>near double</u> <u>half, halve</u>	addition add, more, and make, sum, total altogether double near double half, halve	addition add, more, and make, sum, total altogether double near double half, halve	addition add, more, and make, sum, total altogether double near double half, halve	addition add, more, and make, sum, total altogether double near double half, halve	addition add, more, and make, sum, total altogether double near double half, halve

	<p>How many more is... than...?</p> <p>How much more is...? take away</p> <p>How many are left/ left over?</p> <p>How many have gone? one less, two less, ten less...</p> <p>How many fewer is...than...?</p> <p>How much less is...? difference between</p>	<p>one more, two more...ten more</p> <p>How many more to make...?</p> <p>How many more is...than...?</p> <p>How much more is...?</p> <p><b>subtract</b></p> <p>take away</p> <p>How many are left/ left over?</p> <p>How many have gone? one less, two less, ten less...</p> <p>How many fewer is...than...?</p> <p>How much less is...? difference between</p> <p><b>equals</b></p> <p><b>is the same as</b></p> <p><b>number bonds/ pairs</b></p> <p><b>missing number</b></p>	<p>one more, two more...ten more...ten more...<b>one hundred more</b></p> <p>How many more to make...?</p> <p>How many more is...than...?</p> <p>How much more is...?</p> <p>subtract</p> <p>take away</p> <p>How many are left/ left over?</p> <p>How many have gone? one less, two less, ten less...<b>one hundred less</b></p> <p>How many fewer is...than...?</p> <p>How much less is...? difference between</p> <p>equals</p> <p>is the same as</p> <p>number bonds/ pairs/ <b>facts</b></p> <p><b>tens boundary</b></p>	<p>one more, two more...ten more...ten more...one hundred more</p> <p>How many more to make...?</p> <p>How many more is...than...?</p> <p>How much more is...?</p> <p>subtract</p> <p>take away</p> <p>How many are left/ left over?</p> <p>How many have gone? one less, two less, ten less...one hundred less</p> <p>How many fewer is...than...?</p> <p>How much less is...? difference between</p> <p>equals</p> <p>is the same as</p> <p>number bonds/ pairs/ facts</p> <p>missing number</p> <p>tens boundary, <b>hundreds boundary</b></p>	<p>one more, two more...ten more...one hundred more</p> <p>How many more to make...?</p> <p>How many more is...than...?</p> <p>How much more is...?</p> <p>subtract</p> <p>take away</p> <p>How many are left/ left over?</p> <p>How many have gone? one less, two less, ten less...one hundred less</p> <p>How many fewer is...than...?</p> <p>How much less is...? difference between</p> <p>equals</p> <p>is the same as</p> <p>number bonds/ pairs/ facts</p> <p>missing number</p> <p>tens boundary, hundreds boundary, <b>ones boundary, tenths boundary</b></p> <p>inverse</p>	<p>one more, two more...ten more...one hundred more</p> <p>How many more to make...?</p> <p>How many more is...than...?</p> <p>How much more is...?</p> <p>subtract</p> <p>take away</p> <p>How many are left/ left over?</p> <p>How many have gone? one less, two less, ten less...one hundred less</p> <p>How many fewer is...than...?</p> <p>How much less is...? difference between</p> <p>equals</p> <p>is the same as</p> <p>number bonds/ pairs/ facts</p> <p>missing number</p> <p>tens boundary, hundreds boundary, <b>ones boundary, tenths boundary</b></p> <p>inverse</p>	
<b>Multiplication and division</b>	<p>sharing</p> <p>doubling</p> <p>halving</p> <p>number patterns</p>	<p><b>multiplication</b></p> <p><b>multiply</b></p> <p><b>multiplied by</b></p> <p><b>multiple</b></p> <p><b>division</b></p> <p><b>dividing</b></p> <p><b>grouping</b></p> <p>sharing</p> <p>doubling</p> <p>halving</p> <p><b>array</b></p>	<p>multiplication</p> <p>multiply</p> <p>multiplied by</p> <p>multiple</p> <p><b>groups of</b></p> <p><b>times</b></p> <p><b>once, twice, three times...ten times</b></p> <p><b>repeated addition</b></p> <p>division</p> <p>dividing, <b>divide, divided by, divided into</b></p>	<p>multiplication</p> <p>multiply</p> <p>multiplied by</p> <p>multiple, <b>factor</b></p> <p>groups of</p> <p>times</p> <p><b>product</b></p> <p>once, twice, three times...ten times</p> <p>repeated addition</p> <p>division</p>	<p>multiplication</p> <p>multiply</p> <p>multiplied by</p> <p>multiple, factor</p> <p>groups of</p> <p>times</p> <p>product</p> <p>once, twice, three times...ten times</p> <p>repeated addition</p> <p>division</p>	<p>multiplication</p> <p>multiply</p> <p>multiplied by</p> <p>multiple, factor</p> <p>groups of</p> <p>times</p> <p>product</p> <p>once, twice, three times...ten times</p> <p>repeated addition</p> <p>division</p>	<p>multiplication</p> <p>multiply</p> <p>multiplied by</p> <p>multiple, factor</p> <p>groups of</p> <p>times</p> <p>product</p> <p>once, twice, three times...ten times</p> <p>repeated addition</p> <p>division</p>

		number patterns	grouping sharing, <u>share, share equally</u> <u>left, left over</u> <u>one each, two each, three each ... ten each</u> <u>group in pairs, threes...tens</u> <u>equal groups of</u> doubling halving array <u>row, column</u> number patterns <u>multiplication table</u> <u>multiplication fact, division fact</u>	dividing, divide, divided by, divided into left, left over, <u>remainder</u> grouping sharing, share, share equally one each, two each, three each...ten each group in pairs, threes...tens equal groups of doubling halving array row, column number patterns multiplication table multiplication fact, division fact	dividing, divide, divided by, divided into left, left over, remainder grouping sharing, share, share equally one each, two each, three each...ten each group in pairs, threes...tens equal groups of doubling halving array row, column number patterns multiplication table multiplication fact, division fact <u>inverse</u> <u>square, squared</u> <u>cube, cubed</u>	dividing, divide, divided by, divided into left, left over, remainder grouping sharing, share, share equally one each, two each, three each...ten each group in pairs, threes...tens equal groups of doubling halving array row, column number patterns multiplication table multiplication fact, division fact inverse square, squared cube, cubed	
<b>Fractions (including decimals and percentages)</b>	parts of a whole half quarter	<u>fraction</u> <u>equal part</u> <u>equal grouping</u> <u>equal sharing</u> parts of a whole half <u>one of two equal parts</u> quarter <u>one of four equal parts</u>	fraction <u>equivalent fraction</u> <u>mixed number</u> <u>numerator, denominator</u> equal part equal grouping equal sharing parts of a whole half, <u>two halves</u> one of two equal parts quarter, <u>two quarters, three quarters</u> one of four equal parts <u>one third, two thirds</u> <u>one of three equal parts</u>	fraction equivalent fraction mixed number numerator, denominator equal part equal grouping equal sharing parts of a whole half, two halves one of two equal parts quarter, two quarters, three quarters one of four equal parts one third, two thirds	fraction equivalent fraction mixed number numerator, denominator equal part equal grouping equal sharing parts of a whole half, two halves one of two equal parts quarter, two quarters, three quarters one of four equal parts one third, two thirds	fraction, <u>proper/ improper fraction</u> equivalent fraction mixed number numerator, denominator <u>equivalent, reduced to, cancel</u> equal part equal grouping equal sharing parts of a whole half, two halves one of two equal parts quarter, two quarters, three quarters	fraction, proper/ improper fraction equivalent fraction mixed number numerator, denominator equivalent, reduced to, cancel equal part equal grouping equal sharing parts of a whole half, two halves one of two equal parts quarter, two quarters, three quarters

				one of three equal parts <u>sixths, sevenths, eighths, tenths...</u>	one of three equal parts sixths, sevenths, eighths, tenths... <u>hundredths</u> <u>decimal, decimal fraction, decimal point, decimal place, decimal equivalent</u> <u>proportion</u>	one of four equal parts one third, two thirds one of three equal parts sixths, sevenths, eighths, tenths... hundredths, <u>thousandths</u> decimal, decimal fraction, decimal point, decimal place, decimal equivalent proportion, <u>in every, for every percentage, per cent, %</u>	one of four equal parts one third, two thirds one of three equal parts sixths, sevenths, eighths, tenths... hundredths, thousandths decimal, decimal fraction, decimal point, decimal place, decimal equivalent proportion, in every, for every <u>ratio</u> percentage, per cent, %  <u>Algebra</u> formula, <u>formulae</u> <u>equation</u> <u>unknown</u> <u>variable</u>
<b>Measurement</b>	measure size compare guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as just over, just under	measure <u>measurement</u> size compare guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as <u>roughly</u> just over, just under	measure measurement size compare <u>measuring scale</u> guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as roughly just over, just under	measure measurement size compare measuring scale, <u>division</u> guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as, <u>approximately</u> roughly just over, just under	measure measurement size compare <u>unit, standard unit</u> <u>metric unit</u> measuring scale, division guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as, approximately roughly just over, just under	measure measurement size compare unit, standard unit metric unit, <u>imperial unit</u> measuring scale, division guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as, approximately roughly just over, just under	measure measurement size compare unit, standard unit metric unit, imperial unit measuring scale, division guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as, approximately roughly just over, just under
	<u>Length</u>	<u>Length</u>	<u>Length</u>	<u>Length</u>	<u>Length</u>	<u>Length</u>	<u>Length</u>

<p>metre</p> <p>length, height, width, depth</p> <p>long, short, tall</p> <p>high, low</p> <p>wide, narrow</p> <p>thick, thin</p> <p>longer, shorter, taller, higher...and so on</p> <p>longest, shortest, tallest, highest...and so on</p> <p>far, near, close</p>	<p><b>centimetre</b>, metre</p> <p>length, height, width, depth</p> <p>long, short, tall</p> <p>high, low</p> <p>wide, narrow</p> <p>thick, thin</p> <p>longer, shorter, taller, higher...and so on</p> <p>longest, shortest, tallest, highest...and so on</p> <p>far, near, close</p> <p><b>ruler</b></p> <p><b>metre stick</b></p>	<p>centimetre, metre</p> <p>length, height, width, depth</p> <p>long, short, tall</p> <p>high, low</p> <p>wide, narrow</p> <p>thick, thin</p> <p>longer, shorter, taller, higher...and so on</p> <p>longest, shortest, tallest, highest...and so on</p> <p>far, <b>further, furthest</b>, near, close</p> <p>ruler</p> <p>metre stick, <b>tape measure</b></p>	<p><b>millimetre</b>, centimetre, metre, <b>kilometre, mile</b></p> <p>length, height, width, depth</p> <p>long, short, tall</p> <p>high, low</p> <p>wide, narrow</p> <p>thick, thin</p> <p>longer, shorter, taller, higher...and so on</p> <p>longest, shortest, tallest, highest...and so on</p> <p>far, further, furthest, near, close</p> <p><b>distance apart...between...to...from perimeter</b></p> <p>ruler</p> <p>metre stick, tape measure</p>	<p>millimetre, centimetre, metre, kilometre, mile</p> <p>length, height, width, depth, <b>breadth</b></p> <p>long, short, tall</p> <p>high, low</p> <p>wide, narrow</p> <p>thick, thin</p> <p>longer, shorter, taller, higher...and so on</p> <p>longest, shortest, tallest, highest...and so on</p> <p>far, further, furthest, near, close</p> <p>distance apart...between...to... from</p> <p><b>edge</b>, perimeter</p> <p><b>area, covers</b></p> <p><b>square centimetre (cm<sup>2</sup>)</b></p> <p>ruler</p> <p>metre stick, tape measure</p>	<p>millimetre, centimetre, metre, kilometre, mile</p> <p>length, height, width, depth, breadth</p> <p>long, short, tall</p> <p>high, low</p> <p>wide, narrow</p> <p>thick, thin</p> <p>longer, shorter, taller, higher...and so on</p> <p>longest, shortest, tallest, highest...and so on</p> <p>far, further, furthest, near, close</p> <p>distance apart...between...to... from</p> <p>edge, perimeter</p> <p>area, covers</p> <p>square centimetre (cm<sup>2</sup>), <b>square metre (m<sup>2</sup>)</b>, <b>square millimetre (mm<sup>2</sup>)</b></p> <p>ruler</p> <p>metre stick, tape measure</p>	<p>centimetre, metre, millimetre, kilometre, mile, <b>yard, foot, feet, inch, inches</b></p> <p>length, height, width, depth, breadth</p> <p>long, short, tall</p> <p>high, low</p> <p>wide, narrow</p> <p>thick, thin</p> <p>longer, shorter, taller, higher...and so on</p> <p>longest, shortest, tallest, highest...and so on</p> <p>far, further, furthest, near, close</p> <p>distance apart...between...to... from</p> <p>edge, perimeter, <b>circumference</b></p> <p>area, covers</p> <p>square centimetre (cm<sup>2</sup>), square metre (m<sup>2</sup>), square millimetre (mm<sup>2</sup>)</p> <p>ruler</p> <p>metre stick, tape measure</p>
<p><b>Weight</b></p> <p><b>Weight</b></p> <p>weigh, weighs, balances</p> <p>heavy, light</p> <p>heavier than, lighter than</p> <p>heaviest, lightest</p> <p>scales</p>	<p><b>Weight</b></p> <p><b>kilogram, half kilogram</b></p> <p>weigh, weighs, balances</p> <p>heavy, light</p> <p>heavier than, lighter than</p> <p>heaviest, lightest</p> <p>scales</p>	<p><b>Weight</b></p> <p>kilogram, half kilogram, <b>gram</b></p> <p>weigh, weighs, balances</p> <p>heavy, light</p> <p>heavier than, lighter than</p> <p>heaviest, lightest</p> <p>scales</p>	<p><b>Weight</b></p> <p>kilogram, half kilogram, gram</p> <p>weigh, weighs, balances</p> <p>heavy, light</p> <p>heavier than, lighter than</p> <p>heaviest, lightest</p> <p>scales</p>	<p><b>Weight</b></p> <p><b>mass: big, bigger, small, smaller</b></p> <p><b>weight: heavy/ light, heavier/ lighter, heaviest/ lightest</b></p> <p>kilogram, half kilogram, gram</p> <p>weigh, weighs, balances</p> <p>heavy, light</p> <p>heavier than, lighter than</p> <p>heaviest, lightest</p>	<p><b>Weight</b></p> <p>mass: big, bigger, small, smaller</p> <p>weight: heavy/ light, heavier/ lighter, heaviest/ lightest</p> <p>kilogram, half kilogram, gram</p> <p>weigh, weighs, balances</p> <p>heavy, light</p> <p>heavier than, lighter than</p> <p>heaviest, lightest</p> <p>scales</p>	<p><b>Weight</b></p> <p>mass: big, bigger, small, smaller</p> <p>weight: heavy/ light, heavier/ lighter, heaviest/ lightest</p> <p><b>tonne</b>, kilogram, half kilogram, gram, <b>pound, ounce</b></p> <p>weigh, weighs, balances</p> <p>heavy, light</p> <p>heavier than, lighter than</p> <p>heaviest, lightest</p>

					scales		scales
	<u>Capacity and volume</u> full empty half full holds container	<u>Capacity and volume</u> <u>litre, half litre</u> <u>capacity</u> <u>volume</u> full empty <u>more than</u> <u>less than</u> half full <u>quarter full</u> holds container	<u>Capacity and volume</u> litre, half litre, <u>millilitre</u> capacity volume full empty more than less than half full quarter full holds, <u>contains</u> container	<u>Capacity and volume</u> litre, half litre, millilitre capacity volume full empty more than less than half full quarter full holds, contains container	<u>Capacity and volume</u> litre, half litre, millilitre capacity volume full empty more than less than half full quarter full holds, contains container, <u>measuring cylinder</u>	<u>Capacity and volume</u> litre, half litre, millilitre capacity volume full empty more than less than half full quarter full holds, contains container, measuring cylinder <u>pint, gallon</u>	<u>Capacity and volume</u> litre, half litre, millilitre, <u>centilitre</u> <u>cubic centimetres (cm3), cubic metres (m3), cubic millimetres (mm3), cubic kilometres (km3)</u> capacity volume full empty more than less than half full quarter full holds, contains container, measuring cylinder pint, gallon
	<u>Temperature</u>	<u>Temperature</u>	<u>Temperature</u> <u>temperature degree</u>	<u>Temperature</u> temperature degree <u>centigrade</u>	<u>Temperature</u> temperature degree centigrade	<u>Temperature</u> temperature degree centigrade	<u>Temperature</u> temperature degree centigrade
	<u>Time</u> time days of the week, Monday, Tuesday... day, week birthday, holiday morning, afternoon, evening, night	<u>Time</u> time days of the week, Monday, Tuesday... <u>months of the year (January, February...)</u> <u>seasons: spring, summer, autumn, winter</u>	<u>Time</u> time days of the week, Monday, Tuesday... months of the year (January, February...) seasons: spring, summer, autumn, winter	<u>Time</u> time days of the week, Monday, Tuesday... months of the year (January, February...) seasons: spring, summer, autumn, winter	<u>Time</u> time days of the week, Monday, Tuesday... months of the year (January, February...) seasons: spring, summer, autumn, winter	<u>Time</u> time days of the week, Monday, Tuesday... months of the year (January, February...) seasons: spring, summer, autumn, winter	<u>Time</u> time days of the week, Monday, Tuesday... months of the year (January, February...) seasons: spring, summer, autumn, winter

<p>bedtime, dinner time, playtime</p> <p>today, yesterday, tomorrow</p> <p>before, after</p> <p>next, last</p> <p>now, soon, early, late</p> <p>quick, quicker, quickest, quickly</p> <p>slow, slower, slowest, slowly</p> <p>old, older, oldest</p> <p>new, newer, newest</p> <p>takes longer, takes less time</p> <p>hour, o'clock</p> <p>clock, watch, hands</p>	<p>day, week, <u>weekend</u>, <u>month</u>, <u>year</u></p> <p>birthday, holiday</p> <p>morning, afternoon, evening, night</p> <p>bedtime, dinner time, playtime</p> <p>today, yesterday, tomorrow</p> <p>before, after</p> <p><u>earlier</u>, <u>later</u></p> <p>next, <u>first</u>, last</p> <p><u>midnight</u></p> <p><u>date</u></p> <p>now, soon, early, late</p> <p>quick, quicker, quickest, quickly</p> <p>slow, slower, slowest, slowly</p> <p>old, older, oldest</p> <p>new, newer, newest</p> <p>takes longer, takes less time</p> <p><u>How long ago?</u></p> <p><u>How long will it be to...?</u></p> <p><u>How long will it take to...?</u></p> <p><u>How often?</u></p> <p><u>always</u>, <u>never</u>, <u>often</u>, <u>sometimes</u></p> <p><u>usually</u></p> <p><u>once</u>, <u>twice</u></p> <p>hour, o'clock, <u>half past</u>, <u>quarter past</u>, <u>quarter to</u></p> <p>clock, <u>clock face</u>, watch, hands</p> <p><u>hour hand</u>, <u>minute hand</u></p>	<p>day, week, weekend, <u>fortnight</u>, month, year</p> <p>birthday, holiday</p> <p>morning, afternoon, evening, night</p> <p>bedtime, dinnertime, playtime</p> <p>today, yesterday, tomorrow</p> <p>before, after</p> <p>earlier, later</p> <p>next, first, last</p> <p>midnight</p> <p>date</p> <p>now, soon, early, late</p> <p>quick, quicker, quickest, quickly</p> <p>slow, slower, slowest, slowly</p> <p>old, older, oldest</p> <p>new, newer, newest</p> <p>takes longer, takes less time</p> <p>How long ago?</p> <p>How long will it be to...?</p> <p>How long will it take to...?</p> <p>How often?</p> <p>always, never, often, sometimes</p> <p>usually</p> <p>once, twice</p> <p>hour, o'clock, half past, quarter past, quarter to</p> <p><u>5, 10, 15...minutes past</u></p> <p>clock, clock face, watch, hands</p>	<p>day, week, weekend, fortnight, month, year, <u>century</u></p> <p>birthday, holiday</p> <p>morning, afternoon, evening, night</p> <p>bedtime, dinner time, playtime</p> <p>today, yesterday, tomorrow</p> <p>before, after</p> <p>earlier, later</p> <p>next, first, last</p> <p>midnight</p> <p><u>calendar</u>, date</p> <p>now, soon, early, late, <u>earliest</u>, <u>latest</u></p> <p>quick, quicker, quickest, quickly</p> <p>slow, slower, slowest, slowly</p> <p>old, older, oldest</p> <p>new, newer, newest</p> <p>takes longer, takes less time</p> <p>How long ago?</p> <p>How long will it be to...?</p> <p>How long will it take to...?</p> <p>How often?</p> <p>always, never, often, sometimes</p> <p>usually</p> <p>once, twice</p> <p>hour, o'clock, half past, quarter past, quarter to</p> <p>5, 10, 15...minutes past</p> <p><u>a.m.</u>, <u>p.m.</u></p>	<p>day, week, weekend, fortnight, month, year, leap year, century, <u>millennium</u></p> <p>birthday, holiday</p> <p>morning, afternoon, evening, night</p> <p>bedtime, dinner time, playtime</p> <p>today, yesterday, tomorrow</p> <p>before, after</p> <p>earlier, later</p> <p>next, first, last</p> <p>noon, midnight</p> <p><u>calendar</u>, date, date of birth</p> <p>now, soon, early, late, earliest, latest</p> <p>quick, quicker, quickest, quickly</p> <p>slow, slower, slowest, slowly</p> <p>old, older, oldest</p> <p>new, newer, newest</p> <p>takes longer, takes less time</p> <p>How long ago?</p> <p>How long will it be to...?</p> <p>How long will it take to...?</p> <p>How often?</p> <p>always, never, often, sometimes</p> <p>usually</p> <p>once, twice</p> <p>hour, o'clock, half past, quarter past, quarter to</p> <p>5, 10, 15...minutes past</p> <p>a.m., p.m.</p> <p>clock, clock face, watch, hands</p> <p>digital/ analogue clock/ watch, timer</p>	<p>day, week, weekend, fortnight, month, year, leap year, century, millennium</p> <p>birthday, holiday</p> <p>morning, afternoon, evening, night</p> <p>bedtime, dinner time, playtime</p> <p>today, yesterday, tomorrow</p> <p>before, after</p> <p>earlier, later</p> <p>next, first, last</p> <p>noon, midnight</p> <p><u>calendar</u>, date, date of birth</p> <p>now, soon, early, late, earliest, latest</p> <p>quick, quicker, quickest, quickly</p> <p>slow, slower, slowest, slowly</p> <p>old, older, oldest</p> <p>new, newer, newest</p> <p>takes longer, takes less time</p> <p>How long ago?</p> <p>How long will it be to...?</p> <p>How long will it take to...?</p> <p>How often?</p> <p>always, never, often, sometimes</p> <p>usually</p> <p>once, twice</p> <p>hour, o'clock, half past, quarter past, quarter to</p> <p>5, 10, 15...minutes past</p> <p>a.m., p.m.</p> <p>clock, clock face, watch, hands</p>
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		<a href="#">hours, minutes</a>	<a href="#">digital/ analogue clock/ watch, timer</a> hour hand, minute hand hours, minutes, <a href="#">seconds</a>	clock, clock face, watch, hands digital/ analogue clock/ watch, timer hour hand, minute hand hours, minutes, seconds <a href="#">Roman numerals</a> <a href="#">12-hour clock time, 24-hour clock time</a>	a.m., p.m. clock, clock face, watch, hands digital/ analogue clock/ watch, timer hour hand, minute hand hours, minutes, seconds <a href="#">timetable, arrive, depart</a> Roman numerals 12-hour clock time, 24-hour clock time	hour hand, minute hand hours, minutes, seconds timetable, arrive, depart Roman numerals 12-hour clock time, 24-hour clock time	digital/ analogue clock/ watch, timer hour hand, minute hand hours, minutes, seconds timetable, arrive, depart Roman numerals 12-hour clock time, 24-hour clock time <a href="#">Greenwich Mean Time, British Summer Time, International Date Line</a>
	<a href="#">Money</a> money coin penny, pence, pound price, cost buy, sell spend, spent pay	<a href="#">Money</a> money coin penny, pence, pound price, cost buy, sell spend, spent pay <a href="#">change</a> <a href="#">dear, costs more</a> <a href="#">cheap, costs less, cheaper</a> <a href="#">costs the same as</a> <a href="#">How much...?</a> <a href="#">How many...?</a> <a href="#">total</a>	<a href="#">Money</a> money coin penny, pence, pound price, cost buy, <a href="#">bought</a> , sell, <a href="#">sold</a> spend, spent pay change dear, costs more cheap, costs less, cheaper costs the same as How much...? How many...? total	<a href="#">Money</a> money coin penny, pence, pound price, cost buy, bought, sell, sold spend, spent pay change dear, costs more cheap, costs less, cheaper costs the same as How much...? How many...? total	<a href="#">Money</a> money coin penny, pence, pound price, cost buy, bought, sell, sold spend, spent pay change dear, costs more cheap, costs less, cheaper costs the same as How much...? How many...? total <a href="#">discount</a> <a href="#">currency</a>	<a href="#">Money</a> money coin penny, pence, pound price, cost buy, bought, sell, sold spend, spent pay change dear, costs more cheap, costs less, cheaper costs the same as How much...? How many...? total <a href="#">discount</a> <a href="#">currency</a> <a href="#">profit, loss</a>	<a href="#">Money</a> money coin penny, pence, pound price, cost buy, bought, sell, sold spend, spent pay change dear, costs more cheap, costs less, cheaper costs the same as How much...? How many...? total discount currency <a href="#">profit, loss</a>
<b>Geometry - properties of shape</b>	shape, pattern flat curved, straight round	shape, pattern flat curved, straight round	shape, pattern flat curved, straight round	shape, pattern flat curved, straight round	shape, pattern flat, <a href="#">line</a> curved, straight round	shape, pattern flat, line curved, straight round	shape, pattern flat, line curved, straight round hollow, solid

	<p>hollow, solid</p> <p>sort</p> <p>make, build, draw</p> <p>size bigger, larger, smaller</p> <p>symmetrical</p> <p>pattern, repeating pattern</p> <p>match</p>	<p>hollow, solid</p> <p>sort</p> <p>make, build, draw</p> <p>size</p> <p>bigger, larger, smaller</p> <p><u>symmetry</u>, symmetrical, <u>symmetrical pattern</u></p> <p>pattern, repeating pattern</p> <p>match</p>	<p>hollow, solid</p> <p>sort</p> <p>make, build, draw</p> <p><u>surface</u></p> <p>size</p> <p>bigger, larger, smaller</p> <p>symmetry, symmetrical, symmetrical pattern</p> <p><u>line symmetry</u></p> <p>pattern, repeating pattern</p> <p>match</p>	<p>hollow, solid</p> <p>sort</p> <p>make, build, draw</p> <p><u>perimeter</u></p> <p>surface</p> <p>size</p> <p>bigger, larger, smaller</p> <p>symmetry, symmetrical, symmetrical pattern</p> <p>line symmetry</p> <p>pattern, repeating pattern</p> <p>match</p>	<p>hollow, solid</p> <p>sort</p> <p>make, build, <u>construct</u>, draw, <u>sketch</u></p> <p>perimeter</p> <p><u>centre</u></p> <p>surface</p> <p><u>angle, right-angled</u></p> <p><u>base, square-based</u></p> <p>size</p> <p>bigger, larger, smaller</p> <p>symmetry, symmetrical, symmetrical pattern</p> <p>line symmetry</p> <p><u>reflect, reflection</u></p> <p>pattern, repeating pattern</p> <p>match</p> <p><u>regular, irregular</u></p>	<p>hollow, solid</p> <p>sort</p> <p>make, build, construct, draw, sketch</p> <p>perimeter</p> <p>centre, <u>radius, diameter</u></p> <p>surface</p> <p>angle, right-angled</p> <p><u>congruent</u></p> <p>base, square-based</p> <p>size</p> <p>bigger, larger, smaller</p> <p>symmetry, symmetrical, symmetrical pattern</p> <p>line symmetry</p> <p>reflect, reflection</p> <p><u>axis of symmetry, reflective symmetry</u></p> <p>pattern, repeating pattern</p> <p>match</p> <p>regular, irregular</p>	<p>sort</p> <p>make, build, construct, draw, sketch</p> <p>perimeter</p> <p>centre, radius, diameter</p> <p><u>circumference, concentric, arc</u></p> <p><u>net, open, closed</u></p> <p>surface</p> <p>angle, right-angled</p> <p>congruent</p> <p><u>intersecting, intersection</u></p> <p><u>plane</u></p> <p>base, square-based</p> <p>size</p> <p>bigger, larger, smaller</p> <p>symmetry, symmetrical, symmetrical pattern</p> <p>line symmetry</p> <p>reflect, reflection</p> <p>axis of symmetry, reflective symmetry</p> <p>pattern, repeating pattern</p> <p>match</p> <p>regular, irregular</p>
	<p><u>2-D Shape</u></p> <p>corner, side</p> <p>rectangle (including square)</p> <p>circle</p> <p>triangle</p>	<p><u>2-D Shape</u></p> <p>corner, side</p> <p><u>point, pointed</u></p> <p>rectangle (including square)</p> <p>circle</p> <p>triangle</p>	<p><u>2-D Shape</u></p> <p>corner, side</p> <p>point, pointed</p> <p>rectangle (including square), <u>rectangular</u></p> <p>circle, <u>circular</u></p> <p>triangle, <u>triangular</u></p> <p><u>pentagon</u></p> <p><u>hexagon</u></p>	<p><u>2-D Shape</u></p> <p>corner, side</p> <p>point, pointed</p> <p>rectangle (including square), rectangular</p> <p>circle, circular</p> <p>triangle, triangular</p> <p>pentagon, <u>pentagonal</u></p> <p>hexagon, <u>hexagonal</u></p> <p>octagon, <u>octagonal</u></p>	<p><u>2-D Shape</u></p> <p><u>2-D, two-dimensional</u></p> <p>corner, side</p> <p>point, pointed</p> <p>rectangle (including square), rectangular,</p> <p><u>oblong</u></p> <p><u>rectilinear</u></p> <p>circle, circular</p> <p>triangle, triangular</p>	<p><u>2-D Shape</u></p> <p>2-D, two-dimensional</p> <p>corner, side</p> <p>point, pointed</p> <p>rectangle (including square), rectangular, oblong</p> <p>rectilinear</p> <p>circle, circular</p> <p>triangle, triangular</p>	<p><u>2-D Shape</u></p> <p>2-D, two-dimensional</p> <p>corner, side</p> <p>point, pointed</p> <p>rectangle (including square), rectangular, oblong</p> <p>rectilinear</p> <p>circle, circular</p> <p>triangle, triangular</p>

			<u>octagon</u>	<u>quadrilateral</u> <u>right-angled</u> <u>parallel, perpendicular</u>	<u>equilateral triangle,</u> <u>isosceles triangle, scalene</u> <u>triangle</u> pentagon, pentagonal hexagon, hexagonal <u>heptagon</u> octagon, octagonal quadrilateral <u>parallelogram, rhombus,</u> <u>trapezium</u> <u>polygon</u> right-angled parallel, perpendicular <u>x-axis, y-axis, quadrant</u>	equilateral triangle, isosceles triangle, scalene triangle pentagon, pentagonal hexagon, hexagonal heptagon octagon, octagonal quadrilateral parallelogram, rhombus, trapezium polygon right -angled parallel, perpendicular <u>x-axis, y-axis, quadrant</u>	equilateral triangle, isosceles triangle, scalene triangle pentagon, pentagonal hexagon, hexagonal heptagon octagon, octagonal quadrilateral parallelogram, rhombus, trapezium, <u>kite</u> polygon right-angled parallel, perpendicular x-axis, y-axis, quadrant
	<u>3-D Shape</u> face, edge, vertex, vertices cube pyramid sphere cone	<u>3-D Shape</u> face, edge, vertex, vertices cube, <u>cuboid</u> pyramid sphere cone <u>cylinder</u>	<u>3-D Shape</u> face, edge, vertex, vertices cube, cuboid pyramid sphere cone cylinder	<u>3-D Shape</u> face, edge, vertex, vertices cube, cuboid pyramid sphere, <u>hemisphere</u> cone cylinder <u>prism, triangular prism</u>	<u>3-D Shape</u> <u>3-D, three-dimensional</u> face, edge, vertex, vertices cube, cuboid pyramid sphere, hemisphere, <u>spherical</u> cone cylinder, <u>cylindrical</u> prism, triangular prism <u>tetrahedron, polyhedron</u>	<u>3-D Shape</u> 3-D, three-dimensional face, edge, vertex, vertices cube, cuboid pyramid sphere, hemisphere, spherical cone cylinder, cylindrical prism, triangular prism tetrahedron, polyhedron <u>octahedron</u>	<u>3-D Shape</u> 3-D, three-dimensional face, edge, vertex, vertices cube, cuboid pyramid sphere, hemisphere, spherical cone cylinder, cylindrical prism, triangular prism tetrahedron, polyhedron octahedron <u>dodecahedron</u> <u>net, open, closed</u>
<b>Geometry – position and direction</b>	position over, under above, below top, bottom, side on, in outside, inside around	position over, under, <u>underneath</u> above, below top, bottom, side on, in outside, inside around	position over, under, underneath above, below top, bottom, side on, in outside, inside around	position over, under, underneath above, below top, bottom, side on, in outside, inside around	position over, under, underneath above, below top, bottom, side on, in outside, inside around	position over, under, underneath above, below top, bottom, side on, in outside, inside around	position over, under, underneath above, below top, bottom, side on, in outside, inside around

	<p>in front, behind front, back beside, next to opposite apart between middle, edge corner direction left, right up, down forwards, backwards, sideways across next to, close, near, far along through to, from, towards, away from movement slide roll turn stretch, bend whole turn, half turn</p>	<p>in front, behind front, back beside, next to opposite apart between middle, edge <u>centre</u> corner direction <u>journey</u> left, right up, down forwards, backwards, sideways across next to, close, near, far along through to, from, towards, away from movement slide roll turn stretch, bend whole turn, half turn, <u>quarter turn, three-quarter turn</u></p>	<p>in front, behind front, back beside, next to opposite apart between middle, edge centre corner direction journey, <u>route</u> left, right up, down <u>higher, lower</u> forwards, backwards, sideways across next to, close, near, far along through to, from, towards, away from <u>clockwise, anticlockwise</u> movement slide roll turn stretch, bend whole turn, half turn, quarter turn, three- quarter turn <u>right angle</u> <u>straight line</u></p>	<p>in front, behind front, back beside, next to opposite apart between middle, edge centre corner direction journey, route left, right up, down higher, lower forwards, backwards, sideways across next to, close, near, far along through to, from, towards, away from clockwise, anticlockwise <u>compass point</u> <u>north, south, east, west, N, S, E, W</u> <u>horizontal, vertical, diagonal</u> movement slide roll turn stretch, bend whole turn, half turn, quarter turn, three-quarter turn</p>	<p>in front, behind front, back beside, next to opposite apart between middle, edge centre corner direction journey, route left, right up, down higher, lower forwards, backwards, sideways across next to, close, near, far along through to, from, towards, away from clockwise, anticlockwise compass point north, south, east, west, N, S, E, W north-east, north-west, south-east, south-west, NE, NW, SE, SW <u>north-east, north-west, south-east, south-west, NE, NW, SE, SW</u> horizontal, vertical, diagonal translate, translation <u>coordinate</u> movement slide roll turn stretch, bend</p>	<p>in front, behind front, back beside, next to opposite apart between middle, edge centre corner direction journey, route left, right up, down higher, lower forwards, backwards, sideways across next to, close, near, far along through to, from, towards, away from clockwise, anticlockwise compass point north, south, east, west, N, S, E, W north-east, north-west, south-east, south-west, NE, NW, SE, SW horizontal, vertical, diagonal translate, translation <u>coordinate</u> movement slide roll turn stretch, bend</p>	<p>in front, behind front, back beside, next to opposite apart between middle, edge centre corner direction journey, route left, right up, down higher, lower forwards, backwards, sideways across next to, close, near, far along through to, from, towards, away from clockwise, anticlockwise compass point north, south, east, west, N, S, E, W north-east, north-west, south-east, south-west, NE, NW, SE, SW horizontal, vertical, diagonal translate, translation coordinate movement slide roll turn stretch, bend</p>
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				<p><u>angle...is a greater/ smaller angle than</u></p> <p>right angle</p> <p><u>acute angle</u></p> <p><u>obtuse angle</u></p> <p>straight line</p>	<p>stretch, bend</p> <p>whole turn, half turn, quarter turn, three-quarter turn</p> <p><u>rotate, rotation</u></p> <p>angle, is a greater/ smaller angle than</p> <p><u>degree</u></p> <p>right angle</p> <p>acute angle</p> <p>obtuse angle</p> <p><u>reflection</u></p> <p>straight line</p> <p><u>ruler, set square</u></p> <p><u>angle measurer, compass</u></p>	<p>whole turn, half turn, quarter turn, three-quarter turn</p> <p>rotate, rotation</p> <p>angle, is a greater/ smaller angle than</p> <p>degree</p> <p>right angle</p> <p>acute angle</p> <p>obtuse angle</p> <p>reflection</p> <p>straight line</p> <p>ruler, set square</p> <p>angle measurer, compass, <u>protractor</u></p>	<p>whole turn, half turn, quarter turn, three-quarter turn</p> <p>rotate, rotation</p> <p>angle, is a greater/ smaller angle than</p> <p>degree</p> <p>right angle</p> <p>acute angle</p> <p>obtuse angle</p> <p><u>reflex angle</u></p> <p>reflection</p> <p>straight line</p> <p>ruler, set square</p> <p>angle measurer, compass, protractor</p>
<p><b>Statistics</b></p>	<p>count, sort</p> <p>group, set</p> <p>list</p>	<p>count, sort, <u>vote</u></p> <p>group, set</p> <p>list, <u>table</u></p>	<p>count, <u>tally</u>, sort, vote</p> <p><u>graph, block graph, pictogram</u></p> <p><u>represent</u></p> <p>group, set</p> <p>list, table</p> <p><u>label, title</u></p> <p><u>most popular, most common</u></p> <p><u>least popular, least common</u></p>	<p>count, tally, sort, vote</p> <p>graph, block graph, pictogram</p> <p>represent</p> <p>group, set</p> <p>list, table, <u>chart, bar chart, frequency table</u></p> <p><u>Carroll diagram, Venn diagram</u></p> <p>label, title, <u>axis, axes diagram</u></p> <p>most popular, most common</p> <p>least popular, least common</p>	<p>count, tally, sort, vote</p> <p><u>survey, questionnaire, data</u></p> <p>graph, block graph, pictogram</p> <p>represent</p> <p>group, set</p> <p>list, table, chart, bar chart, frequency table</p> <p>Carroll diagram, Venn diagram</p> <p>label, title, axis, axes</p> <p>diagram</p> <p>most popular, most common</p> <p>least popular, least common</p>	<p>count, tally, sort, vote</p> <p>survey, questionnaire, data, <u>database</u></p> <p>graph, block graph, pictogram</p> <p>represent</p> <p>group, set</p> <p>list, table, chart, bar chart, frequency table, <u>bar line chart</u></p> <p>Carroll diagram, Venn diagram</p> <p><u>line graph</u></p> <p>label, title, axis, axes</p> <p>diagram</p> <p>most popular, most common</p> <p>least popular, least common</p> <p><u>maximum/ minimum value</u></p> <p><u>outcome</u></p>	<p>count, tally, sort, vote</p> <p>survey, questionnaire, data, database</p> <p>graph, block graph, pictogram</p> <p>represent</p> <p>group, set</p> <p>list, table, chart, bar chart, frequency table, bar line chart</p> <p>Carroll diagram, Venn diagram</p> <p>line graph</p> <p>pie chart</p> <p>label, title, axis, axes</p> <p>diagram</p> <p>most popular, most common</p> <p>least popular, least common</p> <p>maximum/ minimum value</p> <p>outcome</p> <p><u>mean (mode, median, range as estimates for this)</u></p>





## St. Mary's Mathematics Skills Progression in **knowledge** and skills - Mathematics

### How parents can help:

We all want children to feel confident with numbers, even if we struggle with maths ourselves. Everyone can help children with maths – you don't need to be an expert! Developing number confidence and a positive attitude to maths has a crucial impact on a child's schooling, and their ability to use numbers in everyday life as they grow. **Be positive about maths.** Try not to say things like "I can't do maths" or "I hated maths at school". **Point out the maths in everyday life.** Include your child in activities involving numbers and measuring, such as shopping, cooking and travelling.

#### Top tips for parents

1. Talk about math in a positive way. A positive attitude about math is infectious.
2. Encourage persistence. Some problems take time to solve.
3. Encourage your child to experiment with different approaches to mathematics. There is often more than one way to solve a math problem.
4. Encourage your child to talk about and show a math problem in a way that makes sense (i.e., draw a picture or use material like macaroni).
5. When your child is solving math problems ask questions such as: Why did you...? What can you do next? Do you see any patterns? Does the answer make sense? How do you know? This helps to encourage thinking about mathematics.
6. Connect math to everyday life and help your child understand how math influences them (i.e. shapes of traffic signs, walking distance to school, telling time).
7. Play family math games together that add excitement such as checkers, junior monopoly, math bingo and Uno.
8. Computers + math = fun! There are great computer math games available on the internet that you can discover with your child.
9. Talk with your child's teacher about difficulties he/she may be experiencing. When teachers and parents work together, children benefit.

#### Everyday learning experiences

Asking children simple questions about the world around them can reinforce math skills and help them apply their math knowledge in new ways. Young children who have lots of opportunities to develop and apply their mathematical knowledge are more likely to achieve in school and in life. Parents and carers do not need extensive mathematical knowledge to support their children's learning. Discussion of interesting questions, and talk about ways that mathematics can help us with everyday activity, can be more useful than knowing a correct procedure or answer.

#### Activities to consider

1. **Baking** a cake involves measuring and shape.
2. **Measuring** children's height as they grow is also fun.
3. **Singing** 'Ten green bottles' is maths – there are lots of songs and videos online.
4. There is counting and pattern-forming in **knitting**.
5. The ancient Japanese art of **origami** is mathematical.

The link below takes you to some examples of games that can be played at home.

<https://thirdspacelearning.com/blog/fun-maths-games-activities-for-kids/>



**RECEPTION  
MATHEMATICS  
TARGETS**

I can count reliably from 1 to 20 and begin to count

I can order numbers from 0-20.

I can recognise amounts without counting up to 5.

I can explore odd and even numbers and double facts up to 10.

I can recognise when one quantity is greater than, less than or the same as.

I can find one more and one less than a given number.

I can recognise and write numbers to 20.

**Number and Place Value**

I can recall number bonds to 5 and some number bonds to 10.

I can say the number that is one more or one less than

I can add two single digit numbers.

I can subtract two single digit numbers.

I can count on or back to find an answer.

**Addition and Subtraction**

I can recall double facts to 10.

I can explore and represent double facts to 10.

I can explore how quantities are grouped equally.

To solve problems including doubling, halving and

**Multiplication and Division**

I can use language to talk about size, weight, capacity, position, time and money

I can compare length.

I can compare weight.

I can compare capacity.

I can solve problems for length, weight and capacity, time and money.

**Measurements**

I can use mathematical language to describe objects and shapes.

I can name and describe basic 2-D shapes.

I can select and rotate 2-D shapes to develop reasoning skills.

I can recognise a shape within a shape.

I can name and describe some 3D shapes.

**Geometry — properties of shape**

I can recognise, describe and create patterns.

I can continue, copy and create repeating patterns.

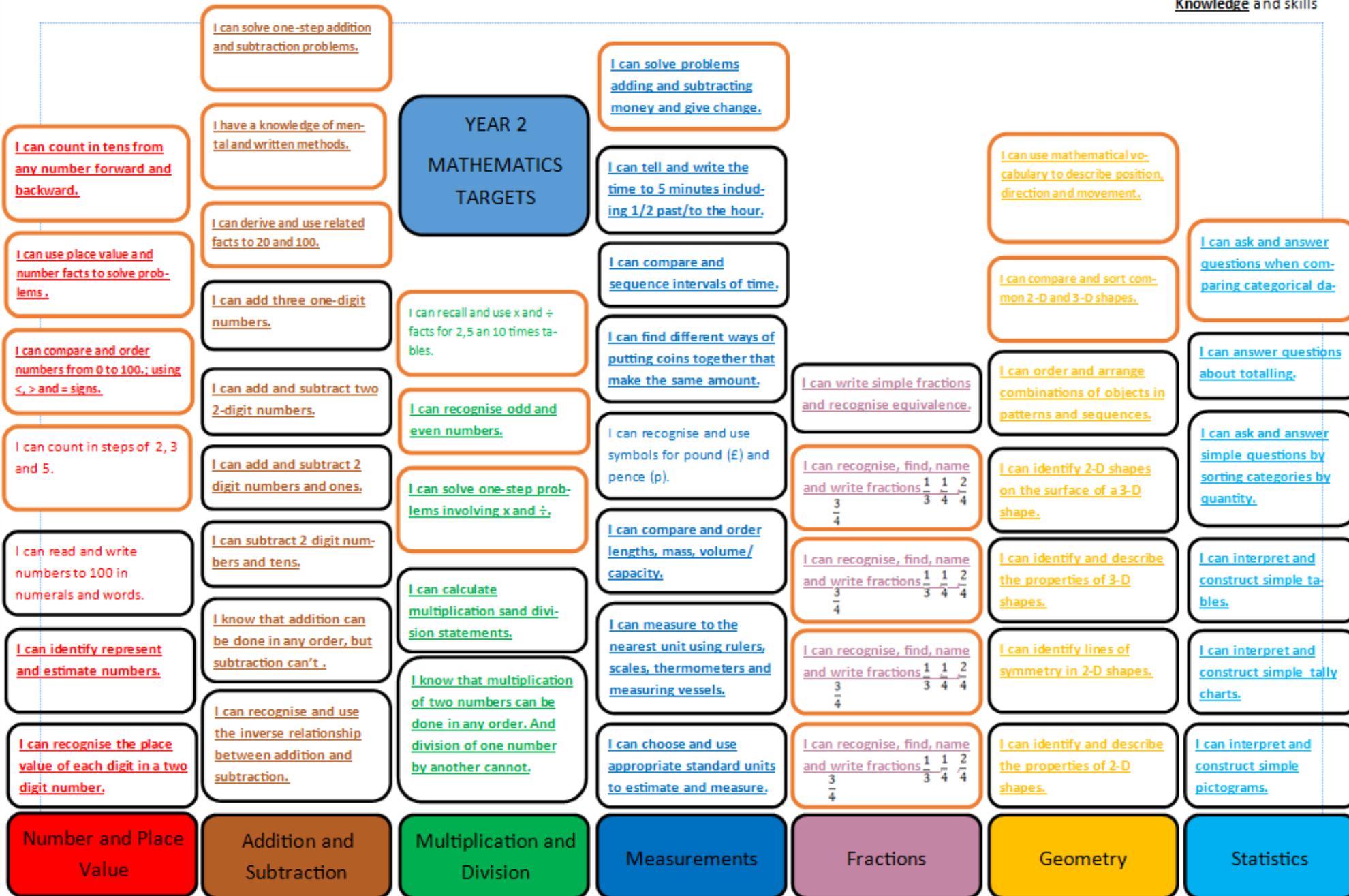
**Geometry — position and direction**



<p><b>YEAR 1</b></p> <p><b>MATHEMATICS</b></p> <p><b>TARGETS</b></p>	I can solve <u>one step problems using subtraction.</u>		<u>Compare, describe and solve problems for length, heights, mass, capacity, volume and time.</u>	I can tell the time to the hour and half past hour, drawing hands on a clock-face to show these times.		
	I can count in multiples of 2, 5 and 10.	I can solve <u>one step problems using addition.</u>		I am beginning to measure.	I can recognise, find and name a <u>quarter of an amount.</u>	
	<u>I can say if a number is equal to, more than, less than, most or least.</u>	I can show and use <u>number bonds to 20.</u>	<u>I can solve one-step division problems.</u>	I am beginning to measure and record capacity and volume.	I can recognise, find and name a <u>half of an amount.</u>	<u>I can recognise and name 3-D shapes.</u>
	I can count to and across 100, forwards and backwards.	I can add and subtract <u>2 digit numbers to 20.</u>	<u>I can solve one-step multiplication problems.</u>	I am beginning to measure and record lengths, heights	I can recognise, find and name a <u>quarter of a shape.</u>	<u>I can recognise and name 2-D Shapes.</u>
	I can count, read and write numbers to 100.	I can show and use <u>subtraction facts within 20.</u>	<u>I can use arrays and multiples.</u>	<u>I know how to use words relating to dates such as weeks and months.</u>	I can recognise, find and name a <u>quarter of an object.</u>	<u>I can describe movement.</u>
	<u>I can find one more and one less than a given number.</u>	I can add and subtract <u>one digit numbers to 20.</u>	<u>I can double single digit numbers.</u>	<u>I know the value of different coins and notes.</u>	I can recognise, find and name a <u>half of a shape.</u>	<u>I can describe position.</u>
	I can read and write numbers from 1 to 20 in digits and words.	I can read, write and <u>understand calculations with +, - and = signs.</u>	<u>I can share and group small amounts.</u>	<u>I can sequence events in order.</u>	I can recognise, find and name <u>half of an object.</u>	<u>I can describe direction.</u>
				<u>I know and use words relating to days.</u>		
	<b>Number and Place Value</b>	<b>Addition and Subtraction</b>	<b>Multiplication and Division</b>	<b>Measurements</b>	<b>Fractions</b>	<b>Geometry</b>



**YEAR 2  
MATHEMATICS  
TARGETS**





St. Mary's Mathematics Skills Progression in **knowledge** and skills - Mathematics

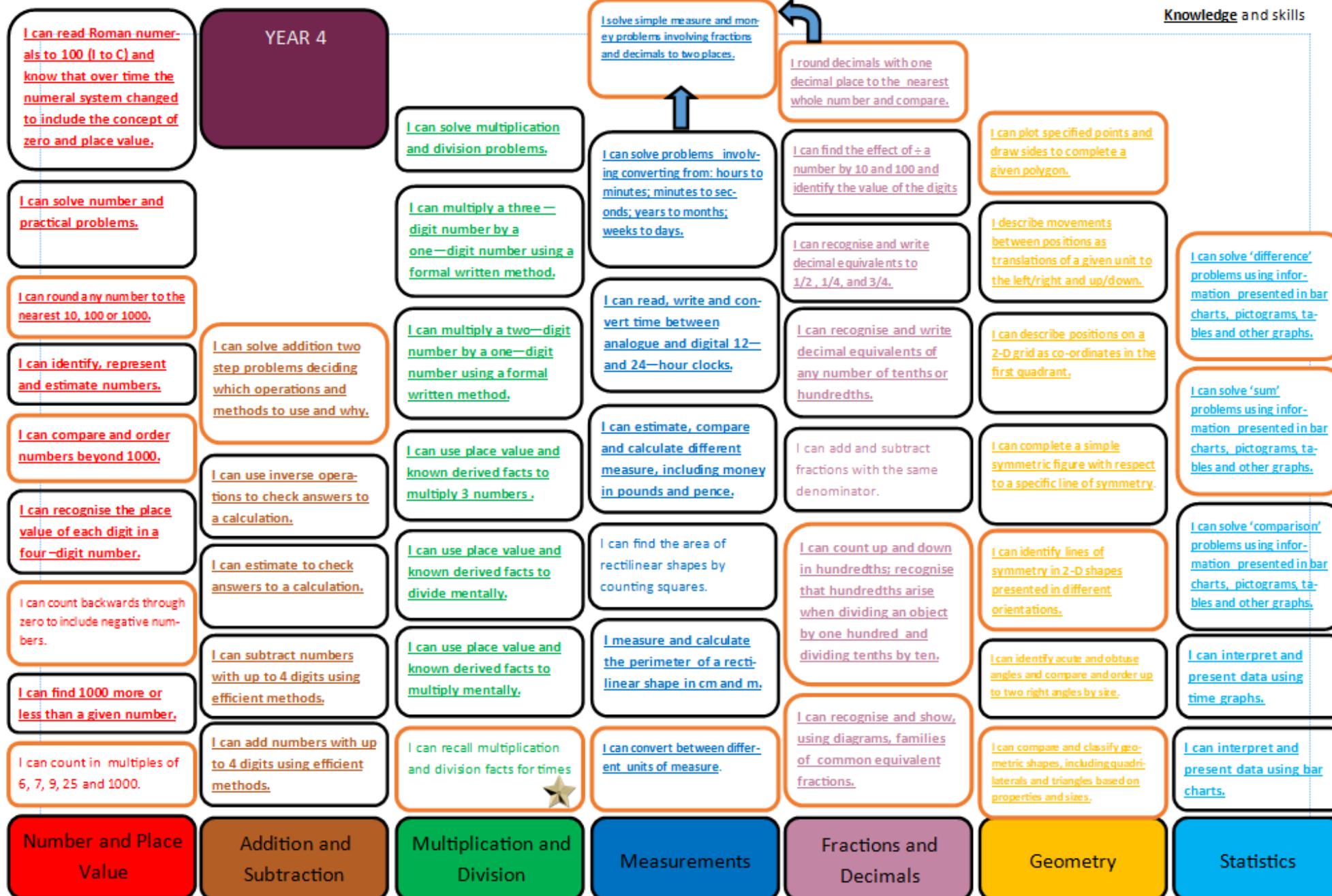
Knowledge and skills

YEAR 3 MATHEMATICS TARGETS						
<p>I can compare and order numbers up to 1000.</p> <p>I can count from 0 in multiples of 4, 8, 50 and 100.</p> <p>I can identify, represent and estimate numbers in different contexts.</p> <p>I can find 10 or 100 more or less than a given number.</p> <p>I can recognise the place value of each digit in a three-digit number.</p> <p>I can solve number problems and practical problems.</p> <p>I can read and write numbers to 100 in numerals and in words.</p>	I can solve missing number problems.	I can solve multiplication and division problems.	I can measure the perimeter of simple 2-D shapes.	I can solve problems involving fractions.	I can identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	<p>I can solve two-step problems using presented data.</p> <p>I can solve one-step problems using presented data.</p> <p>I can interpret and present data using tables.</p> <p>I can interpret and present data using pictograms.</p> <p>I can interpret and present data using bar charts.</p>
	I can estimate the answer to a calculation and use inverse operations to check.	I can use mental and formal written strategies to multiply a 2-digit number by a 1 digit number.	I can estimate and read time and compare times using appropriate vocabulary.	I can compare and order fractions, and fractions with the same denominator.	I can identify whether angles are greater than or less than a right angle.	
	I can solve addition and subtraction problems.	I can write and calculate statements for X and ÷. Using the multiplication tables that I know.	I can tell the time using Roman numerals from I to XII.	I can add and subtract fractions with the same denominator within one whole. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$	I can recognise that two right angles make a half-turn. 3 make 3/4 of a turn and 4 make a complete turn.	
	I can subtract numbers up to three digits using an efficient written method.	I can recall and use multiplication and division facts for the 8 times table.	I can tell and write the time from an analogue clock and 12-hour and 24-hour clocks.	I can recognise and show, using diagrams, equivalent fractions with small denominators.		
	I can add numbers up to three digits using an efficient written method.	I can add and subtract amounts of money to give change using £ and p.		I can recognise and use fractions as numbers.	I can identify right angles.	
	I can add and subtract a 3 digit -number and hundreds mentally.	I can recall and use multiplication and division facts for the 4 times table.	I can measure and compare, add and subtract volume/ capacity (l/ml).	I can find and write fractions for a set of objects.	I can recognise angles as a property of shape or a description of a turn.	
	I can add and subtract a 3 digit -number and tens mentally.	I can recall and use multiplication and division facts for the 3 times table.	I can measure and compare, add and subtract mass (kg/g).	I recognise that tenths arise from dividing an object into 10 equal parts.	I can recognise 3-D shapes in different orientations.	
	I can add and subtract a 3 digit -number and ones/units mentally.	I can use efficient written methods to multiply a 2 digit and a 1 digit number.	I can measure and compare, add and subtract lengths (m/cm/mm).	I can count up and down in tenths.	I can make 3-D shape using modelling materials.	
					I can draw 2-D shapes.	
Number and Place Value	Addition and Subtraction	Multiplication and Division	Measurements	Fractions	Geometry	Statistics



St. Mary's Mathematics Skills Progression in **knowledge** and skills - Mathematics

**Knowledge** and skills





St. Mary's Mathematics Skills Progression in **knowledge** and skills - Mathematics

**YEAR 5  
MATHEMATICS  
TARGETS**

I can read Roman numerals to 1000 (M) and recognise years written in numbers.

I can solve number problems and practical problems that involve all of the below.

I can round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.

I can use negative numbers in context; count forwards and backwards with positive and negative whole numbers through 0.

I can count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.

I know what each digit represents in numbers to 1 000 000.

I can read, write, order and compare numbers to at least 1 000 000.

I can solve  $\times$  and  $\div$  problems, scaling by fractions and ratio.

I can solve problems involving  $\times$  and  $\div$  including factors, multiples square and cubes.

I can recognise and use square and cube numbers.

I can  $\times$  and  $\div$  whole numbers and decimals by 10, 100 and 1000.

I can multiply and divide numbers mentally.

I can divide numbers up to 4 digits by a one or two-digit number.

I can multiply numbers up to 4 digits by a one or two-digit number.

I can establish whether a number is prime and recall prime numbers up to 19.

I know and use the vocabulary of prime numbers, prime factors and composite.

I can identify multiples and factors including finding all factor pairs.

I can use all four operations to solve problems involving measure using decimal notation, including scaling.

I can solve problems involving converting between units of time.

I can estimate the volume and capacity.

I can estimate the area of irregular shapes.

I can calculate and compare the area of rectangles (including squares)

I can measure and calculate the perimeter of composite rectilinear shapes in centimetres & metres.

I understand and use approximate equivalences between metric units and imperial units such as inches & pounds

I can convert between different units of metric measure.

I can write % as a fraction.

I can read and order numbers with 3 decimal places.

I can round decimals with 2 decimal places to the nearest whole number & to 1 one decimal place.

I can recognise and use 1000ths and relate them to 10ths, 100ths and decimal equivalents.

I can multiply proper fractions and mixed numbers by whole numbers.

I can  $+$  and  $-$  fractions with the same denominator and denominators that are multiples of the same number.

I can recognise mixed number and improper fractions and convert from one form to another.

I can identify, name and write equivalent fractions of a given fraction.

I can compare and order fractions whose denominators are all multiples of the same number.

I can identify, describe and represent the position of a shape following a reflection or translation.

I can distinguish between regular and irregular polygons.

I can use the properties of rectangles to deduce related facts and find missing lengths and angles.

I can identify other multiples of  $90^\circ$ .

I can identify angles at point on a straight line and  $1/2$  a turn.

I can identify angles at a point and one whole turn.

I can draw angles and measure them in degrees ( $^\circ$ )

I know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.

I can identify 3-D shapes, including cubes and other cuboids from 2-D drawings.

**Knowledge and skills**

I can solve problems which require knowing percentage and decimal equivalents  $1/2, 1/4, 1/5, 2/5, 4/5$  and those fractions with a denominator with a multiple of 10 or 25.

I can complete, read and interpret information in tables including timetables.

I can solve 'difference' problems using information presented in a line graph.

I can solve 'sum' problems using information presented in a line graph.

I can solve 'comparison' problems using information presented in a line graph.

Number and Place Value

Addition and Subtraction

Multiplication and Division

Measurements

Fractions

Geometry

Statistics



St. Mary's Mathematics Skills Progression in **knowledge** and skills - Mathematics

**YEAR 6  
MATHEMATICS  
TARGETS**

I can find pairs of numbers that satisfy an equation with two unknowns.

I can express missing number problems algebraically.

I can generate and describe linear number sequences. Forward and backward in powers of 10

I can read Roman Numerals to 1,000 (M) and recognise years written in them.

I can use simple formulae.

I use negative numbers in context and calculate intervals across zero.

I can round any whole number.

I know what each digit represents in numbers to 10 000 000.

I can read, write, order and compare numbers up to 10 000 000.

**Number, Place Value and Algebra**

I can use estimation to check answers to calculations by using rounding etc

I can solve problems involving +, -, x and ÷. Including squared and cube d. I understand the equal sign

I can solve addition and subtraction multi-step problems in contexts, deciding on operations and methods use d.

I can use the knowledge of the order of operations to carry out calculations involving the 4 operations. BIDMAS

I can recall prime numbers up to 19. I can identify common factors, common multiples and Prime numbers, prime factors and composite (non-prime) numbers.

I can perform mental calculations, including mixed operations and large numbers.

I can divide numbers up to 4 digits by a two-digit whole number, using formal method of short and long division with remainders in context.

I can interpret remainders as whole number remainders, fractions or by rounding.

I can multiply multi-digit numbers up to 4 digits by a two-digit whole number using a formal written method (including long multiplication)

**Addition, Subtraction Multiplication & Division**

I can solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

I can solve problems involving similar shapes where the scale factor is known or can be found.

I know what the percentage sign means. I can solve problems involving the calculation of percentages.

I can solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.

**Ratio and Proportion**

I can write decimal numbers as fractions  
0.71=71/100.

I can calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units e.g. mm<sup>3</sup> and km<sup>3</sup>.

I can calculate the area of parallelograms and triangles.

I can recognise when it is possible to use formulae for area and volume of shapes.

I can recognise that shapes with the same areas can have different perimeters and vice-versa.

I can convert between miles and kilometres.

I use, read, write and convert between different standard units

I can measure and calculate the perimeter of composite shapes in cm and m.

I can solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.

**Measurements**

I can use written division methods in cases where the answer has up to 2 d.p.

I can multiply 1 – digit numbers with 2 d.p by whole numbers and round them.

I can identify the value of each digit in numbers given to 3 decimal places and multiply and divide by 10, 100 & 1000 giving answers to 3dp read, write order and compare numbers to 3 dp

Recall and use equivalence between fraction, decimals and percentages in context.

I can associate a fraction with division and calculate decimal fraction equivalents.

I can divide proper fractions by whole numbers.

I can multiply simple pairs of proper fractions, writing the answer in its simplest form.

I can + and – fractions with different denominators and mixed numbers, using the concept of equivalent fractions.

I can compare and order fractions, including fractions >1 with denominators as multiples of the same number.

I can use common factors to simplify fractions; comm on multiples to express fractions in the same denomination.

**Fractions, Decimals and percentages**

I can draw given angles and measure them in degrees.

I can solve problems using x and division using scaling, fractions and simple rates.

I can draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

I can describe positions on the full coordinate grid.

I can recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

I can illustrate and name parts of circles, including radius, diameter and circumference.

I can find unknown angles in any triangles, quadrilaterals and regular polygons.

I can compare and classify geometric shapes based on their properties and sizes based on reasoning of sides and angles

I can recognise, describe and build simple 3-D shapes, including making nets.

I can draw 2-D shapes using given dimensions and angles.

**Geometry**

**Knowledge and skills**

I can solve problems whose answer has to be rounded to a specified degree of accuracy.

I can solve problems which require knowing percentage and decimal equivalents 1/2, 1/4, 1/5, 2/5, 4/5 and those fraction with a denominators of a multiple of 10 or 25.

I can complete, read and interpret information tables including time tables.

I can calculate and interpret the mean as an average.

I can construct line graphs.

I can interpret line graphs.

I can construct pie charts.

I can interpret pie charts and line graphs and use these to solve problems.

**Statistics**



**St. Mary's EYFS Policy for Number & Calculation**

**Nursery: 22-36 months**

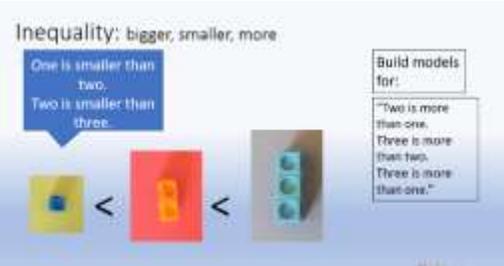
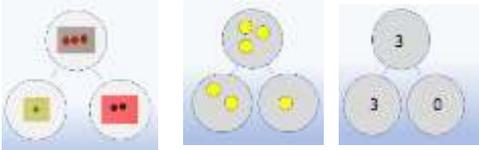
Selects a small number of objects from a group when asked, for example, 'please give me one', 'please give me two'.  
 Creates and experiments with symbols and marks representing ideas of number  
 Begins to make comparisons between quantities.  
 Uses some language of quantities, such as 'more' and 'a lot'  
 Knows that a group of things changes in quantity when something is added or taken away.

Representations	Key knowledge and vocabulary	Concrete & pictorial Conceptual modelling	Abstract Skills and knowledge	Application across the environment
	<p>Concepts of quantity, equality and inequality.</p> <p>Modelling combining sets of small quantities.</p> <p>Modelling adding to a quantity to make it bigger.</p> <p>Removing objects from a set to show the amount is now smaller.</p>	<p>Natural materials and physical objects in all environments.          Pictures to show one or two items.</p> <p>Objects and resources to physically represent a quantity. Images and pictures to represent a small quantity.</p> <p>Using dishes/hoops to make quantities of different values that visually show one set has more than the other.          Images of quantities to compare. Which has more?</p>	<p>Spoken number names.  <i>One, once, alone, first.</i></p> <p>Mark making and graphics to represent a small number in the context of play.</p> <p>Mark making and graphics to represent a small quantity to compare in the context of play.</p>	<p>Ten Town          Wonderful one and terrific two displays.</p> <p>Hiding objects find one of, or lots of in the sand, across the setting.</p> <p>Matching one item to another then to one image. Repeat with two.</p> <p>Snack time: one piece of fruit to one person, two pieces each</p> <p>Problem solving: "We need one/two each how can we sort the bears?"</p>



**Nursery/Reception: 30 - 50 months**

Knows that numbers identify how many objects are in a set.  
 Beginning to represent numbers using fingers, marks on paper or pictures.  
 Sometimes matches numeral and quantity correctly.  
 Compares two groups of objects, saying when they have the same number.  
 Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same.  
 Shows an interest in representing numbers.

Representations	Key Vocabulary	Key knowledge	Concrete & pictorial Conceptual modelling	Abstract Skills and knowledge	Application across the environment
  	<p>Layers of vocabulary</p>  <p><b>Appendix 1a</b> Beck's Tiers of Vocabulary <b>Appendix 1b:</b> Vocabulary book</p> <p><b>Basic to subject specific (Beck's Tiers):</b> Add, more, and, make, sum, total, altogether, double, how many</p> <p><b>Instructional vocabulary:</b> Listen, join in, say, start from, look at, carry on</p>	<p>Concepts of cardinality, equality, inequality and rearranging the same quantity.</p> <p>Counting to 3. One to one correspondence. Knowing how many are in the set.</p> <p>Comparing numbers 1,2 and 3 – 'bigger' and 'smaller'</p> <p>Stable ordering numbers 1 to 3. 3 is made up of 2 and 1.</p> <p>Using counting strategies and subitising to identify the number of concrete objects in the set.</p>	<p>Natural materials and physical objects in all environments to count. (cardinality)          Pictures to show a quantity that can be counted.</p> <p>Use fingers to show small amounts.          Images and pictures to represent a small quantity.</p> <p>Resources that match a numeral to a quantity. E.g a number track, digits cards with numerals and quantities represented.</p>	<p>Represent a quantity by drawing.</p> <p>Mark making and graphics to represent a small quantity and attempts at numerals.</p> <p>Mark making and drawings to replicate the concrete and pictorial model.</p> <p>With models, attempts to write numerals and</p>	<p>Construction.          What can you make with 3 / 4 bricks?</p> <p>Small world.          Put three carriages on the train.          How many cars are in the car park?</p> <p>How many skittles have you knocked over?          Mark making and graphics to represent a small number in the context of play.</p>



					continue to mark make.	
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**Reception: 40 - 60 months**

Counts up to three or four objects by saying one number name for each item.  
 Counts objects to 10 and beginning to count beyond 10.  
 Selects the correct numeral to represent 1 to 5, then 1 to 10 objects.  
 Uses the language of 'more' and 'fewer' to compare two sets of objects.  
 Finds the total number of items in two groups by counting all of them.  
 Says the number that is one more than a given number.  
 In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting.

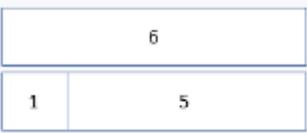
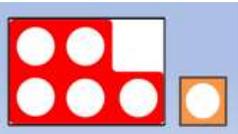
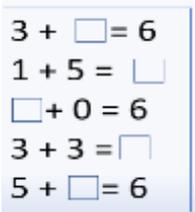
Representations	Key Vocabulary	Key knowledge and vocabulary	Concrete & pictorial Conceptual modelling	Abstract Skills and knowledge	Application across the environment
	<p>Layers of vocabulary</p> <p><b>Basic to subject specific (Beck's Tiers):</b>          Add, more, and, make, sum, total, altogether, double, how many more to make, how many are left, how many have gone?</p>	<p>Number structure. Equality, inequality. Partitioning and recombining.</p> <p>Subitising to 5. 5 as an anchor.</p> <p>Modelling the combining of sets, recognising that the quantity has increased.</p> <p>Using counting strategies and subitising to identify the number of concrete/pictorial objects in the set</p>	<p>Natural materials, physical objects and mathematical resources e.g. counters in all environments to count accurately. (cardinality). To 10 and beyond. Pictures to show a quantity that can be counted then to 10 and beyond.</p> <p>Resources that match a numeral to a quantity</p>	<p>Represent a quantity by drawing or by using graphics. (using drawings to show a resource)</p> <p>Mark making and graphics to represent numbers to 10 and beyond in their play.</p> <p>Graphics and attempts at numerals in the correct orientation.</p>	<p>Malleable play: problem solving 'Let's put 5 cherries on the cakes.'          'How will you put your 5 candles on the two cakes?'</p> <p>Role play: problem solving          Each shelf in the shop must have 5 or more items to sell.          How shall we arrange the items?          Find items in the sand.</p>



	<b>Instructional vocabulary:</b> Listen, join in, say, start from, look at, carry on, what comes next, find, choose, talk about		Models of mathematical counting resources to show the more or fewer. Using a number track or line to show one more than a given number	Mark making and numerals to replicate the concrete and pictorial model. Graphics and numerals to show the addition	3 shells and 2 fish. How many items altogether?
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**Reception: ELG 2018**

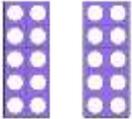
Numbers to 20: place them in order and say which number is one more or one less than a given number  
 Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer  
 They solve problems, including doubling, halving and sharing.

Representations	Key Vocabulary	Key knowledge and vocabulary	Concrete & pictorial Conceptual modelling	Abstract Skills and knowledge	Application across the environment
  	Layers of vocabulary  <b>Basic to subject specific (Beck's Tiers):</b> Add, more, and, make, sum, total, altogether, double, how many more to make, how many are left, how many have gone? One less, two less, ten less, the	Number structure. Equality, inequality. Partitioning and recombining.  Subitising to 5. 5 as an anchor.  Modelling the combining of sets, recognising that the quantity has increased.  Using counting strategies and subitising to identify the number of concrete/pictorial objects in the set	Natural materials, physical objects and mathematical resources e.g. counters in all environments to count accurately. (cardinality). To 10 and beyond. Pictures to show a quantity that can be counted then to 10 and beyond.  Resources that match a numeral to a quantity  Models of mathematical counting	Represent a quantity by drawing or by using graphics. (using drawings to show a resource)  Mark making and graphics to represent numbers to 10 and beyond in their play.  Graphics and attempts at numerals in the correct orientation.  Mark making and numerals to replicate	Malleable play: problem solving 'Let's put 5 cherries on the cakes.' 'How will you put your 5 candles on the two cakes?'  Role play: problem solving Each shelf in the shop must have 5 or more items to sell. How shall we arrange the items?  Find items in the sand.



	<p>difference between, odd and even.</p> <p><b>Instructional vocabulary:</b> Listen, join in, say, start from, look at, carry on, what comes next, find, chose, talk about, repeat, tell me, describe, complete</p>		<p>resources to show the more or fewer. Using a number track or line to show one more than a given number</p>	<p>the concrete and pictorial model. Graphics and numerals to show the addition</p>	<p>3 shells and 2 fish. How many items altogether?</p>
<p><b>Reception: ELG 2018</b> Numbers to 20: place them in order and say which number is one more or one less than a given number Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer <b>They solve problems, including doubling, halving and sharing.</b></p>					
<p>Representations</p>	<p>Key Vocabulary</p>	<p>Key knowledge</p>	<p>Concrete &amp; pictorial Conceptual modelling</p>	<p>Abstract Skills and knowledge</p>	<p>Application across the environment</p>
<p>Counting in 2s</p> <p>Counting in 5s</p>	<p>Layers of vocabulary</p> <p><b>Basic to subject specific (Beck's Tiers):</b> Add, more, and, make, sum, total, altogether, double, how many more to make, how many are left, how many have gone?</p>	<p>Knowing that groups of the same quantity are added together. That is what makes a double.</p> <p>The quantity divided into two equal groups. Halving.</p> <p>Sharing and grouping.</p> <p>Sharing is where you take a quantity and count out into how many equal groups you want.</p> <p>Grouping is where you take the quantity and</p>	<p>Natural materials, physical objects and mathematical resources e.g. counters in all environments to double, share, group and half accurately.</p> <p>Modelling and demonstrating groups of and shared quantities.</p> <p>Showing that the quantity has increased</p>	<p>Represent a quantity by drawing or by using graphics. (using drawings to show a resource)</p> <p>Graphics and numerals to show the double/halving/grouping and sharing used.</p>	<p>In small world play:</p> <p>All the animals in the enclosures are doubles. How many lions will there be etc?</p> <p>Doubles shop Everything in the shop has to be double.</p> <p>Snack time How will we share the fruit so that we can have half each?</p>



 <p>Double 10 is 20.</p>  <p>8 divided in to groups of 2.</p>  <p>4 shared equally into two groups.</p>  <p>To halve the apple it would be cut into two equal pieces</p>	<p>One less, two less, ten less, the difference between, odd and even. Equals, share, groups of, halve and half</p> <p><b>Instructional vocabulary:</b> Listen, join in, say, start from, look at, carry on, what comes next, find, choose, talk about, repeat, tell me, describe, complete, pattern, remember, ring, work out, check, another way</p>	<p>make the groups (of two, or three etc)</p>	<p>when doubled and reduced when halved.</p>		
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To halve the satsuma we would could the segments and share them equally.



Double the number of ladybirds.  
This show half the number of lady birds sitting on the leaf.



Doubling and halving.



**St. Mary's Calculation Policy KS1: ADDITION**

<p><b>EYFS</b></p> <p><b>Appendix 2:</b> Pupil target grids</p>	<p><b>Reception: ELG</b></p> <p>Numbers to 20: place them in order and say which number is one more or one less than a given number.</p> <p>Using quantities and objects, <b>they add</b> and subtract two single-digit numbers and count on or back to find the answer.</p> <p>They solve problems, including doubling, halving and sharing.</p> <p><b>Exceeding:</b> Estimation and checking quantities by counting up to 20. Combining groups of 2, 5 or 10 or sharing into equal groups.</p>	
<p>Year</p>	<p style="text-align: center;"><b>1</b></p>	<p style="text-align: center;"><b>2</b></p>
<p>Layers of vocabulary</p>  <p><b>Appendix 1a</b> Beck's Tiers of Vocabulary</p> <p><b>Appendix 1b:</b> Vocabulary book</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>+, add, more, plus, make, sum, total, altogether, score, double, near double, one more, two more... ten more... <b>How many more to make...? How many more is... than...? How much more is...?</b></p> <p><b>Instructional vocabulary:</b></p> <p>start from, start with, start at, look at, point to, show me...</p> <p><b>NFER– language of tests and questions</b></p> <p>match, tick, draw, complete, write, circle, share, jumps, count on, use a ruler</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>+, add, addition, more, plus, make, sum, total, altogether, score, double, near double, one more, two more... ten more... one hundred more... how many more to make...? <b>How many more is... than...? How much more is...?</b></p> <p><b>Instructional vocabulary:</b></p> <p>tell me, describe, name, pick out, discuss, talk about, explain, explain your method, explain how you got your answer, give an example of... show how you...</p> <p><b>NFER– language of tests and questions</b></p> <p>tick, match, count, tick two, circle, write, draw, complete, use these numbers, shade, write, make, choose, circle the three, complete, write, tick all, complete the number sentence, put a digit, <b>How many...?</b></p>
<p>NC 2014</p>	<p>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.</p>	<p>Recording addition in columns supports place value and prepares for formal written methods with larger numbers.</p>



	Concrete, pictorial, abstract		Concrete, pictorial, abstract			
Developing Conceptual/ Procedural Understanding	<p><b>Number bonds</b></p> <p>We have 10 pegs on the coathangers, how can we split them into 2 groups? Is there another way? How can we be sure we have got them all?</p> <p>Numicon      Ten Frame</p> <p>Use the pattern to complete the number sentences.</p> <p>Use bonds of 10 to calculate bonds of 20.</p> <p><math>6 + 4 = 10</math></p> <p><math>16 + \underline{\quad} = 20</math></p>	<p><math>1 + 1 = 2</math>      <math>2 - 1 = 1</math> double 1 is 2      half of 2 is 1</p> <p><math>2 + 2 = 4</math>      <math>4 - 2 = 2</math> double 2 is 4      half of 4 is 2</p> <p><b>Count all</b></p> <p><b>Count on</b></p> <p><b>Count on, on number track in 1s.</b></p> <p><b>Develop knowledge of fact families.</b></p>	<p><b>Whole-part model</b></p> <p>Fill in the missing numbers</p> <p><b>Balance image for concept of equality.</b></p> <p><math>1 + 8 = 9</math></p>	<p><b>Multilink /unifix</b></p> <p><b>Picture</b></p> <p><b>Whole-part model</b></p> <p>Fill in the missing numbers</p> <p>All answers to be recorded in a number sentence following any informal recording.</p> <p><b>Adding more than two numbers</b></p> <p>Strategy to include looking for facts or bonds that are useful e.g. bonds up to and including 10,</p>	<p><b>Adjustment strategy</b></p> <p><math>5 + 9 =</math></p> <p><math>5 + 10 - 1 = 14</math></p> <p>(Round and adjust)</p> <p><b>Doubles then near doubles</b></p> <p><math>5 + 6 =</math></p> <p><math>5 + 5 + 1 = 11</math></p> <p><math>7 + 8 =</math></p> <p><math>8 + 8 - 1 = 15</math></p> <p><math>47 + 50 =</math></p> <p><b>Re-arranging</b></p> <p><math>18 + 4 =</math></p> <p>Tell me what you know about 4, e.g. <math>3+1, 2+2</math></p>	<p><b>Partition and recombine</b></p> <p>Record partitioned steps in number sentences then add mentally.</p> <p><math>40 + 20 = 60</math></p> <p><math>6 + 7 = 13</math></p> <p><math>60 + 13 = 73</math></p> <p>Moving on to:</p> <p><math>46 + 27 = 60 + 13 = 73</math></p> <p>Tens and units – exchanging</p> <p><math>46 + 27 = 73</math></p> <p><math>\quad + \quad = 60</math></p> <p><math>\quad + \quad = 13</math></p> <p><b>Balance in the equation</b></p> <p><math>14 = 8 + 6, 7 + 6 = 8 + 5</math></p>



				<p>doubles or adding 10 to a given number.</p> $\begin{array}{r} 6 + 3 + 4 = 13 \\ \hline 10 \end{array}$ $\begin{array}{r} 6 + 3 + 4 + 7 + 2 = 22 \\ \hline 10 \end{array}$ <p>Children to show notation.</p>	<p>18+4= Rearrange the 4 into 2+2</p> <p>So 18+2+2= 20+2 =22</p> <p>59+24 = Partition the 24 into 20 +4 and rearrange the 4 into 1+3.</p> <p>So 59+24=</p> $\begin{array}{r} 59+20+1+3 \\ = \\ 59+1+20+3 \\ = 83 \end{array}$	<p>□= 13+9 3+ □+6 =16 14+ ◇= 15+27</p> <p><b>Decision making</b></p> <p>Using statements such as:</p> <p>Ben did 14 + 9 = 23</p> <p>How could he have done it?</p>
Known facts	<p>Represent &amp; use number bonds and related subtraction facts within 20</p> <p>Add and subtract 1 digit and 2 digit numbers to 20, including zero.</p>			<p>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.</p>		
Essential Knowledge	1 more	Number bonds: 5 and 6		10 more	Number bonds:20,12 and 13	
	Largest number first	Number bonds: 7 and 8		Add 1 digit to 2 digit by bridging	Number bonds: 14 and 15	
	Add 10	Number bonds:9 and 10		Partition second number and add tens then ones	Number bonds: 16 and 17	



St. Mary's Mathematics Skills Progression in **knowledge** and skills - Mathematics

	Ten plus ones	Use number bonds of 10 to derive bonds of 11	Add 10 and multiples of 10	Number bonds: 18 and 19
	Doubles up to 10	Use number bonds to 20	Doubles up to 20 and multiples of 5	Partition and recombine
			Add near multiples of 10	



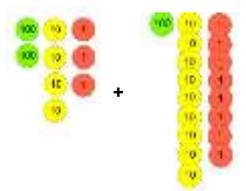
**St. Mary's Calculation Policy KS2: ADDITION**

<p><b>KS1</b></p> <p><b>Appendix 2:</b> Pupil target grids</p>	<p><b>KS1</b></p> <p>Pupils should practise addition to 20 and within to become increasingly fluent. They should use the facts they know to derive others, e.g. using <math>7 + 3 = 10</math> to find <math>17 + 3 = 20</math>, <math>70 + 30 = 100</math>.</p> <p>They should use concrete objects and practical apparatus, such as bead strings and number lines to explore additions including missing numbers.</p> <p>Use pictorial representations such as bar models and whole part diagrams to show additive relationships.</p> <p>100 squares could be used to explore patterns in calculations such as <math>74 + 11</math>, <math>77 + 9</math> encouraging children to think about 'What do you notice?' where partitioning or adjusting is used.</p> <p>Pupils should learn to check their calculations, by using the inverse.</p> <p>They should continue to see addition as both combining groups and counting on.</p> <p>They should use Dienes to model partitioning into tens and ones* and learn to rearrange numbers in different ways e.g. <math>23 = 20 + 3 = 10 + 13</math>.</p> <p>Show understanding that adding zero leaves a number unchanged.</p>	
<p>Year</p>	<p>3</p>	<p>4</p>
<p>Layers of vocabulary</p>  <p><b>Appendix 1a</b> Beck's Tiers of Vocabulary <b>Appendix 1b:</b> Vocabulary book</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>+, add, addition, more, plus, make, sum, total, altogether, score, double, near double, one more, two more... ten more... one hundred more, <b>How many more to make...? How many more is... than...? How much more is...?</b></p> <p><b>Instructional vocabulary:</b></p> <p>explain your method, explain how you got your answer, give an example of... show how you... show your working</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>add, addition, more, plus, increase, sum, total, altogether, score, double, near double, <b>How many more to make...?</b></p> <p><b>Instructional vocabulary:</b></p> <p>calculate, work out, solve, investigate, question, answer, check</p> <p><b>NFER – language of tests and questions</b></p>



	<b>NFER – language of tests and questions</b> estimate, write....in order, complete, circle, estimate, tick, draw, draw two, draw the arrow, show your working, use the..., what number, complete, shade, write in, true or false, tick two, circle all, write a possible, use a ruler, <b>What numbers could be? How many are left? What is next...? What is...? How many...? Which of these?</b>			write, order, complete, draw three, write....in the boxes, show your working, use the method, write the missing, shade, write in order, tick, write your answer as..., write the letter (can be used more than once), describe, write one word, write your answer in, match, to make...you need, draw four, on which, calculate, write these numbers, use the coordinates to draw, estimate, in each box, write these values, circle the best, complete the table, round each number, draw one line, circle all, tick three, plot, <b>Who takes...? How many? What is...? What number?</b>								
NC 2014	Add <b>and subtract</b> numbers with up to 3 digits, using formal written methods of columnar addition <b>and subtraction</b> .			Add <b>and subtract</b> numbers with up to 4 digits using the formal written method of columnar addition <b>and subtraction</b> where appropriate. Solve addition <b>and subtraction</b> two-step problems in contexts, deciding which operations and methods to use and why.								
Developing Conceptual/ Procedural Understanding	<b>Near doubles</b> $13+14 =$ Double 13= 26 $26+1 =27$ or Double 14 =28 $28-1=27$  <b>Using known facts</b> $40 + 80 = 120$ using $4 + 8 = 12$ So $400 + 800 = 1200$  <b>Remodelling strategy</b> $243 + 198$ $241 + 200 = 441$  <b>Place value materials to represent calculations</b> Diennes and then place value counters. $243 + 198 =$	<b>Start with least significant digit</b> $67$ $+ 24$ $11 (7+4)$ $+ 80 (60+20)$ $91$  $7 \text{ add } 4 \text{ equals } 11 \text{ and } 60 \text{ add } 20 \text{ equals } 80. 1 + 0 = 1 \text{ and } 1 \text{ ten } + 8 \text{ tens} = 9 \text{ tens}$  $625$ $+ 48$ $13 (5+8)$ $60 (20+40)$ $+ 600 (600+0)$ $673$  All language in the context of the place value	<b>Columnar addition</b> $625$ $+ 48$ $673$  $1$  <b>Representing problems</b> There are 334 children at Springfield School and 75 at Oak Nursery. How many children are there altogether?	<b>Using known facts</b> $40 + 80 = 120$ using $4 + 8 = 12$ So $400 + 800 = 1200$ and $4000+8000=12,000$  <b>Remodelling strategy</b> $3548 + 1998$ $3546 + 2000 = 5546$  <b>Place value materials to represent calculations</b>	<b>Columnar addition</b> $587$ $+ 475$ $1062$ $11$ “7 add 5 equals 12. That’s 2 units and 1 ten to carry over. 80 add 70 equals 150 and the 1 ten to carry makes 160. That’s 6 tens and 100 to carry over. 500 add 400 equals 900 and the 1 hundred to carry makes 1000”  $7648$ $+ 1486$ $14 (8+6)$ $120 (40+80)$ $1000 (600+400)$ $+ 8000 (7000+1000)$ $9134$  $7648$ $+ 1486$	<b>Columnar addition (decimals) in contexts such as money and measurement</b> $12.45$ $7.36$ $+ 24.50$ $44.31$ $111$  <b>Representing problems</b> There are 259 more boys than girls in Lucy’s school. If there are 789 girls, how many pupils are there altogether?  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td colspan="3" style="text-align: center;">?</td> </tr> <tr> <td style="text-align: center;">759</td> <td style="text-align: center;">759</td> <td style="text-align: center;">+ 259</td> </tr> </table>	?			759	759	+ 259
?												
759	759	+ 259										



	 <p>Teaching point – you cant have more than 9 in each column.</p>	<p>and the mental addition of the totals to be done in any order.</p>			<p>9 1 3 4 1 1 1</p>	
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Known facts	Derive and use addition and subtraction facts to 100, e.g. $33 + 67 = 100$ .		Derive and use addition and subtraction facts (for multiples of 10) to 1000, e.g. $330 + 670 = 1000$ .			
Essential knowledge	Add single digit bridging through boundaries	Add multiples of 10, 100	Fluency of 2 digit + 2 digit		Add multiples of 10, 100 and 1000	
	Partition second number to add	Pairs of 100 (complements of 100)	Partition second number to add		Decimal pairs of 10 and 1	
	Use near doubles to add	Add near multiples of 10 and 100 by rounding and adjusting	Use near doubles to add		Adjust both numbers before adding	
	Partition and recombine		Add near multiples		Partition and recombine	



Year	5		6	
Layers of vocabulary  <b>Appendix 1a</b> Beck's Tiers of Vocabulary <b>Appendix 1b:</b> Vocabulary book	<b>Basic to subject specific (Beck's Tiers):</b> add, addition, more, plus, increase, sum, total, altogether, score, double, near double, <b>How many more to make...?</b>  <b>Instructional vocabulary:</b> put, place, arrange, rearrange, change, change over split, separate  <b>NFER– language of tests and questions</b> complete the sequence, circle the same as, draw four lines, circle the, circle the number that is not, circle two, write yes or no to a statement, circle all, write the, write the missing, circle the incorrect, show your method, show your working, circle three, by how much, calculate, estimate, shade, write the missing, use the diagram, complete the table, circle the number that is both, write a, b, c, d, label, true or false, order, draw a line, write the missing digits, circle true and false, <b>What number is? Which is the closest? Which one of these must also? Who gets the most? What is the total number?</b>		<b>Basic to subject specific (Beck's Tiers):</b> add, addition, more, plus, increase, sum, total, altogether, score, double, near double, <b>How many more to make...?</b>  <b>Instructional vocabulary:</b> put, place, arrange, rearrange, change, change over adjusting, adjust, split, separate, carry on, continue, repeat, predict, describe the pattern, describe the rule, find, find all, find different, investigate, <b>What comes next?</b>  <b>NFER– language of tests and questions</b> which expression, write three, complete, draw the, explain why, write each number, show your method, tick the, calculate, increase by, complete the tables, circle all, calculate, <b>What was the...? What is the difference? How much? What are...? What is...? What could...? What number is...? Which of these...?</b>	
NC 2014	Add <b>and subtract</b> whole numbers with more than 4 digits, including using formal written methods (columnar addition <b>and subtraction</b> ). Solve addition <b>and subtraction</b> multi-step problems in contexts, deciding which operations and methods to use and why.		Solve problems involving addition, subtraction, multiplication and division.	
Developing Conceptual/ Procedural Understanding	<b>Columnar addition</b> Include calculations involving more than 2 numbers and carrying figures >1.	<b>Representing problems</b> If 2541 is the answer, what's the question? - Can you create three addition calculations? - Can you create three subtraction calculations? - Did you use a strategy?	<b>Columnar addition</b> Include calculations with up to 3 'empty columns'. $128.7 + 3.014$  $\begin{array}{r} 128.700 \\ + 3.014 \\ \hline 131.714 \\ 1 \end{array}$	<b>Representing problems</b> 7208 females attended a concert as well as 8963 males. There were originally 20000 seats on sale. How many empty seats were there at the concert?



St. Mary's Mathematics Skills Progression in **knowledge** and skills - Mathematics

	$\begin{array}{r} 25567 \\ 16397 \\ +15984 \\ \hline 57948 \\ 1121 \end{array}$ <p>Include calculations with 'empty columns'. 124.9 + 7.25</p> $\begin{array}{r} 124.90 \\ + 7.25 \\ \hline 132.25 \\ 11 \end{array}$				
Known facts	Derive and use addition and subtraction facts to 10 and 1, E.g. 3.3 + 6.7 = 10 and so 0.33 + 0.67 = 1. BIDMAS.		All the KS2 required facts. BIDMAS.		
Essential knowledge	Fluency of 2 digit + 2 digit including with decimals	Add multiples of 10, 100, 1000 and tenths	Fluency of 2 digit + 2 digit including with decimals	Add multiples of 10, 100, 1000, tenths and hundredths	
	Partition second number to add	Use number facts, bridging and place value	Partition second number to add	Use number facts, bridging and place value	
	Adjust numbers to add	Partition and recombine	Adjust numbers to add	Partition and recombine	
	Negative numbers, counting forwards and backwards through zero		Negative numbers, calculate intervals across zero		



**St. Mary's Calculation Policy KS1: SUBTRACTION**

<p><b>EYFS</b></p> <p><b>Appendix 2:</b> Pupil target grids</p>	<p><b>Reception: ELG</b></p> <p>Numbers to 20: place them in order and say which number is one more or one less than a given number.</p> <p>Using quantities and objects, they add and <b>subtract two single-digit numbers and count on or back to find the answer.</b></p> <p>They solve problems, including doubling, halving and sharing.</p> <p><b>Exceeding:</b> Estimation and checking quantities by counting up to 20. Combining groups of 2, 5 or 10 or sharing into equal groups.</p>	
<p>Year</p>	<p>1</p>	<p>2</p>
<p>Layers of vocabulary</p>  <p><b>Appendix 1a</b> Beck's Tiers of Vocabulary</p> <p><b>Appendix 1b:</b> Vocabulary book</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>take away, distance between, difference between, less than, subtract, take (away), minus, leave, one less, two less, ten less... difference, halve, equals, sign, is the same as, <b>How many more? How much greater? How many fewer? How much more is...? How many are left/left over? How many have gone? How many fewer is... than...? How much less is...?</b></p> <p><b>Instructional vocabulary:</b></p> <p>start from, start with, start at, look at point, to show me</p> <p><b>NFER– language of tests and questions</b></p> <p>match, tick, draw, complete, write, circle, share, jumps, count on, use a ruler</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>subtract, subtraction, take (away), minus leave, one less, two less... ten less... one hundred less, difference, halve, equals, sign, is the same as, tens boundary, difference, partition, rearrange, inverse, place value, <b>How many are left/left over? How many fewer is... than...? How much less is...?</b></p> <p><b>Instructional vocabulary:</b></p> <p>tell me, describe, name, pick out, discuss, talk about, explain, explain your method, explain how you got your answer, give an example of... show how you...</p> <p><b>NFER– language of tests and questions</b></p> <p>tick, match, count, tick two, circle, write, draw, complete, use these numbers, shade, write, make, choose, circle the three, complete, write, tick all, complete the number sentence, put a digit, <b>How many...?</b></p>
<p>NC 2014</p>	<p>Read, write and interpret mathematical statements involving <b>addition (+)</b>, <b>subtraction (-)</b> and equals (=) signs.</p>	<p>Recording subtraction in columns supports place value and prepares for formal written methods with larger numbers.</p>



<p>Developing Conceptual/ Procedural Understanding</p>	<p><b>Number bonds</b></p> <p>Numicon Ten Frame Difference between 7 and 10.</p> <p>Use the pattern to complete the number sentences.</p> <p>6 less than 10 is 4. <b>Count out, then count how many are left.</b></p> <p><math>7 - 4 = 3</math></p>	<p><b>Count back on a number track.</b></p> <p><math>15 - 6 = 9</math></p> <p><b>Difference between.</b></p> <p><math>13 - 8 = \underline{\quad}</math> <math>8 + \underline{\quad} = 13</math></p> <p><b>Subtraction-take away</b></p> <p>Jerry's cakes</p> <p><math>8 - 3 = ?</math> <b>Subtraction-finding the difference</b></p> <p>Peter:   Jenny: </p> <p>How many more cakes does Peter have than Jenny? <math>8 - 3 = ?</math></p>	<p><b>Develop knowledge of fact families.</b></p> <p>00000 00 <math>7 = 5 + 2</math> <math>2 + 5 = 7</math> <math>7 - 2 = 5</math> <math>7 - 5 = 2</math></p> <p><b>Whole-part model</b></p> <p><b>Fill in the missing numbers</b></p> <p><b>Fill in the missing numbers</b></p>	<p><b>Whole-part model</b></p> <p><b>Fill in the missing numbers</b></p> <p>All answers to be recorded in a number sentence following any informal recording.</p> <p><b>Adjustment strategy</b> <math>77 - 9 =</math></p> <p><math>77 - 10 + 1 = 67 + 1</math> <math>= 68</math></p> <p><b>(Round and adjust)</b></p> <p>What is the nearest 10?</p> <p><math>55 - 27 =</math></p> <p><math>55 - 30 + 3 = 25 + 3</math> <math>= 28</math></p> <p><math>91 - 48 =</math></p> <p><math>91 - 50 + 2 = 41 + 2</math> <math>= 43</math></p> <p><b>Subtraction-finding the difference</b> <b>72-68</b> Appropriate number steps 68 to 70 is 2 and then 70 to 72 is 2 <b>4</b></p>	<p><b>Re-arranging</b></p> <p><math>35 - 8 =</math></p> <p>Tell me what you know about 8, e.g. <math>2 + 6</math>, <math>5 + 3</math></p> <p><math>35 - 8 =</math></p> <p>Rearrange the 8 into 5 + 3</p> <p>So <math>35 - 5 - 3 = 30 - 3 = 27</math></p> <p><math>55 - 27 =</math></p> <p>Partition the 27 into 20 + 7 and rearrange the 7 into 5 + 2.</p> <p>So <math>55 - 27 = 55 - 20 - 5 - 2</math> <math>= 35 - 5 - 2</math> <math>= 28</math></p> <p><b>Taking away and exchanging</b></p> <p><math>73 - 46 =</math></p> <p>What do we know about 76? Exchange to make '60 and 13'.</p> <p>Now take away the 46.</p> <p><math>73 - 46 = 27</math></p>	<p><b>Subtract mentally pairs of multiples of 10 using known facts</b></p> <p><math>60 - 20 = 40</math> because <math>6 - 2 = 4</math></p> <p>Subtracting multiples of tens</p> <p><math>60 - 20 = 40</math></p> <p><b>Partitioning of the second number strategy</b></p> <p><math>74 - 47</math></p> <p><math>74 - 40 = 34</math></p> <p><math>34 - 4 - 3 = 27</math></p> <p><b>Balance in the equation</b></p> <p><math>35 - \square = 31</math> <math>\square - 12 = 34</math> <math>20 - \square = 14 - 3</math> (Open-ended)</p>
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					<p><math>73 - 46 = 27</math></p> <p><math>73</math> becomes 60 and 13</p>	<p><math>18 - \square = 15 - \square</math></p> <p><b>Decision making</b></p> <p><math>27 - \square = 12</math></p> <p>Sam works out</p> <p><math>27 - 15 = 12.</math></p> <p>How could he have done this?</p>
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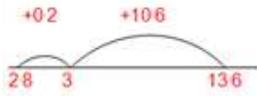
Known facts	Represent & use <b>number bonds</b> and related subtraction facts within 20. <b>Add and</b> subtract 1 digit and 2 digit numbers to 20, including zero.		Recall and use <b>addition and</b> subtraction facts to 20 fluently, and derive and use related facts up to 100.	
Essential knowledge	1 less	Number bonds: subtraction 5 and 6	10 less	Number bonds: subtraction 20,12 and 13
	Count back	Number bonds: subtraction 7 and 8	Subtract 1 digit from 2 digit by bridging	Number bonds: subtraction 14 and 15
	Subtract 10	Number bonds: subtraction 9 and 10	Partition second number and count back in tens then ones.	Number bonds: subtraction 16 and 17
	Teens subtract 10	Difference between	Subtract 10 and multiples of 10.	Number bonds: subtraction 18 and 19
			Subtract near multiples of 10.	Difference between
			Add near multiples of 10.	



**St. Mary's Calculation Policy KS2: SUBTRACTION**

<p><b>KS1</b></p> <p><b>Appendix 2:</b> Pupil target grids</p>	<p><b>KS1</b></p> <p>Pupils should practise subtraction to 20 and within to become increasingly fluent. They should use the facts they know to derive others, e.g. using <math>10 - 7 = 3</math> and <math>7 = 10 - 3</math> to calculate <math>100 - 70 = 30</math> and <math>70 = 100 - 30</math>.</p> <p>Know the effect of zero.</p> <p>As well as number lines, 100 squares could be used to model calculations such as <math>74 - 11</math>, <math>77 - 9</math> or <math>36 - 14</math>, where partitioning or adjusting are used.</p> <p>Pupils should learn to check their calculations, including by adding to check.</p> <p>They should continue to see subtraction as both take away and finding the difference and should find a small difference by counting up.</p> <p>They should use Dienes to model partitioning into tens and ones and learn to partition numbers in different ways e.g. <math>23 = 20 + 3 = 10 + 13</math>.</p>	
<p>Year</p>	<p>3</p>	<p>4</p>
<p>Layers of vocabulary</p>  <p><b>Appendix 1a</b> Beck's Tiers of Vocabulary</p> <p><b>Appendix 1b:</b> Vocabulary book</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>subtract, subtraction, take (away), minus, leave, one less, two less... ten less... one hundred less...difference between, half, halve = equals, sign, is the same as tens boundary, hundreds boundary, exchange, carried digits, <b>How many are left/left over? How many fewer is...than...? How much less is...?</b></p> <p><b>Instructional vocabulary:</b></p> <p>explain your method, explain how you got your answer, give an example of...show how you...show your working</p> <p><b>NFER – language of tests and questions</b></p> <p>estimate, write....in order, complete, circle, estimate, tick, draw, draw two, draw the arrow, show your working, use the, complete, shade, write in, true or false, tick two, circle all, , use a ruler, write a</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>subtract, subtraction, take (away), minus, decrease, leave, difference between, half, halve, equals, sign, is the same as tens boundary, hundreds boundary, inverse, exchange, carried digits, <b>How many are left/left over? How many more/fewer is...than...? How much more/less is...?</b></p> <p><b>Instructional vocabulary:</b></p> <p>calculate, work out, solve, investigate, question, answer check</p> <p><b>NFER – language of tests and questions</b></p> <p>write, order, complete, draw three, write....in the boxes, show your working, use the method, write the missing, shade, write in order, tick, write your answer as..., write the letter (can be used more than once), describe, write one word, write your answer in, match, to make...you need, draw four, on which, calculate, write</p>



	possible, <b>What is...? What is next? How many...? What number...? Which of these? What numbers could be...? How many are left?</b>	these numbers, use the coordinates to draw, estimate, in each box, write these values, circle the best, complete the table, round each number, draw one line, circle all, tick three, plot, check, <b>How many...? What is...? How much? What number...? Who takes...?</b>								
NC 2014	<b>Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction. Least significant digit is always dealt with first to establish if the exchange is needed.</b>			<b>Add and subtract numbers with up to 4 digits using the formal written method of columnar addition and subtraction where appropriate. Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</b>						
Developing Conceptual/ Procedural Understanding  Appendix 1: Place value models  Columns to be headed HTU	<p><b>Subtract mentally pairs of multiples of 100 using known facts</b></p> <p>600 – 200 = 400 because 6 – 2 = 4</p> <p><b>Remodelling strategy (keeping the difference the same)</b> 502 – 198</p> <p>504 – 200 = 304</p> <p><b>Re-arranging</b></p> <p>Use of apparatus to understand rearrangements, e.g. 55 as 40 and 15(not as part of calculations).</p> <p><b>Place value materials to represent calculations</b> Diennes and then place value counters.</p>	<p><b>Start with least significant digit - decomposition</b></p> <p>81 = 80 1</p> <p>- 57    50 7</p> <p>—    —</p> <p>81 = 70 11</p> <p>- 57    50 7</p> <p>24    20 4</p> <p>“1 subtract 7 is tricky so I will rearrange 81 into 70 and 11. 11 subtract 7 equals 4 and 70 subtract 50 equals 20. 20 and 4 make 24.”</p> <p>81 – 57 =</p> 	<p>40 to subtract 80 is tricky. I will exchange one hundred from 700 and make 140. 14 subtract 6 equals 8. 140 subtract 80 equals 60 and 600 subtract 0 equals 600.”</p> <p><b>Columnar subtraction</b></p> $\begin{array}{r} 6 \text{ } 10 \text{ } 1 \\ 7 \text{ } 8 \text{ } 4 \\ - 2 \text{ } 8 \text{ } 6 \\ \hline 4 \text{ } 6 \text{ } 8 \end{array}$ <p>Emphasis on language of place value, i.e. 14 units subtract 6 units, 14 tens subtract 8 tens, and 6 hundreds subtract 2 hundreds.</p> <p><b>Representing problems</b></p> <p>There are 386 pupils at Oak Primary. If 79 pupils have sandwiches, how many have dinners?</p> <table border="1" data-bbox="840 1380 1030 1428"> <tr><td>386</td></tr> <tr><td>?    79</td></tr> </table>	386	?    79	<p><b>Subtract mentally pairs of multiples of 1000 using known facts</b></p> <p>6000 – 2000= 4000 because 6 – 2 = 4</p> <p><b>Remodelling strategy (keeping the difference the same)</b> 3548 - 1998</p> <p>3550 – 2000 = 1550</p> <p><b>Find the difference strategy</b> 13.6 – 2.8 =</p>  <p>13.6 – 2.8 = 10.8</p> <p><b>Place value materials to represent calculations</b> Appendix 1.</p>	<p><b>Columnar subtraction</b> 2344 - 187</p> $\begin{array}{r} 2 \text{ } 3 \text{ } 4 \text{ } 4 \\ - 1 \text{ } 8 \text{ } 7 \\ \hline 2 \text{ } 1 \text{ } 5 \text{ } 7 \end{array}$ <p>6467 – 2684</p> $\begin{array}{r} 6 \text{ } 4 \text{ } 6 \text{ } 7 \\ - 2 \text{ } 6 \text{ } 8 \text{ } 4 \\ \hline 3 \text{ } 7 \text{ } 8 \text{ } 3 \end{array}$ <p><b>Columnar subtraction (decimals) in contexts such as money and measurement</b></p> <p>32.34 – 14.18</p> $\begin{array}{r} 3 \text{ } 2 \text{ } . \text{ } 3 \text{ } 4 \\ - 1 \text{ } 4 \text{ } . \text{ } 1 \text{ } 8 \\ \hline 1 \text{ } 8 \text{ } . \text{ } 1 \text{ } 6 \end{array}$	<p><b>Representing problems</b></p> <p>Check the answer to the following calculations using the inverse. Show all your working.</p> <p>2456- 734 = 1822</p> <table border="1" data-bbox="1646 845 1926 941"> <tr><td>2456</td></tr> <tr><td>1822    734</td></tr> </table>	2456	1822    734
386										
?    79										
2456										
1822    734										



	<p>81 becomes 70 and 11</p> <p>7 5 4   7 0 0   5 0   4 - 8 6   8 0   6 — — — — —</p> <p>7 5 4   6 0 0   1 4 0   1 4 - 8 6   8 0   6 6 6 8   6 0 0   6 0   8</p> <p>"It's tricky to take 6 from 4 and 80 from 50. I need to rearrange the number. I will exchange one ten from 50 which leaves 40 and makes 14 in the units."</p>				
Known facts	Derive and use <b>addition and subtraction</b> facts to 100, e.g. $33 + 67 = 100$ .	Derive and use <b>addition and subtraction</b> facts (for multiples of 10) to 1000, e.g. $330 + 670 = 1000$ .			
Essential knowledge	Subtract single digit bridging through boundaries	Subtract multiples of 10,100	Fluency of 2 digit - 2 digit	Subtract multiples of 10, 100 and 1000	
	Partition second number to subtract	Pairs of 100 (complements of 100)	Partition second number to subtract	Decimal subtraction from 10 or 1	
	Difference between	Subtract near multiples of 10 and 100 by rounding and adjusting	Difference between	Subtract near multiples by rounding and adjusting	
	Partition and recombine				



Year	5	6
<p>Layers of vocabulary</p>  <p><b>Appendix 1a</b> Beck's Tiers of Vocabulary</p> <p><b>Appendix 1b:</b> Vocabulary book</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>subtract, subtraction, take (away), minus, leave, ten less... one hundred less...difference between, half, halve, = equals, sign, is the same as tens boundary, hundreds boundary, inverse, units boundary, tenths boundary, exchange, carried digits, <b>How many are left/left over? How many fewer is...than...? How much less is...?</b></p> <p><b>Instructional vocabulary:</b></p> <p>put, place, arrange, rearrange, change, change over, adjusting, adjust split, separate</p> <p><b>NFER– language of tests and questions</b></p> <p>complete the sequence, circle the same as, draw four lines, circle the, circle the number that is not, circle two, circle two, write yes or no to a statement, circle all, write the, write the missing, circle the incorrect, show your method, show your working, circle three, by how much, calculate, estimate, shade, write the missing, use the diagram, complete the table, circle the number that is both, write a, b, c, d, label, true or false, order, draw a line, write the missing digits, circle true and false, tick two, <b>What number is...? Which is the closest? Which one of these must also...? Who gets the most? What is the total number?</b></p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>subtract, subtraction, take (away), minus, decrease, leave, difference between, half, halve, = equals, sign, is the same as tens boundary, hundreds boundary, units boundary, tenths boundary, inverse, <b>How many are left/left over? How many more/fewer is...than...? How much more/less is...?</b></p> <p><b>Instructional vocabulary:</b></p> <p>put, place, arrange, rearrange, change, change over, adjusting, adjust, split, separate, carry on, continue, repeat, predict, describe the pattern, describe the rule, find, find all, find different investigate, <b>What comes next?</b></p> <p><b>NFER– language of tests and questions</b></p> <p>write three, complete, draw the, explain why, write each number, what is, show your method, tick the, calculate, increase by, complete the tables, circle all, calculate, <b>What was the...? What is the difference? Which expression? How much? What is the difference? What are...? What could...? What number is? Which of these...?</b></p>
<p>NC 2014</p>	<p>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). 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>



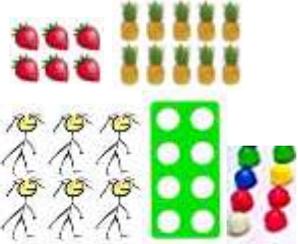
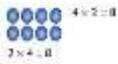
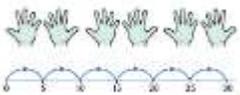
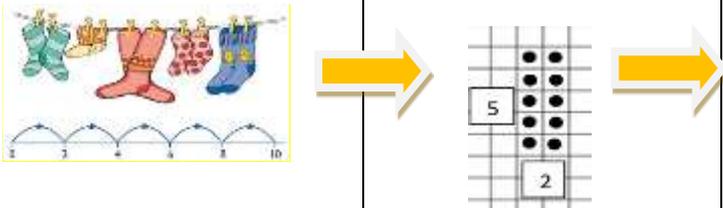
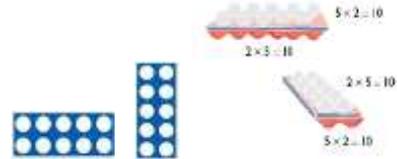
Developing Conceptual/ Procedural Understanding  Appendix 1: Place value models	<b>Columnar subtraction</b>		<b>Representing problems</b>		
	$\begin{array}{r} & & 2 & 3 & 1 \\ & & 5 & 2 & 3 & 4 \\ - & & 1 & 1 & 8 & 7 \\ \hline & & 5 & 1 & 1 & 5 & 7 \end{array}$ <p>Include calculations with 'empty columns'. 324.9 - 7.25</p> $\begin{array}{r} & 1 & 1 & 8 & 1 \\ & 3 & 2 & 4 & . & 9 & 0 \\ - & & 7 & . & 2 & 5 \\ \hline & 3 & 1 & 7 & . & 6 & 5 \end{array}$	<p>Kangchenjunga is the third highest mountain in the world at 28,169 feet above sea level. Lhotse is the fourth highest at 27,960 feet above sea level. Find the difference in heights mentally.</p>		<td> <b>Columnar subtraction</b>            Include calculations with up to 3 'empty columns'.  <math>128.7 - 3.014</math> <math display="block">\begin{array}{r} &amp; &amp; 6 &amp; 9 &amp; 1 \\ &amp; &amp; 1 &amp; 2 &amp; 8 &amp; . &amp; 7 &amp; 0 &amp; 0 \\ - &amp; &amp; &amp; 3 &amp; . &amp; 0 &amp; 1 &amp; 4 \\ \hline &amp; &amp; &amp; 1 &amp; 2 &amp; 5 &amp; . &amp; 6 &amp; 8 &amp; 6 \end{array}</math> <p><u>An example of a find the difference strategy</u></p> <math>122456 - 11999</math>  <u>+1 to each side of the equation</u>  <math>122457 - 12000</math> </td> <td> <b>Representing problems</b>            Katie was given the calculation below <math>47326 - 1900 =</math> She said "I will just take off 2000 then subtract another 100 so my answer is 45126." Is she correct? Would you use her method? Explain your answer         </td>	<b>Columnar subtraction</b> Include calculations with up to 3 'empty columns'. $128.7 - 3.014$ $\begin{array}{r} & & 6 & 9 & 1 \\ & & 1 & 2 & 8 & . & 7 & 0 & 0 \\ - & & & 3 & . & 0 & 1 & 4 \\ \hline & & & 1 & 2 & 5 & . & 6 & 8 & 6 \end{array}$ <p><u>An example of a find the difference strategy</u></p> $122456 - 11999$ <u>+1 to each side of the equation</u> $122457 - 12000$
Known facts	Derive and use addition and subtraction facts to 10 and 1, e.g. $3.3 + 6.7 = 10$ leads to $10 - 3.3 = 6.7$ and $0.33 + 0.67 = 1$ so $1 - 0.67 = 0.33$ . BIDMAS.		All the KS2 required facts. BIDMAS.		
Essential knowledge	Fluency of 2 digit - 2 digit including with decimals	Subtract multiples of 10, 100, 1000 and tenths	Fluency of 2 digit - 2 digit including with decimals	Subtract multiples of 10, 100, 1000, tenths and hundredths	
	Partition second number to subtract	Use number facts, bridging and place value	Partition second number to subtract	Use number facts, bridging and place value	
	Adjust numbers to subtract	Difference between	Adjust numbers to subtract	Difference between	
	Negative numbers, counting forwards and backwards through zero		Negative numbers, calculate intervals across zero		



**St. Mary's Calculation Policy KS1: MULTIPLICATION**

<p><b>EYFS</b></p> <p><b>Appendix 2:</b> Pupil target grids</p>	<p><b>Reception: ELG</b></p> <p>Numbers to 20: place them in order and say which number is one more or one less than a given number.</p> <p>Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer.</p> <p>They solve problems, <b>including doubling, halving and sharing.</b></p> <p><b>Exceeding:</b> Estimation and checking quantities by counting up to 20. <b>Combining groups of 2, 5 or 10 or sharing into equal groups.</b></p>	
<p><b>Year</b></p>	<p><b>1</b></p>	<p><b>2</b></p>
<p>Layers of vocabulary</p>  <p><b>Appendix 1a</b> Beck's Tiers of Vocabulary</p> <p><b>Appendix 1b:</b> Vocabulary book</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>count in ones, twos... tens... array, groups of, equal groups, odd, even</p> <p><b>Instructional vocabulary:</b></p> <p>carry on, continue, repeat, find, choose, collect, use, make, build, tell me, describe, pick out, talk about, explain, show me, read, write, record, <b>What comes next?</b></p> <p><b>NFER– language of tests and questions</b></p> <p>match, tick, draw, complete, write, circle, share, jumps, count on, use a ruler</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>lots of, groups of x, times, multiply, multiplied by, multiple of once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition, array, row, column, double, halve, share, share equally</p> <p><b>Instructional vocabulary:</b></p> <p>carry on, continue, repeat, predict, describe the pattern, describe the rule, find, find all, find different, investigate, <b>What comes next?</b></p> <p><b>NFER– language of tests and questions</b></p> <p>tick, match, count, tick two, circle, write, draw, complete, use these numbers, shade, write, make, choose, circle the three, complete, write, tick all, complete the number sentence, put a digit, <b>How many...?</b></p>



<p>NC 2014</p>	<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>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs.</p>	
<p>Developing Conceptual/ Procedural Understanding</p>	<p><b>Grouping</b></p>  <p>2 frogs on each lily pad</p> <p><b>GROUPING ITP</b></p> <p><i>Pictures to show 2 lots of 3 or 3 lots of 2 etc.</i></p> <p><b>Doubles</b></p>  <p>2 4 6</p>	<p><b>Arrays</b> (rectangular arrangements to show equal groups)</p>  	<p><b>Repeated addition</b></p>  <p>Introduce the x symbol once repeated addition is understood.</p> <p><b>Grouping</b></p>  <p>5 frogs on each lily pad <math>5 \times 3 = 15</math></p> <p><math>5 + 5 + 5 = 15</math></p> <p><math>3 + 3 + 3 + 3 + 3 = 15</math></p> <p><b>Arrays</b></p>  	<p><b>Commutativity</b></p>    <p><math>5 + 5 + 5 + 5 + 5 = 30</math>  <math>5 \times 6 = 30</math>      5 multiplied by 6      6 groups of 5      6 hops of 5</p> <p><b>Decision making</b></p> <p>How many number sentences can you write to describe this array? Can you use addition, multiplication and division?</p> 
		 <p><math>5 \times 2 = 10</math></p> <p><math>2 + 2 + 2 + 2 + 2 = 10</math></p> <p><math>5 + 5 = 10</math></p>	<p>Explain your answers.</p>  <p><math>5 \times 2 = 2 \times 5</math></p>	



St. Mary's Mathematics Skills Progression in **knowledge** and skills - Mathematics

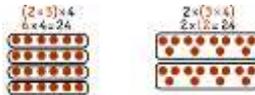
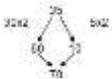
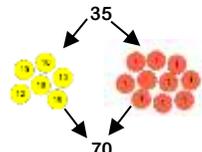
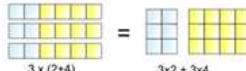
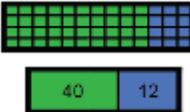
Known facts	Count in multiples of twos, fives and tens.		Recall and use $\times$ and $\div$ facts for the 2, 5 and 10 x tables, including recognising odd and even numbers.	
Essential Knowledge	Count in 2s	Doubles up to 10	2 x table	Doubles up to 20
	Count in 10s	Double multiples of 10	10 x table	Doubles of multiples of 5
	Count in 5s	Count in 2s, 5s and 10s	5x table	Count in 3s



**St. Mary's Calculation Policy KS2: MULTIPLICATION**

<p><b>KS1</b></p> <p><b>Appendix 2:</b> Pupil target grids</p>	<p><b>KS1</b></p> <p>Pupils should memorise and reason with numbers in 2, 5 and 10 times tables.</p> <p>They should see ways to represent odd and even numbers and know how they are represented in tables. This will help them to understand the pattern in numbers.</p> <p>Pupils should begin to understand multiplication as scaling in terms of double and half (e.g. that tower of cubes is double the height of the other tower).</p> <p>Commutative law shown on array.</p> <p>Repeated addition can be shown mentally on a number line.</p> <p>Inverse relationship between multiplication and division. Use an array to explore how numbers can be organised into groups.</p>	
<p>Year</p>	<p>3</p>	<p>4</p>
<p>Layers of vocabulary</p>  <p><b>Appendix 1a</b> Beck's Tiers of Vocabulary</p> <p><b>Appendix 1b:</b> Vocabulary book</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>lots of, groups of <math>\times</math>, times, multiply, multiplication, multiplied by multiple of, product once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition, array, row, column, double, halve, share, share equally, one each, two each, three each...</p> <p><b>Instructional vocabulary:</b></p> <p>carry on, continue, repeat, predict, describe the pattern, describe the rule, find, find all, find different, investigate, choose, decide, collect, <b>What comes next?</b></p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>lots of, groups of times, multiply, multiplication, multiplied by, multiple of, product once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition, array, row, column, double, halve, factor, multiple</p> <p><b>Instructional vocabulary:</b></p> <p>carry on, continue, repeat, predict, describe the pattern, describe the rule, pattern, puzzle, calculate, calculation, mental calculation, method, jotting, answer right, correct, wrong, number sentence sign, operation, symbol, equation, <b>What comes next? What could we try next? How did you work it out...?</b></p>



	<p><b>NFER – language of tests and questions</b>          estimate, write...in order, complete, circle, estimate, tick, draw, draw two, draw the arrow, show your working, use the, complete, shade, write in, true or false, tick two, circle all, use a ruler, write a possible, <b>What numbers could be? How many are left? What is next...? What is...? How many...? What number...? Which of these...?</b></p>			<p><b>NFER – language of tests and questions</b>          write, order, complete, draw three, write....in the boxes, show your working, use the method, write the missing, shade, write in order, tick, write your answer as..., write the letter (can be used more than once), describe, write one word, write your answer in, match, to make...you need, draw four, on which, calculate, write these numbers, use the coordinates to draw, estimate, in each box, write these values, circle the best, complete the table, round each number, draw one line, circle all, tick three, plot, check, <b>How many...? What is...? How much...? What number...? Who takes...?</b></p>																
NC 2014	<p>Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including 2 digit numbers times 1 digit numbers progressing to formal written methods.</p>			<p>Multiply 2 digit and 3 digit numbers by a 1 digit number using formal written layout. Solve problems involving multiplying and adding.</p>																
Developing Conceptual/ Procedural Understanding	<p><b>Building tables</b></p>  <p>For example, build tables using counting stick-forwards and backwards and with missing jumps</p> <p><b>Using known facts</b></p> <p>If <math>3 \times 2 = 6</math>, then <math>30 \times 2 = 60</math>, <math>60 \div 3 = 20</math> and <math>30 = 60 \div 2</math>.</p> <p><b>Associativity</b></p> <p><math>(2 \times 3) \times 4 = 2 \times (3 \times 4)</math></p> 	<p><b>Partitioning strategy to double</b></p> <p>Double 35</p>  <p><b>Place value materials to represent calculations</b> Place value counters</p>  <p><b>Partitioning</b> Informal recording of partitioned numbers</p> <p><math>15 \times 5 = 75</math></p> <p><math>10 \times 5 = 50</math></p> <p><math>5 \times 5 = 25</math></p>	<p><b>Grid method</b></p> <p><math>23 \times 8 =</math></p> <p><math>20 \times 8 = 160</math></p> <p><math>3 \times 8 = 24</math></p> <p><math>23 \times 8 = 184</math></p> <table border="1" data-bbox="840 877 974 925"> <tr><td>x</td><td>20</td><td>3</td></tr> <tr><td>8</td><td></td><td></td></tr> </table> <p><b>Short multiplication</b></p> <p>Expanded</p> <p>23</p> <p>x <u>  </u> 8</p> <p>24 (8x3)</p> <p><u>160</u> (8x20)</p> <p><u>184</u></p>	x	20	3	8			<p><b>Building tables</b></p>  <p>For example, build tables using counting stick-forwards and backwards and with missing jumps</p> <p><b>Using known facts</b></p> <p>If <math>2 \times 3 = 6</math> then <math>200 \times 3 = 600</math> and <math>600 \div 3 = 200</math></p> <p><b>Distributivity</b></p> <p><math>3 \times (2 + 4) = 3 \times 2 + 3 \times 4</math>          So the '3' can be 'distributed' across the '2 + 4' into 3 times 2 and 3 times 4</p>  <p>leading to <math>13 \times 4 = 10 \times 4 + 3 \times 4 = 52</math></p> 	<p><b>Place value materials to represent calculations</b> Place value counters</p> <p><math>346 \times 9</math></p> <p><math>300 \times 9 = 2700</math></p> <p><math>40 \times 9 = 360</math></p> <p><math>6 \times 9 = 54</math></p> <p><b>Grid method</b> (if needed for conceptual understanding)</p> <p><math>346 \times 9</math></p> <table border="1" data-bbox="1377 1061 1545 1109"> <tr><td>x</td><td>300</td><td>40</td><td>6</td></tr> <tr><td>9</td><td></td><td></td><td></td></tr> </table>	x	300	40	6	9				<p><b>Representing problems</b></p> <p>Multiply a number by itself and then make one factor one more and the other one less. What do you notice? Does this always happen?</p> <p>E.g. <math>4 \times 4 = 16</math>     <math>6 \times 6 = 36</math>  <math>5 \times 3 = 15</math>     <math>7 \times 5 = 35</math></p> <p>Try out more examples to prove your thinking.</p> <p>Place <math>&lt;</math>, <math>&gt;</math>, or <math>=</math> in these number sentences to make them correct:  <math>50 \times 4</math>   <math>4 \times 50</math>  <math>4 \times 50</math>   <math>40 \times 5</math>  <math>200 \times 5</math>   <math>3 \times 300</math></p>
x	20	3																		
8																				
x	300	40	6																	
9																				



	$27 \times 3 = 81$  $20 \times 3 = 60$  $7 \times 3 = 21$  "20 multiplied by 3 equals 60 and 7 multiplied by 3 equals 21. 60 add 21 equals 81."	<b>leading to compact</b>  $\begin{array}{r} 23 \\ \times \quad 8 \\ \hline 184 \\ 2 \end{array}$  <b>Representing problems</b>  A group of aliens live on Planet Xert. Tinions have three legs, Quinions have four legs. The group has 22 legs altogether. How many Tinions and Quinions might there be? Is there more than one solution?	<b>Short multiplication</b>  <b>Expanded</b>  $\begin{array}{r} 346 \\ \times \quad 9 \\ \hline 54 \quad (9 \times 6) \\ 360 \quad (9 \times 40) \\ \hline 2700 \quad (9 \times 300) \\ 3114 \end{array}$  <b>leading to compact</b>  $\begin{array}{r} 346 \\ \times \quad 9 \\ \hline 3114 \\ 45 \end{array}$	
Known facts	Recall and use $\times$ and $\div$ facts for the 3, 4 and 8 x tables.		Recall $\times$ and $\div$ facts for x tables up to $12 \times 12$ .	
Essential knowledge	Review 2x, 5x and 10x	Double 2 digit numbers	4x and 8x tables	10x bigger
	4x table	3x table	3x, 6x and 12x tables	Double larger numbers and decimals
	8 x table	6x table	3x and 9x tables	11x and 7x tables
Year	5		6	
Layers of vocabulary	<b>Basic to subject specific (Beck's Tiers):</b>  lots of, groups of times, multiply, multiplication, multiplied by multiple of, product once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition, array, row, column double, halve, share, share equally, factor, multiple, prime, composite		<b>Basic to subject specific (Beck's Tiers):</b>  lots of, groups of times, multiply, multiplication, multiplied by, multiple of, product once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition, array, row, column, double, halve, share, share equally, factor, multiple, prime, composite	
 <b>Appendix 1a</b> Beck's Tiers of Vocabulary				



<p><b>Appendix 1b:</b> Vocabulary book</p>	<p><b>Instructional vocabulary:</b></p> <p>carry on, continue, repeat, predict, describe the pattern, describe the rule, find, find all, find different, investigate, <b>What comes next?</b></p> <p><b>NFER– language of tests and questions</b> complete the sequence, circle the same as, draw four lines, circle the, circle the number that is not, circle two, circle two, write yes or no to a statement, circle all, write the, write the missing, circle the incorrect, show your method, show your working, circle three, who gets the most, by how much, calculate, estimate, shade, write the missing, use the diagram, complete the table, circle the number that is both, write a, b, c, d, label, true or false, order, draw a line, write the missing digits, circle true and false, tick two, <b>What number is? Which is the closest? Which one of these must also? What is the total number...?</b></p>		<p><b>Instructional vocabulary:</b></p> <p>carry on, continue, repeat, predict, describe the pattern, describe the rule, find, find all, find different, investigate, <b>What comes next?</b></p> <p><b>NFER– language of tests and questions</b> write three, complete, draw the, explain why, write each number, show your method, tick the, calculate, increase by, complete the tables, circle all, calculate, <b>What was the...? What is the difference? Which expression? How much...? What are...? What is...? What could...? What number is...? Which of these...?</b></p>											
<p>NC 2014</p>	<p>Multiply numbers up to 4 digits by a 1 or 2 digit number using a formal written method, including long multiplication for 2 digit numbers. Solve problems involving multiplication and division including using knowledge of factors and multiples, squares and cubes. Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. 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 2 digit whole number using the formal written method of long multiplication. Solve problems involving addition, subtraction, multiplication and division.</p>											
<p>Developing Conceptual/ Procedural Understanding</p>	<p><b>Building tables</b></p>  <p>For example, apply tables knowledge to multiples of 10, 100 and 1000 using counting stick- forwards and backwards and with missing jumps</p>	<p><b>Grid method</b> (if needed for conceptual understanding) <math>28 \times 27 =</math></p> <table border="1" data-bbox="546 1286 707 1369"> <tr> <td>x</td> <td>20</td> <td>8</td> </tr> <tr> <td>20</td> <td></td> <td></td> </tr> <tr> <td>7</td> <td></td> <td></td> </tr> </table>	x	20	8	20			7			<p><b>leading to compact</b></p> <p><b>Drop down</b></p> $\begin{array}{r} 28 \\ \times 27 \\ \hline 196 \\ 560 \\ \hline 756 \end{array}$	<p><b>Building tables</b></p>  <p>For example, apply tables knowledge to decimals using counting stick- forwards and backwards and with missing jumps</p> <p><b>Using known facts</b></p> <p>If <math>2 \times 3 = 6</math> then <math>0.2 \times 3 = 0.6</math> and <math>0.02 \times 3 = 0.06</math></p>	<p><b>If place value is secure, use grid method for decimal multiplication</b> <math>0.75 \times 6</math></p> <p><math>0.7 \times 6 = 4.2</math></p> <p><math>0.05 \times 6 = 0.3</math></p> <p><math>0.75 \times 6 = 4.5</math></p>
x	20	8												
20														
7														



	<p><b>Using known facts</b></p> <p>If <math>2 \times 3 = 6</math> then <math>2000 \times 3 = 6000</math> and</p> <p><math>200 \times 30 = 6000</math></p> <p><b>Place value materials to represent calculations</b>  <math>4346 \times 8 =</math></p> <p> <math>\times 8 = 3200</math> (4000)</p> <p> <math>\times 8 = 2400</math> (300)</p> <p> <math>\times 8 = 320</math> (40)</p> <p> <math>\times 8 = 48</math> (6)</p> <p><b>Short multiplication</b></p> <p>Use expanded method first if needed to build conceptual understanding</p> $\begin{array}{r} 4346 \\ \times \quad 8 \\ \hline 34768 \end{array}$ <p>2 3 4</p>	<p>Addition to be done mentally or across followed by column addition</p> <p><b>Long multiplication</b></p> <p>Expanded</p> $\begin{array}{r} 28 \\ \times 27 \\ \hline 56 \text{ (7x8)} \\ 140 \text{ (7x20)} \\ 160 \text{ (20x8)} \\ 400 \text{ (20x20)} \\ \hline 756 \end{array}$	<p>Extend to HTU x TU or ThHTU x TU as appropriate</p> <p><b>Representing problems</b></p> <p>40 cupcakes cost £3.60, how much do 20 cupcakes cost? How much do 80 cupcakes cost? How much do 10 cupcakes cost?</p>	<p><b>Long multiplication</b></p> <p>Use expanded method first if needed to build conceptual understanding</p> $\begin{array}{r} 5172 \\ \times \quad 27 \\ \hline 36204 \\ 103440 \\ \hline 139644 \end{array}$	<p><b>Make explicit links between decimals and money</b></p> <table border="1" data-bbox="1624 347 1816 408"> <tr> <td>x</td> <td>0.7</td> <td>0.05</td> </tr> <tr> <td>6</td> <td></td> <td></td> </tr> </table> <p><b>Representing problems</b></p> <p>Amy is given the calculation <math>5413 \times 600</math>. She says "I can do this without a written method." Write down the mental steps you think Amy could do.</p>	x	0.7	0.05	6		
x	0.7	0.05									
6											



St. Mary's Mathematics Skills Progression in **knowledge** and skills - Mathematics

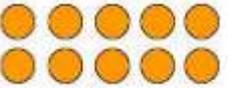
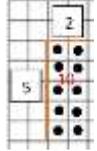
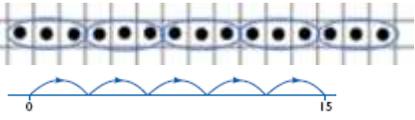
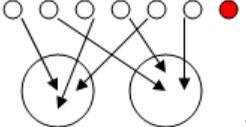
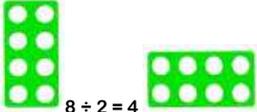
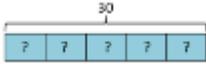
Known facts	<p>Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.</p> <p>Recall prime numbers up to 19.</p> <p>Recognise and use square and cube numbers and the notation for squared (<sup>2</sup>) and cubed (<sup>3</sup>) BIDMAS.</p>		<p>Identify common factors, common multiples and prime numbers.</p> <p>Recognise and use square and cube numbers and the notation for squared (<sup>2</sup>) and cubed (<sup>3</sup>) BIDMAS.</p>	
Essential knowledge	4x and 8x tables	100, 1000 times bigger	Multiplication facts up to 12 x 12	Partition to multiply mentally
	3x, 6x and 12x tables; 3x and 9x tables	10, 100, 1000 times smaller	Apply place value to derive multiplication facts, e.g. $3 \times 4 = 12$ so $3 \times 0.4 = 1.2$	Double larger numbers and decimals
	11x and 7x tables	Double larger numbers and decimals		



**St. Mary's Calculation Policy KS1: DIVISION**

<p><b>EYFS</b></p> <p><b>Appendix 2:</b> Pupil target grids</p>	<p><b>Reception: ELG 2018</b></p> <p>Numbers to 20: place them in order and say which number is one more or one less than a given number.</p> <p>Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer.</p> <p>They solve problems, including doubling, <b>halving and sharing</b>.</p> <p><b>Exceeding:</b> Estimation and checking quantities by counting up to 20. <b>Combining groups of 2, 5 or 10 or sharing into equal groups.</b></p>	
<p><b>Year</b></p>	<p><b>1</b></p>	<p><b>2</b></p>
<p>Layers of vocabulary</p>  <p><b>Appendix 1a</b> Beck's Tiers of Vocabulary</p> <p><b>Appendix 1b:</b> Vocabulary book</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>count in ones, twos... tens... share, groups of, equal groups, dividend, divisor, odd, even</p> <p><b>Instructional vocabulary:</b></p> <p>count out, share out, left, left over</p> <p><b>NFER– language of tests and questions</b></p> <p>match, tick, draw, complete, write, circle, share, jumps, count on, use a ruler</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>share, share equally, one each, two each, three each... group in pairs, threes... tens equal groups of ÷, divide, divided by, divided into left, left over, dividend, divisor</p> <p><b>Instructional vocabulary:</b></p> <p>tell me, describe, name, pick out, discuss, talk about, explain, explain your method, explain how you got your answer, give an example of... show how you...</p> <p><b>NFER– language of tests and questions</b></p> <p>tick, match, count, tick two, circle, write, draw, complete, use these numbers, shade, write, make, choose, circle the three, complete, write, tick all, complete the number sentence, put a digit, <b>How many?</b></p>



<p>NC 2014</p>	<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>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs.</p>	
<p>Developing Conceptual/ Procedural Understanding</p>	<p><b>Grouping/Sharing models</b> Using practical contexts and cross-curricular links (PE) such as socks and shoes; animals in the ark to get into groups. Sharing models such as sharing pieces of fruit.</p> <p><b>Sharing</b> into equal groups 6 frogs shared equally between 2 lily pads gives 3 frogs on each lily pad.</p>  <p>or</p> <p><b>Grouping</b> in equal groups 6 frogs grouped in 2s need 3 lily pads to sit on.</p>  <p><b>GROUPING ITP</b></p> <p>How many twos?</p>   	<p><b>Arrays – dividend - the answer from the multiplication calculation</b> (rectangular arrangements to show equal groups)</p>   <p><b>Arrays – dividend - the answer from the multiplication calculation</b></p> <p>How many groups of the divisor are in the dividend?</p> <p><b>E.g</b> How many groups of 5 are there in 10?</p> <p><math>5 \times 2 = 10</math> <math>10 \div 5 = 2</math></p>  <p><b>Decision making</b></p> <p>How many different ways can you arrange 12 buttons in equal groups?</p> 	<p><b>Grouping/Sharing models</b> Introduce the ÷ symbol</p>  <p>15 frogs shared equally between three lily pads <math>15 \div 3 = 5</math> or 15 frogs grouped in 5s need 3 lily pads to sit on <math>15 \div 5 = 3</math></p> <p><math>15 \div 3 = 5</math> groups of 3 (grouping)</p>  <p><math>15 \div 3 = 5</math></p>  <p>5 hops in 15. How big is each hop?</p> <p><math>20 \div 2 = 10</math></p>  <p>There are 7 cakes and 2 children. How many cakes will they get each? (Leftovers/remainders introduced)</p>  <p><math>7 \div 2 = 3r1</math></p>	<p><b>Arrays</b></p>  <p><math>8 \div 2 = 4</math> and <math>8 \div 4 = 2</math></p> <p><b>Repeated addition (to reach a given target)</b></p>  <p>There are 20 sweets in a bag. How many children can have 5 each?</p> <p><math>+5 \quad +5 \quad +5 \quad +5</math></p>  <p><b>Repeated subtraction (from a given quantity)</b></p> <p><b>Links to tables</b></p>  <p>Use language of division linked to tables using counting stick</p> <p><b>Representing problems</b></p> <p>Jane has 30 cakes. She wants to share them equally between 5 boxes. How many cakes should go in each box?</p>  <p><math>30 \div 5 = 6</math></p> <p>Number of cakes in each box = 6</p>

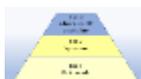


St. Mary's Mathematics Skills Progression in **knowledge** and skills - Mathematics

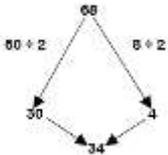
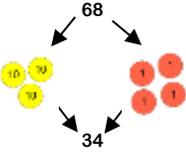
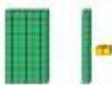
Known facts	Count in multiples of twos, fives and tens.		Recall and use $\times$ and $\div$ facts for the 2, 5 and 10 x tables, including recognising odd and even numbers.	
Essential Knowledge	Count back in 2s	Halves up to 10	Division facts (2 x table)	Halves up to 20
	Count back in 10s	Halve multiples of 10	Division facts (10 x table)	Review division facts (2 x, 5 x, 10 x tables)
	Count back in 5s	How many 2s? 5s? 10s?	Division facts (5 x table)	Count back in 3s



**St. Mary's Calculation Policy KS2: DIVISION**

<p><b>KS1</b></p> <p><b>Appendix 2:</b> Pupil target grids</p>	<p><b>KS1</b></p> <p>Noticing how counting in multiples of 2, 5 and 10 relates to the number of groups you have counted (introducing times tables) links to division.</p> <p>An understanding of the more you share between, the less each person will get (e.g. would you prefer to share these grapes between 2 people or 3 people? Why?).</p> <p>Secure understanding of grouping means you count the number of groups you have made. Whereas sharing means you count the number of objects in each group.</p>	
<p>Year</p>	<p>3</p>	<p>4</p>
<p>Layers of vocabulary</p>  <p><b>Appendix 1a</b> Beck's Tiers of Vocabulary</p> <p><b>Appendix 1b:</b> Vocabulary book</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>share, share equally one each, two each, three each... group in pairs, threes... tens equal groups of <math>\div</math>, divide, division, divided by, divided into left, left over, remainder</p> <p><b>Instructional vocabulary:</b></p> <p>calculate, work out, solve, investigate question, answer, check</p> <p><b>NFER – language of tests and questions</b></p> <p>estimate, write....in order, complete, circle, estimate, tick, draw, draw two, draw the arrow, show your working, use the, complete, shade, write in, true or false, tick two, circle all, use a ruler, write a possible, <b>What numbers could be...? How many are left? What is? How many? What number...? What is next? Which of these...?</b></p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>share, share equally one each, two each, three each... group in pairs, threes... tens equal groups of <math>\div</math>, divide, division, divided by, divided into left, left over, remainder, dividend, divisor</p> <p><b>Instructional vocabulary:</b></p> <p>calculate, work out, solve, investigate question, answer, check</p> <p><b>NFER – language of tests and questions</b></p> <p>write, order, complete, draw three, write....in the boxes, show your working, use the method, write the missing, shade, write in order, tick, write your answer as..., write the letter (can be used more than once), describe, write one word, write your answer in, match, to make...you need, draw four, on which, calculate, write these numbers, use the coordinates to draw, estimate, in each box, write these values, circle the best, complete the table, round each number, draw one line, circle all, tick three, plot, check, <b>How many? What is? How much...? What number...? Who takes...?</b></p>



<p>NC 2014</p>	<p>Write and calculate mathematical statements for <b>multiplication and division</b> using the multiplication tables that they know, <b>including 2 digit numbers times 1 digit numbers</b> progressing to formal written methods.</p>		<p>Practise to become fluent in the formal written method of short division with exact answers (see Mathematics Appendix 1).</p>	
<p>Developing Conceptual/Procedural Understanding</p>	<p><b>Links to tables</b></p>  <p>For example, use language of division linked to tables using counting stick</p> <p><b>Using known facts</b></p> <p>If <math>3 \times 2 = 6</math>, then <math>30 \times 2 = 60</math>, <math>60 \div 3 = 20</math> and</p> <p><math>30 = 60 \div 2</math>.</p> <p><b>Partitioning strategy to halve</b></p> <p>Halve 68</p>  	<p><b>Place value materials to represent calculations</b></p> <p>Place value counters to build the dividend.</p> <p><math>72 \div 3 =</math></p>  <p>72 is made up of 60 and 12 using multiples of 3.</p>  <p><math>60 \div 3 = 20</math>    <math>12 \div 3 = 4</math></p> <p><b>Short division</b></p> <p><math>72 \div 3 =</math></p> $\begin{array}{r} 24 \\ 3 \overline{) 72} \end{array}$ <p>'72 divided by 3. 7 tens shared equally between 3 is 2 with a remainder of 1 ten. Exchange the 1 ten for 10 units. I now have 12 units which shared equally between 3 is 4. The answer is 24.'</p>	<p><b>Links to tables</b></p>  <p>For example, use language of division linked to tables using counting stick</p> <p><b>Using known facts</b></p> <p>If <math>2 \times 3 = 6</math> then <math>200 \times 3 = 600</math> and <math>600 \div 3 = 200</math></p> <p><b>Rearranging the dividend to find multiples of the divisor.</b></p> <p><math>69 \div 3 =</math></p> <p>'What do I know about the 3 x tables?'</p> <p>"I know <math>3 \times 10 = 30</math> and <math>3 \times 3 = 9</math>."</p> $\begin{array}{r} 30 \quad 30 \quad 9 \\ \downarrow \quad \downarrow \quad \downarrow \\ 10 \quad 10 \quad 3 \end{array}$ <p><math>69 \div 3 = 23</math></p> $\begin{array}{r} 23 \\ 3 \overline{) 69} \end{array}$	<p><b>Place value materials to represent calculations</b></p> <p><b>Short division</b></p> <p><math>372 \div 6 =</math></p> $\begin{array}{r} 62 \\ 6 \overline{) 372} \end{array}$ <p>'372 divided by 6. 3 hundreds cannot be shared equally between 6, so exchange the hundreds for 30 tens. I now have 37 tens which shared equally between 6 is 6 with a remainder of 1 ten. Exchange the ten for 10 units. I now have 12 units which shared equally between 6 is 2. The answer is 62.'</p> <p><b>Representing problems – Questioning for greater depth</b></p> <p>Alan says that the solution to <math>186 \div 4</math> can be written as '46 remainder 2' or as '46.5'. Do you agree? Explain your answer.</p> $\begin{array}{r} 24 \text{ r } 1 \\ 4 \overline{) 186} \end{array}$



	<p><b>Rearranging the dividend to find multiples of the divisor.</b></p> <p><math>48 \div 3 =</math></p> <p>'What do I know about the 3 x tables?'</p> <p>"I know <math>3 \times 10 = 30</math> and <math>3 \times 6 = 18</math>."</p> <p style="text-align: center;"> <math>\begin{array}{cc} 30 &amp; 18 \\ \downarrow &amp; \downarrow \\ 10 &amp; 6 \end{array}</math> </p> <p><math>48 \div 3 = 16</math></p>	<p><b>Representing problems</b></p> <p>Andy says 'I can use my three times table to work out <math>180 \div 3</math>'. Explain what Andy could do to work out this calculation.</p>		
Known facts	Recall and use <b>x and <math>\div</math></b> facts for the 3, 4 and 8 x tables.		Recall <b>x and <math>\div</math></b> facts for x tables up to 12 x 12.	
Essential knowledge	Review division facts (2 x, 5 x and 10 x tables)	Halve 2 digit numbers	Division facts (4x and 8x tables)	10x smaller
	Division facts (4 x table)	Division facts (3 x table)	Division facts (3 x, 6 x and 12 x tables)	Halve larger numbers and decimals
	Division facts (8 x table)	Division facts (6 x table)	Division facts (3 x and 9 x tables)	Division facts (11 x and 7 x tables)



Year	5	6
<p>Layers of vocabulary</p>  <p><b>Appendix 1a</b> Beck's Tiers of Vocabulary <b>Appendix 1b:</b> Vocabulary book</p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>equal groups of, divide, division, divided by, divided into, remainder, factor, quotient, divisible by inverse</p> <p><b>Instructional vocabulary:</b></p> <p>calculate, work out, solve, investigate, question, answer, check, same, different missing number/s, number facts, number pairs, number bonds, greatest value, least value</p> <p><b>NFER– language of tests and questions</b></p> <p>complete the sequence, circle the same as, draw four lines, circle the, circle the number that is not, circle two, circle two, write yes or no to a statement, circle all, write the, write the missing, circle the incorrect, show your method, show your working, circle three, by how much, calculate, estimate, shade, write the missing, use the diagram, complete the table, circle the number that is both, write a, b, c, d, label, true or false, order, draw a line, write the missing digits, circle true and false, tick two, <b>What number is? Which is the closest? Which one of these must also...? Who gets the most...? What is the total number?</b></p>	<p><b>Basic to subject specific (Beck's Tiers):</b></p> <p>equal groups of, divide, division, divided by, divided into, remainder, factor, quotient, divisible by inverse, remainders as fractions or decimals</p> <p><b>Instructional vocabulary:</b></p> <p>calculate, work out, solve, investigate, question, answer, check, same, different missing number/s, number facts, number pairs, number bonds, greatest value, least value</p> <p><b>NFER– language of tests and questions</b></p> <p>write three, complete, draw the, explain why, what are, write each number, show your method, tick the, calculate, increase by, complete the tables, circle all, calculate, <b>What was the...? What is the difference? Which expression? How much? What is? What could? What number is? Which of these...?</b></p>
<p>NC 2014</p>	<p>Divide numbers up to 4 digits by a 1 digit number using the formal written method of short division and interpret remainders appropriately for the context (as remainders, as fractions, as decimals or by rounding, e.g. <math>98 \div 4 = 24 \text{ r}2 = 24 \frac{1}{2} = 24.5 \approx 25</math>).</p> <p>Solve problems involving <b>multiplication and division</b> including using knowledge of factors and multiples, squares and cubes. Solve problems involving <b>addition, subtraction, multiplication and division</b> and a combination of these, including understanding the meaning of the equals sign. Solve problems involving <b>multiplication and division</b> including scaling by simple fractions and problems involving simple rates.</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 to the context.</p> <p>Divide numbers up to 4 digits by a 2 digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.</p> <p>Solve problems involving <b>addition, subtraction, multiplication and division</b>.</p>



Developing Conceptual/ Procedural Understanding

**Using known facts**  
 If  $6 \div 2 = 3$  then  $6000 \div 2 = 3000$  and  
 $6000 \div 20 = 300$

**Place value materials to represent calculations**  
 $483 \div 7 =$

100    10    1

**Short division**  
 $483 \div 7 =$

0 6 9 r1

7 | 4 8 3

“484 divided by 7. 4 hundreds cannot be shared equally between 7, so exchange the hundreds for 40 tens. I now have 48 tens which shared equally between 7 is 6 with a remainder of 6 tens. Exchange the 6 tens for 60 units, we now have 64 units. 64 shared equally between 7 equals 9 remainder 1. The answer is 69 r1.”

**Interpreting remainders**  
 $17 \div 5$   
 “What do I know? 17 is not a multiple of 5.”

$3 \underline{2} = 3.4$   
 5

From knowledge of decimal/fraction equivalents or by converting  $\frac{3}{5}$  into  $\frac{6}{10}$ .

Examples:

17 | 581  $\div$  7 =

581  $\div$  7 could be calculated by the formal written method of short division or it could be calculated by rearranging the dividend, using known facts, into 560 and 21.

**Using known facts**  
 If  $6 \div 2 = 3$  then  $6 \div 0.2 = 30$  and  
 $6 \div 0.02 = 300$

**Short division**  
 $97.6 \div 5 =$

1 9 . 5 2

5 | 9 7 . 6 0

“97.6 divided by 5. 9 tens shared equally between 5 is 1 with a remainder of 4 tens. Exchange the ten for 10 units. I now have 47 units which shared equally between 5 is 9 with a remainder of 2 units. Exchange the 2 units for 20 tenths, we now have 26 tenths. 26 shared equally between 5 equals 5 with a remainder of 1 tenth. Extend the dividend with a 0 in the hundredths column. Exchange the tenth for 10 hundredths. 10 shared equally between 5 equals 2. The answer is 19.52.”

**Long division**  
 (thinking not generally recorded)  
 $384 \div 16 =$

1	16
2	32
4	64
5	80
8	128
10	160

 “What do I know about the divisor?”  
 Record partial tables.

With questions of this type where the divisor is close to a number linked to the times tables, encourage the children to use known facts and adjustment to set up the partial tables.

		Adjust →	
1	60	1	59
2	120	2	118
3	240	3	236
4	300	4	295
5	480	5	472
6	600	6	590

Factorising - 35 can be divided by 5 and 7.

**Representing problems**  
 Megan divides 500 by 8 and gets the answer 62r4. She re writes it as  $62 \text{ r } 1/2$ . Is she right? Explain your answer.



		<p><b>Representing problems</b></p> <p>Correct the errors in the calculation below. Explain the error. <math>266 \div 5 = 73.1</math></p> $\begin{array}{r} 073r1 \\ 5 \overline{) 23616} \end{array}$	$\begin{array}{r} 24 \\ 16 \overline{) 384} \\ \underline{-32} \phantom{0} \\ 64 \\ \underline{-64} \\ 0 \end{array}$ <p>(38 tens <math>\div</math> 16 = 2 r6; <math>2 \times 16 = 32</math>)          (bring the 4 down)          (64 units <math>\div</math> 16 = 4)          (no remainder)</p>	
Known facts	Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Recall prime numbers up to 19.		Identify common factors, common multiples and prime numbers.	
Essential knowledge	Division facts (4 x and 8 x tables)	100, 1000 times smaller	Division facts up to 12 x 12	Halve larger numbers and decimals
	Division facts (3 x, 6 x and 12 x tables; 3 x and 9 x tables)	Partition to divide mentally	Apply place value to derive division facts, e.g. $12 \div 3 = 4$ so $1.2 \div 3 = 0.4$	Partition to divide mentally including decimals
	Division facts (11 x and 7 x tables)	Halve larger numbers and decimals		
	Test divisibility		Test divisibility	



### Mathematics: Planning and Assessment from National Curriculum Year 1

Autumn STEP 16 E1			Spring STEP 17 D1			Summer STEP 18 S1		
Entering	Developing	Secure	Entering	Developing	Secure	Entering	Developing	Secure
3 <b>D30-50</b>	5 <b>D40-60</b>	7 (4 on KPIs) <b>E1</b>	5 <b>D40-60</b>	7 <b>E1</b>	14 + 7 on KPIs <b>D1</b>	7 <b>E1</b>	14 <b>D1</b>	22 (10 on KPIs) <b>S1</b>

Number & Place Value	Addition & Subtraction	Multiplication & Division	Fractions	Measurement	Geometry: Properties of Shapes
<ul style="list-style-type: none"> <li>❖ <u>Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.</u></li> <li>❖ <u>Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens.</u></li> <li>❖ <u>Given a number, identify one more and one less.</u></li> <li>❖ 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.</li> <li>❖ Read and write numbers</li> </ul>	<ul style="list-style-type: none"> <li>❖ Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.</li> <li>❖ <u>Represent and use number bonds and related subtraction facts within 20.</u></li> <li>❖ Add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>❖ Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and</li> </ul>	<ul style="list-style-type: none"> <li>❖ 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.</li> </ul>	<ul style="list-style-type: none"> <li>❖ <u>Recognise, find and name a half as one of two equal parts of an object, shape or quantity.</u></li> <li>❖ Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li> </ul>	<p><i>Compare, describe and solve practical problems for:</i></p> <ul style="list-style-type: none"> <li>❖ <u>lengths and heights</u> [for example, long/short, longer/shorter, tall/short, double/half];</li> <li>❖ <u>mass/weight</u> [for example, heavy/light, heavier than, lighter than];</li> <li>❖ <u>capacity and volume</u> [for example, full/empty, more than, less than, half, half full, quarter];</li> <li>❖ <u>time</u> [for example, quicker, slower, earlier, later].</li> </ul> <p><i>Measure and begin to record the following:</i></p> <ul style="list-style-type: none"> <li>❖ lengths and heights;</li> <li>❖ mass/weight;</li> <li>❖ capacity and volume;</li> <li>❖ time (hours, minutes, seconds).</li> </ul> <ul style="list-style-type: none"> <li>❖ Recognise and know the value of different denominations of coins and notes.</li> <li>❖ Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening].</li> <li>❖ Recognise and use language relating to dates, including days of the week, weeks, months and years.</li> <li>❖ <u>Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.</u></li> </ul>	<p><i>Recognise and name common 2-D and 3-D shapes, including:</i></p> <ul style="list-style-type: none"> <li>❖ <u>2-D shapes</u> [for example, rectangles (including squares), circles and triangles];</li> <li>❖ <u>3-D shapes</u> [for example, cuboids (including cubes), pyramids and spheres].</li> </ul>
					<b>Geometry: Position &amp; Direction</b>
					<ul style="list-style-type: none"> <li>❖ Describe position, direction and movement, including whole, half, quarter and three-quarter turns.</li> </ul>



Steps 19 to 21						Mathematics: Planning and Assessment from National Curriculum Year 2			43	13 KPIs
Autumn STEP 19 E2			Spring STEP 20 D2			Summer STEP 21 S2				
Entering	Developing	Secure	Entering	Developing	Secure	Entering	Developing	Secure		
4 E1	7 D1	11 ( 6 on KPIs) E2	7 D1	11 E2	23 ( 9 on KPIs)	11 E2	23 D2	34 (13 on KPIs) S2		

Number & Place Value	Addition & Subtraction	Multiplication & Division	Measurement	Geometry: Properties of Shapes
<ul style="list-style-type: none"> <li>Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.</li> <li>Recognise the place value of each digit in a two-digit number (tens, ones).</li> <li>Identify, represent and estimate numbers using different representations, including the number line.</li> <li>Compare and order numbers from 0 up to 100; use &lt;, &gt; and = signs.</li> <li>Read and write numbers to at least 100 in numerals and in words.</li> <li>Use place value and number facts to solve problems.</li> </ul>	<p><i>Solve problems with addition and subtraction:</i></p> <ul style="list-style-type: none"> <li>Using concrete objects and pictorial representations, including those involving numbers, quantities and measures;</li> <li>Applying their increasing knowledge of mental and written methods.</li> </ul> <p><i>Recall and use addition and subtraction facts to 20 and 100:</i></p> <ul style="list-style-type: none"> <li>fluently up to 20;</li> <li>related facts to 100.</li> </ul> <p><i>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</i></p> <ul style="list-style-type: none"> <li>a two-digit number and ones;</li> <li>a two-digit number and tens;</li> <li>two two-digit numbers;</li> <li>adding three one-digit numbers.</li> </ul> <ul style="list-style-type: none"> <li>Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.</li> <li>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</li> </ul>	<ul style="list-style-type: none"> <li>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.</li> <li>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (=) signs.</li> <li>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.</li> <li>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</li> </ul>	<p><i>Choose and use appropriate standard units to estimate and measure to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels:</i></p> <ul style="list-style-type: none"> <li>length/height in any direction (m/cm);</li> <li>mass (kg/g);</li> <li>temperature (<math>^{\circ}</math>C);</li> <li>capacity (litres/ml).</li> </ul> <ul style="list-style-type: none"> <li>Compare and order lengths, mass, volume/capacity and record the results using &gt;, &lt; and =.</li> <li>Recognise and use symbols for pounds (£) and pence (p);</li> <li>Combine amounts to make a particular value.</li> <li>Find different combinations of coins that equal the same amounts of money.</li> <li>Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.</li> <li>Compare and sequence intervals of time.</li> <li>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.</li> <li>Know the number of minutes in an hour and number of hours in a day.</li> </ul>	<ul style="list-style-type: none"> <li>Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.</li> <li>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</li> <li>Identify 2-D shapes on the surface of 3-D shapes [for example, a circle on a cylinder and a triangle on a pyramid].</li> <li>Compare and sort common 2-D and 3-D shapes and everyday objects.</li> </ul>
				Geometry: Position & Direction
				<ul style="list-style-type: none"> <li>Order and arrange combinations of mathematical objects in patterns and sequences.</li> <li>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</li> </ul>
				Statistics
				<ul style="list-style-type: none"> <li>Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.</li> <li>Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.</li> <li>Ask and answer questions about totalling and comparing categorical data.</li> </ul>



Mathematics: Planning and Assessment from National Curriculum Year 3								
Autumn STEP 22 E3			Spring STEP 23 D3			Summer STEP 24 S3		
Entering	Developing	Secure	Entering	Developing	Secure	Entering	Developing	Secure
3 E2	6 D2	11 ( 5 on KPIs) E3	6 D2	11 E3	23 (12 on KPIs) D3	11	23 D3	34 (18 on KPIs) S3
Number & Place Value	Addition & Subtraction	Multiplication & Division	Fractions	Measurement	Geometry: Properties of Shapes	Statistics		
<ul style="list-style-type: none"> <li>Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.</li> <li>Recognise the place value of each digit in a three-digit number (hundreds, tens, ones).</li> <li>Compare and order numbers up to 1000.</li> <li>Identify, represent and estimate numbers using different representations.</li> <li>Read and write numbers up to 1000 in numerals and in words.</li> <li>Solve number problems and practical problems involving these ideas.</li> </ul>	<p><i>Add and subtract numbers mentally, including:</i></p> <ul style="list-style-type: none"> <li>a three-digit number and ones;</li> <li>a three-digit number and tens;</li> <li>a three-digit number and hundreds.</li> </ul> <ul style="list-style-type: none"> <li>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.</li> <li>Estimate the answer to a calculation and use inverse operation to check answers.</li> <li>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</li> </ul>	<ul style="list-style-type: none"> <li>Recall and use multiplication and division facts for the 3x table.</li> <li>Recall and use multiplication and division facts for the 4x table.</li> <li>Recall and use multiplication and division facts for the 8x table.</li> <li>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.</li> <li>Solve problems, including missing number problems, involving multiplication and division, including positive integers scaling problems and correspondence problems in which n objects are connected to m objects.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.</li> <li>Recognise and use fractions as numbers: unit fractions (numerator of 1) and non-unit fractions with small denominators.</li> <li>Recognise and show, using diagrams, equivalent fractions with small denominators.</li> <li>Add and subtract fractions with the same denominator within one whole [for example, <math>\frac{5}{7} + \frac{1}{7} = \frac{6}{7}</math>].</li> <li>Compare and order unit fractions, and fractions with the same denominators.</li> <li>Solve problems that involve all of the above.</li> </ul>	<ul style="list-style-type: none"> <li>Measure, compare, add and subtract lengths (m/cm/mm);</li> <li>Measure, compare, add and subtract mass (kg/g);</li> <li>Measure, compare, add and subtract volume/capacity (l/ml).</li> <li>Measure the perimeter of simple 2-D shapes.</li> <li>Add and subtract amounts of money to give change, using both £ and p in practical contexts.</li> </ul> <p><i>Tell and write the time from:</i></p> <ul style="list-style-type: none"> <li>an analogue clock and 12-hour and 24-hour clocks;</li> <li>an analogue clock, including using Roman numerals from I to XII.</li> </ul> <ul style="list-style-type: none"> <li>Estimate and read time with increasing accuracy to the nearest minute.</li> <li>Record and compare time in terms of seconds, minutes and hours</li> <li>Use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight.</li> <li>Know the number of seconds in a minute and the number of days in each month, year and leap year</li> <li>Compare durations of events [for example to calculate the time taken by particular events or tasks].</li> </ul>	<ul style="list-style-type: none"> <li>Draw 2-D shapes and make 3-D shapes using modelling materials.</li> <li>Recognise 3-D shapes in different orientations and describe them.</li> <li>Recognise angles as a property of shape or a description of a turn.</li> <li>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 whether angles are greater than or less than a right angle.</li> <li>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</li> </ul>	<ul style="list-style-type: none"> <li>Interpret and present data using bar charts, pictograms and tables.</li> <li>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.</li> </ul>		



**Mathematics: Planning and Assessment from National Curriculum Lower Key Stage Year 4**

Autumn STEP 25 E4			Spring STEP 26 D4			Summer STEP 27 S4		
Entering	Developing	Secure	Entering	Developing	Secure	Entering	Developing	Secure
5 <b>E3</b>	8 <b>D3</b>	12 (5 on KPIs) <b>E4</b>	8 <b>D3</b>	12 <b>E4</b>	23 (10 on KPIs) <b>D4</b>	12 <b>E4</b>	23 <b>D4</b>	34 (15 on KPIs) <b>S4</b>

Number & Place Value	Addition & Subtraction	Multiplication & Division	Fractions (including decimals)	Measurement
<ul style="list-style-type: none"> <li>Count in multiples of 6, 7, 9, 25 and 1000.</li> <li>Find 1000 more or less than a given number.</li> <li>Count backward through zero to include <u>negative numbers</u>.</li> <li>Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones).</li> <li>Order and compare numbers beyond 1000.</li> <li>Identify, represent and estimate numbers using different representations.</li> <li>Round any number to the nearest 10, 100 or 1000.</li> <li>Solve number and practical problems that involve all of the above and with increasingly large positive numbers.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.</li> <li>Estimate and use inverse operations to check answers to a calculation.</li> <li>Solve addition and subtraction <u>two-step problems</u> in contexts, <u>deciding which operations and methods to use and why</u>.</li> </ul>	<ul style="list-style-type: none"> <li>Recall <u>multiplication and division facts for multiplication tables up to 12 x 12</u>.</li> <li>Use <u>place value, known and derived facts to multiply and divide mentally</u>, including:               <ul style="list-style-type: none"> <li>multiplying by 0 and 1;</li> <li>dividing by 1;</li> <li>multiplying together three numbers.</li> </ul> </li> <li>Recognise and use factor pairs and commutativity in mental calculations.</li> <li>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</li> <li>Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integers scaling problems and harder correspondence problems such as <i>n</i> objects are connected to <i>m</i> objects.</li> </ul>	<ul style="list-style-type: none"> <li>Recognise and show, using diagrams, families of <u>common equivalent fractions</u>.</li> <li>Count up and down in hundredths; recognise that <u>hundredths arise when dividing an object by one hundred and dividing tenths by ten</u>.</li> <li>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.</li> <li>Add and subtract fractions with the same denominator.</li> <li>Recognise and write decimal equivalents of any number of tenths or hundredths.</li> <li>Recognise and write decimal equivalents to <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, <math>\frac{3}{4}</math>.</li> <li>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.</li> <li>Round decimals with one decimal place to the <u>nearest whole number</u>.</li> <li>Compare numbers with the same number of decimal places up to two decimal places.</li> <li>Solve <u>simple measure and money problems involving fractions and decimal to two decimal places</u>.</li> </ul>	<ul style="list-style-type: none"> <li>Convert between different units of measure [for example, kilometre to metre; hour to minute].</li> <li>Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.</li> <li>Find the area of rectilinear shapes by counting squares.</li> <li>Estimate, compare and calculate different measures, including money in pounds and pence.</li> </ul> <p style="text-align: center;"><b>Geometry: Properties of Shapes</b></p> <ul style="list-style-type: none"> <li>Compare and classify <u>geometric shapes, including quadrilaterals and triangles, based on their properties and sizes</u>.</li> <li>Identify acute and obtuse angles and compare and order angles up to two right angles by size.</li> </ul> <p style="text-align: center;"><b>Geometry: Position &amp; Direction</b></p> <ul style="list-style-type: none"> <li>Describe positions on a 2-D grid as coordinates in the first quadrant.</li> <li>Describe movements between positions as translations of a given unit to the left/right and up/down.</li> </ul> <p style="text-align: center;"><b>Statistics</b></p> <ul style="list-style-type: none"> <li>Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.</li> </ul>



Mathematics: Planning and Assessment from National Curriculum Year 5								
Autumn STEP 28 E5			Spring STEP 29 D5			Summer STEP 30 S5		
Entering	Developing	Secure	Entering	Developing	Secure	Entering	Developing	Secure
5	10	14 (6 on KPIs) E5	10	19	28 (12 on KPIs) D5	22	32	42 + 17 on KPIs
Number & place Value		Addition & Subtraction	Multiplication & Division		Fractions (including decimals & %)	Measurement	Geometry: Properties of Shapes	
<ul style="list-style-type: none"> <li>❖ <u>Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit.</u></li> <li>❖ Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.</li> <li>❖ <u>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.</u></li> <li>❖ Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.</li> <li>❖ Solve number problems and practical problems that involve all of the above.</li> <li>❖ Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</li> </ul>		<ul style="list-style-type: none"> <li>❖ <u>Add and subtract whole numbers with more than 4 digits.</u></li> <li>❖ Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).</li> <li>❖ <u>Add and subtract numbers mentally with increasingly large numbers (example, 12462 – 2300 = 10 162)</u></li> <li>❖ Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</li> <li>❖ Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> </ul>	<ul style="list-style-type: none"> <li>❖ <u>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</u></li> <li>❖ Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.</li> <li>❖ Establish whether a number up to 100 is prime and recall prime numbers up to 19.</li> <li>❖ 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.</li> <li>❖ Multiply and divide numbers mentally drawing upon known facts.</li> <li>❖ 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.</li> <li>❖ Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.</li> <li>❖ Recognise and use square numbers and cube numbers, and the notation for squared (<sup>2</sup>) and cubed (<sup>3</sup>).</li> <li>❖ <u>Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.</u></li> <li>❖ Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.</li> <li>❖ <u>Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.</u></li> </ul>		<ul style="list-style-type: none"> <li>❖ <u>Compare and order fractions whose denominators are all multiples of the same number.</u></li> <li>❖ Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.</li> <li>❖ Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements &gt; 1 as a mixed number [for example, <math>\frac{7}{5} = 1\frac{2}{5} = 1\frac{4}{5}</math>].</li> <li>❖ Add and subtract fractions with the same denominator and denominators that are multiples of the same number.</li> <li>❖ Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.</li> <li>❖ <u>Read and write decimal numbers as fractions [for example, 0.71 = <math>\frac{71}{100}</math>].</u></li> <li>❖ Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.</li> <li>❖ Round decimals with two decimal places to the nearest whole number and to one decimal place.</li> <li>❖ <u>Read, write, order and compare numbers with up to three decimal places.</u></li> <li>❖ Solve problems involving number up to three decimal places.</li> <li>❖ 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.</li> <li>❖ <u>Solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{3}{5}</math> and those fractions with a denominator of a multiple of 10 or 25.</u></li> </ul>	<ul style="list-style-type: none"> <li>❖ <u>Convert between different units of metric measure (for example, kilometre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre).</u></li> <li>❖ Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.</li> <li>❖ <u>Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</u></li> <li>❖ <u>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>).</u></li> <li>❖ Estimate the area of irregular shapes.</li> <li>❖ Estimate volume [for example, using 1 cm<sup>3</sup> blocks to build cuboids (including cubes)] and capacity [for example, using water].</li> <li>❖ Solve problems involving converting between units of time.</li> <li>❖ Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.</li> <li>❖ Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.</li> <li>❖ <u>Draw given angles, and measure them in degrees (°).</u></li> </ul> <p><i>Identify:</i></p> <ul style="list-style-type: none"> <li>❖ angles at a point and one whole turn (total 360°);</li> <li>❖ angles at a point on a straight line and <math>\frac{1}{2}</math> a turn (total 180°);</li> <li>❖ <del>other</del> multiples of 90°.</li> </ul> <li>❖ Use the properties of rectangles to deduce related facts and find missing lengths and angles.</li> <li>❖ <u>Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</u></li>	
							<b>Geometry: Position &amp; Direction</b>	
							<ul style="list-style-type: none"> <li>❖ 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.</li> </ul>	
							<b>Statistics</b>	
							<ul style="list-style-type: none"> <li>❖ Solve comparison, sum and difference problems using information presented in a line graph.</li> <li>❖ <u>Complete, read and interpret information in tables, including timetables.</u></li> </ul>	



Mathematics: Planning and Assessment from National Curriculum Year 6									
Autumn STEP 31 E6			Spring STEP 32 D6			Summer STEP 33 S6			
Entering	Developing	Secure	Entering	Developing	Secure	Entering	Developing	Secure	
20 E5	30 D5	50 (11 on KPIs) E6	30 D5	50 E6	70 (22 on KPIs) D6	E6	70 D6	90 (34KPIs) S6	
Number & place Value		Addition & Subtraction		Multiplication & Division		Fractions (including decimals & %)		Measurement	Geometry: Properties of Shapes
<ul style="list-style-type: none"> <li>❖ Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit.</li> <li>❖ Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.</li> <li>❖ Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.</li> <li>❖ Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.</li> <li>❖ Solve number problems and practical problems that involve all of the above.</li> <li>❖ Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</li> </ul>		<ul style="list-style-type: none"> <li>❖ Add and subtract whole numbers with more than 4 digits.</li> <li>❖ Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).</li> <li>❖ Add and subtract numbers mentally with increasingly large numbers (example, <math>12462 - 2300 = 10162</math>).</li> <li>❖ Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</li> <li>❖ Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> </ul>		<ul style="list-style-type: none"> <li>❖ Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</li> <li>❖ Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.</li> <li>❖ Establish whether a number up to 100 is prime and recall prime numbers up to 19.</li> <li>❖ 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.</li> <li>❖ Multiply and divide numbers mentally drawing upon known facts.</li> <li>❖ 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.</li> <li>❖ Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.</li> <li>❖ Recognise and use square numbers and cube numbers, and the notation for squared (<math>^2</math>) and cubed (<math>^3</math>).</li> <li>❖ Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.</li> <li>❖ Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.</li> <li>❖ Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.</li> </ul>		<ul style="list-style-type: none"> <li>❖ Compare and order fractions whose denominators are all multiples of the same number.</li> <li>❖ Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.</li> <li>❖ 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 [for example, <math>\frac{7}{5} = \frac{1}{5} + \frac{6}{5} = 1\frac{1}{5}</math>].</li> <li>❖ Add and subtract fractions with the same denominator and denominators that are multiples of the same number.</li> <li>❖ Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.</li> <li>❖ Read and write decimal numbers as fractions [for example, <math>0.71 = \frac{71}{100}</math>].</li> <li>❖ Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.</li> <li>❖ Round decimals with two decimal places to the nearest whole number and to one decimal place.</li> <li>❖ Read, write, order and compare numbers with up to three decimal places.</li> <li>❖ Solve problems involving number up to three decimal places.</li> <li>❖ 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.</li> <li>❖ Solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{1}{5}</math>, <math>\frac{4}{5}</math> and those fractions with a denominator of a multiple of 10 or 25.</li> </ul>		<ul style="list-style-type: none"> <li>❖ Convert between different units of metric measure (for example, kilometre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre).</li> <li>❖ Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.</li> <li>❖ Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.</li> <li>❖ Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (<math>\text{cm}^2</math>) and square metres (<math>\text{m}^2</math>).</li> <li>❖ Estimate the area of irregular shapes.</li> <li>❖ Estimate volume [for example, using <math>1 \text{ cm}^3</math> blocks to build cuboids (including cubes)] and capacity [for example, using water].</li> <li>❖ Solve problems involving converting between units of time.</li> <li>❖ Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal</li> </ul>	<ul style="list-style-type: none"> <li>❖ Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.</li> <li>❖ Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.</li> <li>❖ Draw given angles, and measure them in degrees (<math>^\circ</math>).</li> </ul> <p>Identify:</p> <ul style="list-style-type: none"> <li>❖ angles at a point and one whole turn (total 3600);</li> <li>❖ angles at a point on a straight line and <math>\frac{1}{2}</math> a turn (total 1800);</li> <li>❖ other multiples of 900.</li> </ul> <ul style="list-style-type: none"> <li>❖ Use the properties of rectangles to deduce related facts and find missing lengths and angles.</li> <li>❖ Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</li> </ul>
<b>Geometry: Position &amp; Direction</b>									
<ul style="list-style-type: none"> <li>❖ 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.</li> </ul>									
<b>Statistics</b>									
<ul style="list-style-type: none"> <li>❖ Solve comparison, sum and difference problems using information presented in a line graph.</li> <li>❖ Complete, read and interpret information in tables, including timetables.</li> </ul>									



**Development Matters:** Non-statutory curriculum guidance for the early years foundationstage (3 and 4-year-olds)



### 3 and 4-year-olds will be learning to:

Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').

Recite numbers past 5.

Say one number for each item in order: 1,2,3,4,5.

Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').

Show 'finger numbers' up to 5.

Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.

### Examples of how to support this:

Point to small groups of two or three objects: "Look, there are two!" Occasionally ask children how many there are in a small set of two or three.

Regularly say the counting sequence, in a variety of playful contexts, inside and outdoors, forwards and backwards, sometimes going to high numbers. For example: hide and seek, rocket-launch countdowns.

Count things and then repeat the last number. For example: "1, 2, 3 – **3 cars**". Point out the number of things whenever possible; so, rather than just 'chairs', 'apples' or 'children', say 'two chairs', 'three apples', 'four children'.

Ask children to get you several things and emphasise the total number in your conversation with the child.

Use small numbers to manage the learning environment. Suggestions: have a pot labelled '5 pencils' or a crate for '3 trucks'. Draw children's attention to these throughout the session and especially at tidy-up time: "How many pencils should be in this pot?" or "How many have we got?" etc.





**3 and 4-year-olds will be learning to:**

**Examples of how to support this:**

Experiment with their own symbols and marks as well as numerals.

Solve real world mathematical problems with numbers up to 5.

Compare quantities using language: 'more than', 'fewer than'.

Encourage children in their own ways of recording (for example) how many balls they managed to throw through the hoop. Provide numerals nearby for reference. Suggestions: wooden numerals in a basket or a number track on the fence.

Discuss mathematical ideas throughout the day, inside and outdoors. Suggestions:

- "I think Jasmin has got more crackers..."
- support children to solve problems using fingers, objects and marks: "There are four of you, but there aren't enough chairs...."
- draw children's attention to differences and changes in amounts, such as those in stories like 'The Enormous Turnip'.

Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language:

'sides', 'corners'; 'straight', 'flat', 'round'.

Encourage children to play freely with blocks, shapes, shape puzzles and shape-sorters.

Sensitively support and discuss questions like: "What is the same and what is different?"

Encourage children to talk informally about shape properties using words like 'sharp corner', 'pointy' or 'curvy'. Talk about shapes as you play with them: "We need a piece with a straight edge."



**3 and 4-year-olds will be learning to:**

**Examples of how to support this:**

Understand position through words alone – for example, “The bag is under the table,” – with no pointing.

Describe a familiar route.

Discuss routes and locations, using words like ‘in front of’ and ‘behind’.

Discuss position in real contexts. Suggestions: how to shift the leaves **off** a path or sweep water away **down** the drain.

Use spatial words in play, including ‘in’, ‘on’, ‘under’, ‘up’, ‘down’, ‘besides’ and ‘between’. Suggestion: “Let’s put the troll under the bridge and the billy goat beside the stream.”

Take children out to shops or the park: recall the route and the order of things seen on the way.

Set up obstacle courses, interesting pathways and hiding places for children to play with freely. When appropriate, ask children to describe their route and give directions to each other.

Provide complex train tracks, with loops and bridges, or water-flowing challenges with guttering that direct the flow to a water tray, for children to play freely with.

Read stories about journeys, such as ‘Rosie’s Walk’.

Make comparisons between objects relating to size, length, weight and capacity.

Provide experiences of size changes. Suggestions: “Can you make a puddle larger?”, “When you squeeze a sponge, does it stay small?”, “What happens when you stretch dough, or elastic?”

Talk with children about their everyday ways of comparing size, length, weight and capacity. Model more specific techniques, such as lining up ends of lengths and straightening ribbons, discussing accuracy: “Is it **exactly**...?”



**3 and 4-year-olds will be learning to:**

Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc.

Combine shapes to make new ones – an arch, a bigger triangle, etc.

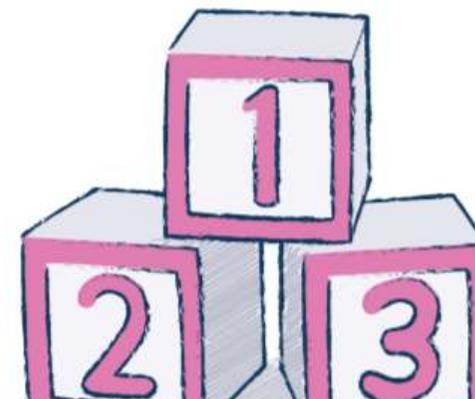
**Examples of how to support this:**

Provide a variety of construction materials like blocks and interlocking bricks. Provide den-making materials. Allow children to play freely with these materials, outdoors and inside. When appropriate, talk about the shapes and how their properties suit the purpose.

Provide shapes that combine to make other shapes, such as pattern blocks and interlocking shapes, for children to play freely with. When appropriate, discuss the different designs that children make.

Occasionally suggest challenges, so that children build increasingly more complex constructions.

Use tidy-up time to match blocks to silhouettes or fit things in containers, describing and naming shapes. Suggestion: "Where does this triangular one /cylinder /cuboid go?"





### 3 and 4-year-olds will be learning to:

Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs', etc.

Extend and create ABAB patterns – stick, leaf, stick, leaf.

Notice and correct an error in a repeating pattern.

Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'

### Examples of how to support this:

Provide patterns from different cultures, such as fabrics.

Provide a range of natural and everyday objects and materials, as well as blocks and shapes, for children to play with freely and to make patterns with. When appropriate, encourage children to continue patterns and spot mistakes.

Engage children in following and inventing movement and music patterns, such as clap, clap, stamp.

Talk about patterns of events, in cooking, gardening, sewing or getting dressed. Suggestions:

- 'First', 'then', 'after', 'before'
- "Every day we..."
- "Every evening we..."

Talk about the sequence of events in stories.

Use vocabulary like 'morning', 'afternoon', 'evening' and 'night-time', 'earlier', 'later', 'too late', 'too soon', 'in a minute'.

Count down to forthcoming events on the calendar in terms of number of days or sleeps. Refer to the days of the week, and the day before or day after, 'yesterday' and 'tomorrow'.



**Development Matters:** Non-statutory curriculum guidance for the early years foundationstage (**Reception**)



**Children in reception will be learning to:**

Count objects, actions and sounds.

**Examples of how to support this:**

Develop the key skills of counting objects including saying the numbers in order and matching one number name to each item.

Say how many there are after counting – for example, "...6, 7, 8. There are **8 balls**" – to help children appreciate that the last number of the count indicates the total number of the group. This is the cardinal counting principle.

Say how many there might be before you count to give a purpose to counting: "I think there are about 8. Shall we count to see?"

Count out a smaller number from a larger group: "Give me seven..."  
Knowing when to stop shows that children understand the cardinal principle.

Build counting into everyday routines such as register time, tidying up, lining up or counting out pieces of fruit at snack time.

Sing counting songs and number rhymes and read stories that involve counting.

Play games which involve counting.

Identify children who have had less prior experience of counting and provide additional opportunities for counting practice.



**Children in reception will be learning to:**

**Examples of how to support this:**

Subitise.

Show small quantities in familiar patterns (for example, dice) and random arrangements.

Play games which involve quickly revealing and hiding numbers of objects.

Put objects into five frames and then ten frames to begin to familiarise children with the tens structure of the number system.

Prompt children to subitise first when enumerating groups of up to 4 or 5 objects: "I don't think we need to count those. They are in a square shape so there must be 4." Count to check.

Encourage children to show a number of fingers 'all at once', without counting.

Link the number symbol (numeral) with its cardinal number value.

Display numerals in order alongside dot quantities or tens frame arrangements.

Play card games such as snap or matching pairs with cards where some have numerals, and some have dot arrangements.

Discuss the different ways children might record quantities (for example, scores in games), such as tallies, dots and using numeral cards.



**Children in reception will be learning to:**

**Examples of how to support this:**

Count beyond ten.

Count verbally beyond 20, pausing at each multiple of 10 to draw out the structure, for instance when playing hide and seek, or to time children getting ready.

Provide images such as number tracks, calendars and hundred squares indoors and out, including painted on the ground, so children become familiar with two-digit numbers and can start to spot patterns within them.

Compare numbers.

Provide collections to compare, starting with a very different number of things. Include more small things and fewer large things, spread them out and bunch them up, to draw attention to the number not the size of things or the space they take up. Include groups where the number of items is the same.

Use vocabulary: 'more than', 'less than', 'fewer', 'the same as', 'equal to'. Encourage children to use these words as well.

Distribute items evenly, for example: "Put 3 in each bag," or give the same number of pieces of fruit to each child. Make deliberate mistakes to provoke discussion.

Tell a story about a character distributing snacks unfairly and invite children to make sure everyone has the same.

Understand the 'one more than/one less than' relationship between consecutive numbers.

Make predictions about what the outcome will be in stories, rhymes and songs if one is added, or if one is taken away.

Provide 'staircase' patterns which show that the next counting number includes the previous number plus one.



**Children in reception will be learning to:**

Explore the composition of numbers to 10.

**Examples of how to support this:**

Focus on composition of 2, 3, 4 and 5 before moving onto larger numbers

Provide a range of visual models of numbers: for example, six as double three on dice, or the fingers on one hand and one more, or as four and two with ten frame images.

Model conceptual subitising: "Well, there are three here and three here, so there must be six."

Emphasise the parts within the whole: "There were 8 eggs in the incubator. Two have hatched and 6 have not yet hatched."

Plan games which involve partitioning and recombining sets. For example, throw 5 beanbags, aiming for a hoop. How many go in and how many don't?



**Children in reception will be learning to:**

Automatically recall number bonds for numbers 0–5 and some to 10.

**Examples of how to support this:**

Have a sustained focus on each number to and within 5. Make visual and practical displays in the classroom showing the different ways of making numbers to 5 so that children can refer to these.

Help children to learn number bonds through lots of hands-on experiences of partitioning and combining numbers in different contexts, and seeing subitising patterns.

Play hiding games with a number of objects in a box, under a cloth, in a tent, in a cave, etc.: “6 went in the tent and 3 came out. I wonder how many are still in there?”

Intentionally give children the wrong number of things. For example: ask each child to plant 4 seeds then give them 1, 2 or 3. “I’ve only got 1 seed, I need 3 more.”

Spot and use opportunities for children to apply number bonds:  
“There are 5 of us but only 2 clipboards. How many more do we need?”

Place objects into a five frame and talk about how many spaces are filled and unfilled.



**Children in reception will be learning to:**

**Examples of how to support this:**

Select, rotate and manipulate shapes to develop spatial reasoning skills.

Provide high-quality pattern and building sets, including pattern blocks, tangrams, building blocks and magnetic construction tiles, as well as found materials.

Challenge children to copy increasingly complex 2D pictures and patterns with these 3D resources, guided by knowledge of learning trajectories: "I bet you can't add an arch to that," or "Maybe tomorrow someone will build a staircase."

Teach children to solve a range of jigsaws of increasing challenge.

Compose and decompose shapes so that children recognise a shape can have other shapes *within* it, just as numbers can.

Investigate how shapes can be combined to make new shapes: for example, two triangles can be put together to make a square. Encourage children to predict what shapes they will make when paper is folded. Wonder aloud how many ways there are to make a hexagon with pattern blocks.

Find 2D shapes within 3D shapes, including through printing or shadow play.

Continue, copy and create repeating patterns.

Make patterns with varying rules (including AB, ABB and ABBC) and objects and invite children to continue the pattern.

Make a deliberate mistake and discuss how to fix it.

Compare length, weight and capacity.

Model comparative language using 'than' and encourage children to use this vocabulary. For example: "This is heavier than that."

Ask children to make and test predictions. "What if we pour the jugful into the teapot? Which holds more?"