

Vine Core Curriculum

**Termly Curriculum Overviews – Maths**

**Year Group - Year 6**

**Highlighted are the objectives on the Year 6 Expected Standard Framework, children must achieve these**

	Autumn	Spring	Summer
Number and Place Value	<p>The pupil can demonstrate an understanding of place value, including large numbers and decimals (e.g. what is the value of the '7' in 276,541?; find the difference between the largest and smallest whole numbers that can be made from using three digits; <math>8.09 = 8 + 9?</math>; <math>28.13 = 28 + + 0.03</math>).</p> <ul style="list-style-type: none"> <li>• read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</li> <li>• round any whole number to a required degree of accuracy</li> </ul>	<p>The pupil can demonstrate an understanding of place value, including large numbers and decimals (e.g. what is the value of the '7' in 276,541?; find the difference between the largest and smallest whole numbers that can be made from using three digits; <math>8.09 = 8 + 9?</math>; <math>28.13 = 28 + + 0.03</math>).</p> <ul style="list-style-type: none"> <li>• read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</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 and practical problems that involve all of the above.</li> </ul>	<ul style="list-style-type: none"> <li>• read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</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 and practical problems that involve all of the above.</li> </ul>
Addition and Subtraction	<p>The pupil can calculate mentally, using efficient strategies such as manipulating expressions using commutative and distributive properties to simplify the calculation</p> <p>The pupil can use formal methods to solve multi-step problems.</p> <ul style="list-style-type: none"> <li>• perform mental calculations, including with mixed operations and large numbers.</li> <li>• use their knowledge of the order of operations to carry out calculations involving the four operations</li> <li>• solve problems involving addition, subtraction, multiplication and division</li> <li>• use estimation to check answers to calculations and determine, in the context of a problem an appropriate degree of accuracy.</li> </ul>	<p>The pupil can calculate mentally, using efficient strategies such as manipulating expressions using commutative and distributive properties to simplify the calculation</p> <p>The pupil can use formal methods to solve multi-step problems.</p> <ul style="list-style-type: none"> <li>• perform mental calculations, including with mixed operations and large numbers.</li> <li>• use their knowledge of the order of operations to carry out calculations involving the four operations</li> <li>• solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li> <li>• solve problems involving addition, subtraction, multiplication and division</li> </ul>	<p>The pupil can calculate mentally, using efficient strategies such as manipulating expressions using commutative and distributive properties to simplify the calculation</p> <p>The pupil can use formal methods to solve multi-step problems.</p> <ul style="list-style-type: none"> <li>• perform mental calculations, including with mixed operations and large numbers.</li> <li>• use their knowledge of the order of operations to carry out calculations involving the four operations</li> <li>• solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li> <li>• solve problems involving addition, subtraction, multiplication and division</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> </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> </ul>
Multiplication and Division	<p>The pupil can calculate mentally, using efficient strategies such as manipulating expressions using commutative and distributive properties to simplify the calculation</p> <p>The pupil can use formal methods to solve multi-step problems.</p> <ul style="list-style-type: none"> <li>• multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li> <li>• divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division</li> <li>• solve problems involving addition, subtraction, multiplication and division</li> </ul>	<p>The pupil can calculate mentally, using efficient strategies such as manipulating expressions using commutative and distributive properties to simplify the calculation</p> <p>The pupil can use formal methods to solve multi-step problems.</p> <ul style="list-style-type: none"> <li>• multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li> <li>• 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</li> <li>• divide numbers up to 4 digits by a two-digit whole number using the formal written method of short division where appropriate interpreting remainders according to the context.</li> <li>• solve problems involving addition, subtraction, multiplication and division</li> <li>• identify common factors, common multiples and prime numbers</li> </ul>	<p>The pupil can calculate mentally, using efficient strategies such as manipulating expressions using commutative and distributive properties to simplify the calculation</p> <p>The pupil can use formal methods to solve multi-step problems.</p> <ul style="list-style-type: none"> <li>• multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li> <li>• 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</li> <li>• divide numbers up to 4 digits by a two-digit whole number using the formal written method of short division where appropriate interpreting remainders according to the context.</li> <li>• solve problems involving addition, subtraction, multiplication and division</li> <li>• identify common factors, common multiples and prime numbers</li> <li>• use their knowledge of the order of operations to carry out calculations involving the four operations</li> </ul>
Fractions, Decimals and Percentages	<p>The pupil can recognise the relationship between fractions, decimals and percentages and can express them as equivalent quantities (e.g. one piece of cake that has been cut into 5 equal slices can be expressed as 15 or 0.2 or 20% of the whole cake).</p> <p>The pupil can calculate using fractions, decimals or percentages (e.g. knowing that 7 divided by 21 is the same as <math>7 \div 21</math> and that this is equal to <math>\frac{1}{3}</math>; 15% of 60; <math>112 \div 34</math>; 79 of 108; <math>0.8 \times 70</math>).</p>	<p>The pupil can recognise the relationship between fractions, decimals and percentages and can express them as equivalent quantities (e.g. one piece of cake that has been cut into 5 equal slices can be expressed as 15 or 0.2 or 20% of the whole cake).</p> <p>The pupil can calculate using fractions, decimals or percentages (e.g. knowing that 7 divided by 21 is the same as <math>7 \div 21</math> and that this is equal to <math>\frac{1}{3}</math>; 15% of 60; <math>112 \div 34</math>; 79 of 108; <math>0.8 \times 70</math>).</p>	<p>The pupil can recognise the relationship between fractions, decimals and percentages and can express them as equivalent quantities (e.g. one piece of cake that has been cut into 5 equal slices can be expressed as 15 or 0.2 or 20% of the whole cake).</p> <p>The pupil can calculate using fractions, decimals or percentages (e.g. knowing that 7 divided by 21 is the same as <math>7 \div 21</math> and that this is equal to <math>\frac{1}{3}</math>; 15% of 60; <math>112 \div 34</math>; 79 of 108; <math>0.8 \times 70</math>).</p>

	<ul style="list-style-type: none"> <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 its simplest form (e.g. <math>1/4 \times 1/2 = 1/8</math>)</li> <li>associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. <math>3/8</math>)</li> <li>identify the value of each digit to three decimal places</li> <li>recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</li> </ul>	<ul style="list-style-type: none"> <li>use common factors to simplify fractions; 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 its simplest form (e.g. <math>1/4 \times 1/2 = 1/8</math>)</li> <li>divide proper fractions by whole numbers (e.g. <math>1/3 \div 2 = 1/6</math>)</li> <li>associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. <math>3/8</math>)</li> <li>identify the value of each digit to three decimal places and multiply and divide numbers by 10 and 100</li> <li>multiply one-digit numbers with up to two decimal places by whole numbers</li> <li>recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</li> <li>use written division methods in cases where the answer has up to two decimal places</li> <li>solve problems involving the calculation of percentages [e.g. of measures and such as 15% of 360] and the use of percentages for comparison</li> </ul>	<ul style="list-style-type: none"> <li>use common factors to simplify fractions; 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 its simplest form (e.g. <math>1/4 \times 1/2 = 1/8</math>)</li> <li>divide proper fractions by whole numbers (e.g. <math>1/3 \div 2 = 1/6</math>)</li> <li>associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. <math>3/8</math>)</li> <li>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</li> <li>multiply one-digit numbers with up to two decimal places by whole numbers</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> <li>use written division methods in cases where the answer has up to two decimal places</li> <li>solve problems involving the calculation of percentages [e.g. of measures and such as 15% of 360] and the use of percentages for comparison</li> </ul>
Money	Application of all four operations	Application of all four operations	Application of all four operations
Algebra	<ul style="list-style-type: none"> <li>use simple formulae</li> <li>express missing number problems algebraically</li> <li>find pairs of numbers that satisfy an equation with two unknowns</li> </ul>	<p>The pupil can substitute values into a simple formula to solve problems (e.g. perimeter of a rectangle or area of a triangle).</p> <ul style="list-style-type: none"> <li>use simple formulae</li> <li>generate and describe linear number sequences</li> <li>express missing number problems algebraically</li> <li>find pairs of numbers that satisfy an equation with two unknowns</li> </ul>	<p>The pupil can substitute values into a simple formula to solve problems (e.g. perimeter of a rectangle or area of a triangle).</p> <ul style="list-style-type: none"> <li>use simple formulae</li> <li>generate and describe linear number sequences</li> <li>express missing number problems algebraically</li> <li>find pairs of numbers that satisfy an equation with two unknowns</li> </ul>

			<ul style="list-style-type: none"> <li>• enumerate possibilities of combinations of two variables.</li> </ul>
Shape and Geometry	<p>The pupil can use mathematical reasoning to find missing angles (e.g. the missing angle in an isosceles triangle when one of the angles is given; the missing angle in a more complex diagram using knowledge about angles at a point and vertically opposite angles).</p> <ul style="list-style-type: none"> <li>• draw 2-D shapes using given dimensions and angles</li> <li>• recognise, describe and build simple 3-D shapes, including making nets</li> <li>• illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</li> <li>• recognise angles where they meet at a point, are on a straight line</li> <li>• describe positions on the full coordinate grid (all four quadrants)</li> </ul>	<p>The pupil can use mathematical reasoning to find missing angles (e.g. the missing angle in an isosceles triangle when one of the angles is given; the missing angle in a more complex diagram using knowledge about angles at a point and vertically opposite angles).</p> <ul style="list-style-type: none"> <li>• draw 2-D shapes using given dimensions and angles</li> <li>• recognise, describe and build simple 3-D shapes, including making nets</li> <li>• compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</li> <li>• illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</li> <li>• recognise angles where they meet at a point, are on a straight line, or are vertically opposite.</li> <li>• describe positions on the full coordinate grid (all four quadrants)</li> <li>• draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</li> </ul>	<p>The pupil can use mathematical reasoning to find missing angles (e.g. the missing angle in an isosceles triangle when one of the angles is given; the missing angle in a more complex diagram using knowledge about angles at a point and vertically opposite angles).</p> <ul style="list-style-type: none"> <li>• draw 2-D shapes using given dimensions and angles</li> <li>• recognise, describe and build simple 3-D shapes, including making nets</li> <li>• compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</li> <li>• illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</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>• describe positions on the full coordinate grid (all four quadrants)</li> <li>• draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</li> </ul>
Measure	<p>The pupil can calculate with measures (e.g. calculate length of a bus journey given start and end times; convert 0.05km into m and then into cm).</p> <ul style="list-style-type: none"> <li>• solve problems involving the calculation and conversion of units of measure, using decimal notation</li> <li>• recognise that shapes with the same areas can have different perimeters and vice versa</li> <li>• recognise when it is possible to use formulae for area and volume of shapes</li> <li>• calculate the area of parallelograms and triangles</li> </ul>	<p>The pupil can substitute values into a simple formula to solve problems (e.g. perimeter of a rectangle or area of a triangle).</p> <p>The pupil can calculate with measures (e.g. calculate length of a bus journey given start and end times; convert 0.05km into m and then into cm).</p> <ul style="list-style-type: none"> <li>• solve problems involving the calculation and conversion of units of measure, using decimal notation</li> <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 to up to three decimal places</li> </ul>	<p>The pupil can substitute values into a simple formula to solve problems (e.g. perimeter of a rectangle or area of a triangle).</p> <ul style="list-style-type: none"> <li>• solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</li> <li>• use, read, write and convert between standard units, converting measurements of length,</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>• recognise when it is possible to use formulae for area and volume of shapes</li> <li>• calculate the area of parallelograms and triangles</li> </ul>

		<ul style="list-style-type: none"> <li>• convert between miles and kilometres</li> <li>• recognise that shapes with the same areas can have different perimeters and vice versa</li> <li>• recognise when it is possible to use formulae for area and volume of shapes</li> <li>• calculate the area of parallelograms and triangles</li> <li>• 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>)</li> </ul>	<ul style="list-style-type: none"> <li>• 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 [for example, mm<sup>3</sup> and km<sup>3</sup>].</li> </ul>
Ratio and proportion	<ul style="list-style-type: none"> <li>• solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</li> <li>• solve problems involving similar shapes where the scale factor is known or can be found</li> </ul>	<ul style="list-style-type: none"> <li>• solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</li> <li>• solve problems involving similar shapes where the scale factor is known or can be found</li> </ul>	<ul style="list-style-type: none"> <li>• solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</li> <li>• solve problems involving the calculation of percentages [e.g. of measures and such as 15% of 360] and the use of percentages for comparison</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>
Time	Application within problem solving in measures	Application within problem solving in measures	Application within problem solving in measures
Data	<ul style="list-style-type: none"> <li>• interpret and construct pie charts and line graphs and use these to solve problems</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>	<ul style="list-style-type: none"> <li>• interpret and construct pie charts and line graphs and use these to solve problems</li> </ul>