

	Year 4	Year 5	Year 6
<b>NUMBER &amp; PLACE VALUE APPROXIMATION, ESTIMATION/ROUNDING</b>	<ul style="list-style-type: none"> <li>count in multiples of 6, 7, 9, 25 and 1,000.</li> <li>order and compare numbers beyond 1,000.</li> <li>find 1,000 more or less than a given number.</li> <li>recognise the place value of each digit in a 4-digit number.</li> <li>read Roman numerals to 100 and know that over time the numeral system changed to include the concept of zero and place value.</li> <li>identify, represent and estimate numbers using different representations.</li> <li>round any number to the nearest 10, 100 or 1,000.</li> <li>count backwards through zero to include negative numbers.</li> <li>solve number and practical problems with the above (involving increasingly large numbers).</li> </ul>	<ul style="list-style-type: none"> <li>count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.</li> <li>read, write, order and compare numbers to at least 1,000,000.</li> <li>determine the value of each digit in numbers up to 1,000,000.</li> <li>read Roman numerals to 1,000 (M) and recognise years written in Roman numerals.</li> <li>round any number up to 1,000,000 to the nearest 10, 100, 1000, 10000 and 100000.</li> <li>interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.</li> <li>solve number problems and practical problems with the above.</li> </ul>	<ul style="list-style-type: none"> <li>read, write, order and compare numbers up to 10,000,000.</li> <li>determine the value of each digit in numbers up to 10,000,000.</li> <li>round any whole number to a required degree of accuracy.</li> <li>use negative numbers in context, and calculate intervals across zero.</li> <li>solve number problems and practical problems with the above.</li> </ul>
<b>CALCULATIONS</b>	<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.</li> <li>estimate and use inverse operations to check answers in a calculation.</li> <li>solve addition and subtraction 2-step problems in contexts, deciding which operations and methods to use and why.</li> <li>recall multiplication and division facts up to 12x12.</li> <li>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.</li> <li>recognise and use factor pairs and commutativity in mental calculations.</li> <li>multiply 2-digit numbers by a 1-digit number using formal written layout.</li> <li>solve problems involving multiplying and adding, including using the distributive law to multiply 2-digit numbers by 1-digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.</li> </ul>	<ul style="list-style-type: none"> <li>add and subtract numbers mentally with increasingly large numbers.</li> <li>add and subtract whole numbers with more than 4 digits, including using formal written methods.</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> <li>identify multiples and factors, including finding all factor pairs or a number and common factor pairs of two numbers.</li> <li>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>recognise and use square numbers and cube numbers, and the notation for squared and cubed.</li> <li>multiply and divide numbers mentally drawing on known facts.</li> <li>multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.</li> <li>multiply numbers up to 4 digits by a 1-digit or 2-digit number using a formal written method, including long multiplication for 2-digit numbers.</li> <li>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.</li> <li>solve problems involving multiplication and division including using 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>use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</li> <li>solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> <li>identify common factors, common multiples and prime numbers.</li> <li>perform mental calculations, including with mixed operations and large numbers.</li> <li>multiply multi-digit numbers up to 4 digits by a 2 digit whole number using the formal written method of long multiplication.</li> <li>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 for the context.</li> <li>divide numbers up to 4 digits by a 2 digit number using the formal written method of short division where appropriate.</li> <li>solve problems involving addition, subtraction, multiplication and division.</li> <li>use my knowledge of the order of operations to carry out calculations involving the four operations.</li> </ul> <p><b>ALGEBRA</b></p> <ul style="list-style-type: none"> <li>express missing number problems algebraically.</li> <li>use simple formulae.</li> <li>generate and describe linear number sequences.</li> <li>find pairs of numbers that satisfy an equation with two unknowns.</li> <li>enumerate possibilities of combinations of two variables.</li> </ul>
<b>FRACTIONS DECIMALS &amp; PERCENTAGES</b>	<ul style="list-style-type: none"> <li>count up and down in hundredths.</li> <li>recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten.</li> <li>recognise and show using diagrams, families of common equivalent fractions.</li> <li>add and subtract fractions within the same denominator.</li> <li>recognise and write decimal equivalents to 1/4, 1/2 and 3/4.</li> <li>recognise and write decimal equivalents of any number of tenths or hundredths.</li> <li>round decimals with one decimal place to the nearest whole number.</li> <li>compare numbers with the same number of decimal places up to 2 decimal places.</li> <li>find the effect of dividing a 1-digit or 2-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.</li> <li>solve problems involving increasingly harder fractions and fractions to divide quantities, including non-unit fractions where the answer is a whole number.</li> <li>solve simple measure and money problems involving fractions and decimals to 2 decimal places.</li> </ul>	<ul style="list-style-type: none"> <li>recognise mixed numbers and improper fractions and convert from one form to the other.</li> <li>write mathematical statements <math>&gt;1</math> as a mixed number.</li> <li>identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.</li> <li>compare and order fractions whose denominators are multiples of the same number.</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.</li> <li>recognise and can use thousandths and relate them to tenths, hundredths and decimal equivalents.</li> <li>round decimals with 2 decimal places to the nearest whole number and 1 decimal place.</li> <li>read, write, order and compare numbers with up to 3 decimal places.</li> <li>solve problems involving numbers up to 3 decimal places.</li> <li>recognise the percent symbol and understand that percent relates to 'number parts per hundred'.</li> <li>write percentages as a fraction with denominator hundred, 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{4}{5}</math> and those fractions with a denominator or a multiple of 10 or 25.</li> </ul>	<ul style="list-style-type: none"> <li>use common factors to simplify fractions and use common multiples to express fractions in the same denomination.</li> <li>compare and order fractions, including fractions <math>&gt;1</math>.</li> <li>add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.</li> <li>multiply simple pairs of proper fractions, writing the answer in the simplest form.</li> <li>divide proper fractions by whole numbers.</li> <li>associate a fraction with division to calculate decimal fractions equivalents for a simple fraction.</li> <li>identify the value of each digit to 3 decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to 3 decimal places.</li> <li>multiply 1-digit numbers with up to 2 decimal places by whole numbers.</li> <li>use written division methods in cases where the answer has up to 2 decimal places.</li> <li>solve problems which require answers to be rounded to specified degrees of accuracy.</li> <li>recall and use equivalences between simple fractions, decimals and percentages, including in different contexts</li> </ul> <p><b>RATIO AND PROPORTION</b></p> <ul style="list-style-type: none"> <li>solve problems involving the relative sizes of two quantities, where missing values can be found using integer multiplication and division facts.</li> <li>solve problems involving the calculation of percentages and the use of percentage comparisons.</li> <li>solve problems involving similar shapes where the scale factor is known or can be found.</li> <li>solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</li> </ul>
<b>MEASUREMENT</b>	<ul style="list-style-type: none"> <li>compare different measures, including money in £ and p.</li> <li>estimate different measures, including money in £ and p.</li> <li>calculate different measures. Including money in £ and p.</li> <li>read, write and convert time between analogue and digital 12 hour clocks.</li> <li>read, write and convert time between analogue and digital 24 hour clocks.</li> <li>solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.</li> <li>convert between different units of measurements</li> <li>measure and calculate the perimeter of a rectilinear figure in cm and m.</li> <li>find the area of rectilinear shapes by counting squares.</li> <li>calculate different measures</li> </ul>	<ul style="list-style-type: none"> <li>solve problems involving converting between units of time.</li> <li>convert between different units of metric measure.</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 cm and m.</li> <li>calculate and compare the area of rectangles (incl. squares), and including using standard units (<math>\text{cm}^2</math> and <math>\text{cm}^3</math>) to estimate the area of irregular shapes.</li> <li>estimate volume and capacity.</li> <li>use all four operations to solve problems involving money using decimal notation, including scaling.</li> </ul>	<ul style="list-style-type: none"> <li>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 of up to 3 decimal places.</li> <li>convert between miles and kilometres.</li> <li>recognise that shapes with the same areas can have different perimeters and vice versa.</li> <li>calculate the area of parallelograms and triangles.</li> <li>recognise when it is possible to use the formulae for the area of shapes.</li> <li>calculate, estimate and compare volume of cubes and cuboids, using standard units.</li> <li>recognise when it is possible to use the formulae for the volume of shapes.</li> <li>solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate.</li> </ul>
<b>GEOMETRY - SHAPES</b>	<ul style="list-style-type: none"> <li>compare and classify geometric shapes, including quadrilateral and triangles based on their properties and sizes.</li> <li>identify lines of symmetry in 2D shapes presented in different orientations.</li> <li>complete a simple symmetric figure with respect to a specific line of symmetry,</li> <li>identify acute and obtuse angles and compare and order angles up to two right angles by size.</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> <li>identify 3D shapes, including cubes and other cuboids, from 2D representations.</li> <li>know angles are measured in degrees.</li> <li>estimate and compare acute, obtuse and reflex angles.</li> <li>identify angles at a point and one whole turn.</li> <li>identify angles at a point on a straight line and <math>\frac{1}{2}</math> a turn.</li> <li>identify other multiples of <math>90^\circ</math>.</li> <li>draw given angles and measure them in degrees.</li> </ul>	<ul style="list-style-type: none"> <li>compare and classify geometric shapes based on the properties and sizes.</li> <li>describe simple 3D shapes.</li> <li>draw 2D shapes given dimensions and angles.</li> <li>recognise and build simple 3D shapes, including making nets.</li> <li>find unknown angles in any triangles, quadrilaterals and regular polygons.</li> <li>recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</li> <li>illustrate and name parts of circles, including radius, diameter and circumference.</li> <li>know the diameter is twice the radius.</li> </ul>
<b>GEOMETRY POSITION &amp; DIRECTION</b>	<ul style="list-style-type: none"> <li>describe movements between positions as translations of a given unit to the left/right and up/down.</li> <li>describe positions on a 2D grid as coordinates in the first quadrant.</li> <li>plot specified points and draw sides to complete a given polygon.</li> </ul>	<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>	<ul style="list-style-type: none"> <li>draw and translate simple shapes on the co-ordinate plane, and reflect them in the axes.</li> <li>describe positions on the full co-ordinate grid (all four quadrants).</li> </ul>
<b>STATISTICS</b>	<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> <li>solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.</li> </ul>	<ul style="list-style-type: none"> <li>complete, read and interpret information in tables, including timetables.</li> <li>solve comparison, sum and difference problems using information presented in a line graph.</li> </ul>	<ul style="list-style-type: none"> <li>interpret and construct pie charts and line graphs and use these to solve problems</li> <li>calculate and interpret the mean as an average.</li> </ul>