

# THE VAYNOR CURRICULUM

## MATHEMATICS SEQUENCE



### INTENT



#### Love for Learning:

All children will develop a love for Maths with teachers being explicit with why each concept is taught to them. They will build on prior knowledge and make connections which will increase their confidence and resilience. A purposeful maths education will develop and love, appreciation and curiosity for the subject.



#### Enquiring Minds:

Questions will be posed in a range of different contexts and representations to deepen children's understanding and develop their interests further. Children will reason, prove/disprove statements and develop arguments for justification, using mathematical language.



#### World Wise:

Children will be taught a maths curriculum which engages with real life contexts and problems, highlighting the importance of the subject. A curriculum which prepares them with the knowledge to succeed in a world full of mathematical experiences.

	Number / Place Value	4 Calculations (+ - x ÷)	Fractions & Decimals	Geometry, Measures & Statistics
EYFS	<ul style="list-style-type: none"> <li>Develop a deep understanding of numbers within 10 (number sense) – including the composition of each number.</li> <li>Subitise (recognize quantities without counting) up to 5.</li> <li>Mentally recall number bonds up to 5 and some up to 10.</li> <li>Double numbers to 5.</li> <li>Verbally count beyond 20.</li> <li>Compare quantities up to 10.</li> <li>Explore patterns within numbers e.g. odd / even.</li> </ul>			
Year 1	<ul style="list-style-type: none"> <li>Count, read and write numbers to 100.</li> <li>Identify one more / less than a given number.</li> <li>Read and write numbers from 0-20 in words.</li> <li>Count, read and write numbers to 100 in numerals.</li> <li>Count forwards and backwards</li> </ul>	<ul style="list-style-type: none"> <li>Read, write and interpret statements involving + - &amp; = signs.</li> <li>Represent and use number bonds and related facts within 20.</li> <li>Add and subtract 1 and 2-digit numbers to 20 (including zero).</li> <li>Solve one step problems</li> </ul>	<ul style="list-style-type: none"> <li>Recognise, find and name half as one of two equal parts of an object, shape or quantity.</li> <li>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li> </ul>	<ul style="list-style-type: none"> <li>Understand positional language e.g. left, right forwards, backwards etc.</li> <li>To name and recognise common 2D shapes</li> <li>To name and recognise common 3D shapes</li> </ul>

	<p>to and across 100, from any number.</p> <ul style="list-style-type: none"> <li>Identify and represent numbers using a variety of concrete and pictorial representations.</li> <li>Use the language: more than, less than and equal to.</li> <li>Count in 2s, 10s and 5s.</li> </ul>	<p>involving addition and subtraction, including missing numbers.</p>		<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 e.g. morning afternoon and evening. Yesterday, today and this evening</li> <li>Recognise days of the week and months of the year</li> <li>Tell the time to o'clock and half past – drawing hands on the clock face</li> <li>Compare and solve practical problems involving the following:               <p>Length = longer/shorter Weight = heavier / shorter Capacity = more than / less than / half full / quarter full</p> <ul style="list-style-type: none"> <li>Measure and begin to record: Length, Mass / Weight, Capacity / Volume</li> </ul> </li> </ul>
Year 2	<ul style="list-style-type: none"> <li>Recognise the value of each digit in a two-digit number.</li> <li>Compare and order numbers up to 100 (<math>&gt;</math> <math>&lt;</math> <math>=</math>).</li> <li>Read and write numbers to 100 in numerals and words.</li> <li>Identify, represent, and estimate numbers using different representations.</li> <li>Count in steps of: 2, 3, 5 &amp; 10 from any number, forwards and backwards.</li> </ul>	<ul style="list-style-type: none"> <li>Mentally add numbers within 20 using a variety of strategies (see mental maths calculation policy)</li> <li>Add numbers using CPA approach and develop written strategies for:               <p>3 single digit numbers 2-digit number and ones 2-digit number and tens Two 2-digit numbers</p> </li> <li>Mentally subtract numbers within 20 using a variety of strategies (see mental maths calculation policy)</li> <li>Subtract numbers using CPA approach and develop written strategies for:               <p>2-digit number and ones 2-digit number and tens Two 2-digit numbers</p> </li> <li>Estimate the answer to a calculation and use inverse operations to check answers and solve missing number problems.</li> <li>Understand that addition can be</li> </ul>	<ul style="list-style-type: none"> <li>Recognise, find, name and write the following fractions:  <math display="block">\frac{1}{3} \frac{1}{4} \frac{1}{2} \frac{2}{4} \frac{3}{4}</math>               of a length, shape, set of objects or quantity.               <ul style="list-style-type: none"> <li>Write simple fractions e.g. <math>\frac{1}{2}</math> of 6 = 3.</li> <li>Recognise the equivalence of <math>\frac{1}{2} = \frac{2}{4}</math></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Identify a vertical line of symmetry in simple 2D shapes.</li> <li>Understanding right angles as a degree of turn. E.g. 1 right angle = <math>\frac{1}{4}</math> turn</li> <li>Name and describe the properties of 2D shapes e.g. number of sides and vertices</li> <li>Compare and sort common 2D shapes.</li> <li>Identify and continue patterns and sequences of shapes and objects.</li> <li>Name and describe the properties of 3D shapes e.g. number of faces, edges and vertices.</li> <li>Compare and sort common 3D shapes.</li> <li>Identify 2D shapes on the surface of 3D shapes e.g. 2 circles on a cylinder.</li> <li>Use the appropriate units to estimate and measure: length, mass, temperature and capacity.</li> </ul>

		<p>solved in any order but subtraction cannot.</p> <ul style="list-style-type: none"> <li>Solve problems involving multiplication using CPA approach e.g. arrays, mental methods and repeated addition.</li> <li>Recall multiplication facts for:               <ol style="list-style-type: none"> <li>2x table</li> <li>10x table</li> <li>5x table</li> </ol> </li> <li>Calculate mathematical statements using multiplication symbol.</li> <li>Show that multiplication of 2 numbers can be done in any order.</li> <li>Recognise odd and even numbers.</li> <li>Solve division problems using CPA approach: e.g. division dot sharing</li> <li>Recall division facts for:               <ol style="list-style-type: none"> <li>Twos</li> <li>Tens</li> <li>Fives</li> </ol> </li> <li>Calculate mathematical statements using the division symbol.</li> <li>Solve division word problems.</li> <li>Show that division <b>cannot</b> be done in any order but multiplication can</li> <li>Recognise inverse relationship between the <math>\times</math> and <math>\div</math></li> </ul>		<ul style="list-style-type: none"> <li>Compare and order: length, mass, temperature and capacity.</li> <li>Recognise and use £ and p symbols.</li> <li>Combine amounts to make a particular value.</li> <li>Find different combinations of coins that = the same amount</li> <li>Solve simple money problems involving <math>+</math> / <math>-</math> including giving change.</li> <li>Compare and sequence intervals of time.</li> <li>Tell the time to 5 minutes and draw on clock face.</li> <li>Know some connections with time e.g. number of minutes in an hour or hours in a day.</li> <li>Construct simple pictograms, tally charts, block diagrams and tables.</li> <li>Interpret simple pictograms, tally charts, block diagrams and tables.</li> </ul>
Year 3	<ul style="list-style-type: none"> <li>Recognise the value of each digit in a three-digit number.</li> <li>Compare and order numbers up to 1000.</li> <li>Read and write numbers to 1000 in numeral and words.</li> <li>Identify, represent and estimate numbers using different representations.</li> <li>Count in: 4s, 8s, 50s and 100s.</li> <li>Find 10 and 100 more / less than a given number.</li> </ul>	<ul style="list-style-type: none"> <li>Add numbers mentally: 3-digit number and ones 3-digit number and tens 3-digit numbers and hundreds</li> <li>Add numbers with up to 3 digits, using formal written methods of columnar addition (expanded method).</li> <li>Subtract numbers mentally: 3-digit number and ones 3-digit number and tens 3-digit numbers and hundreds</li> </ul>	<ul style="list-style-type: none"> <li>Recognise, find and write fractions of number and shape.</li> <li>Begin to understand fractions as numbers on a number line.</li> <li>Recognise and show equivalent fractions.</li> <li>Compare and order fractions with the same denominator.</li> <li>Add and subtract fractions with the same denominator within one whole.</li> </ul>	<ul style="list-style-type: none"> <li>Present and interpret data using bar charts, pictograms and tables</li> <li>Solve 1 and 2 step problems e.g. how many more liked....</li> <li>Measure the perimeter of simple 2D shapes.</li> <li>Tell and write the time from an analogue clock to the nearest minute.</li> <li>Tell the time using Roman Numeral and digital clocks (including am/pm).</li> </ul>

		<ul style="list-style-type: none"> <li>Subtract numbers with up to 3 digits, using formal written methods of columnar subtraction (expanded method).</li> <li>Estimate the answer to a calculation and use inverse operations to check answers.</li> <li>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</li> <li>Recall multiplication facts for 3, 4 and 8x table (work around these within journeys)</li> <li>Use place value facts to help multiply 2-digit x ones digit <i>e.g., 16 x 8 can be done as 10 x 8 = 80 and 6 x 8 = 48 and add them together</i> <ul style="list-style-type: none"> <li>Solve problems including missing numbers.</li> </ul> </li> <li>Recall division facts for 3, 4 and 8x table</li> <li>Use place value facts to help divide 2 digit ÷ a ones digit <i>e.g. 75 ÷ 5 can be done as 50 ÷ 5 and 25 ÷ 5 (chunking)</i> <ul style="list-style-type: none"> <li>Divide number which create remainders and understand why</li> <li>Solve missing number problems using inverse relationship, identifying relationship between x and ÷</li> <li>Solve division word problems in contexts</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Solve problems which involve fractions.</li> <li>Count up and down in tenths – understand their value and that 10 tenths = 1 whole.</li> </ul>	<ul style="list-style-type: none"> <li>Record, understand and compare units of time e.g. number of seconds in a minute, days in each month, how many minutes in a certain amount of hours etc.</li> <li>Compare duration of events e.g. which bus route is quickest or how long did the film last?'</li> <li>Add and subtract amounts of money to give change, using both £ and p in practical contexts. (Decimal and formal in Year 4).</li> <li>Measure: length (mm, cm and mm), weight (g and kg) and volume (ml and l) accurately.</li> <li>Compare: length (mm, cm and mm), weight (g and kg) and volume (ml and l) accurately.</li> <li>Add and subtract length (mm, cm and mm), weight (g and kg) and volume (ml and l) accurately e.g. 3 ½ kg + 400g.</li> <li>Identify, sort and describe a range of 3D shapes in relation to their properties.</li> <li>Make 3D models recognising 2D faces and angles etc.</li> </ul>
<b>Year 4</b>	<ul style="list-style-type: none"> <li>Recognise the value of each digit in a four-digit number.</li> <li>Compare and order numbers up to 10,000.</li> <li>Identify, represent and estimate numbers using different representations.</li> <li>Find 1000 more / less than a given number.</li> <li>Round any number to the nearest: 10, 100 &amp; 1000.</li> </ul>	<ul style="list-style-type: none"> <li>Add 2 and 3-digit numbers mentally using a range of strategies (see mental maths calculation policy).</li> <li>Add numbers up to 4 digits, using formal written methods of columnar addition.</li> <li>Subtract 2 and 3-digit numbers mentally using a range of strategies (see mental maths calculation policy).</li> </ul>	<ul style="list-style-type: none"> <li>Recognise, find and name a wider variety of fractions (length, shape and number)</li> <li>Recognise equivalent fractions e.g. <math>\frac{2}{3} = \frac{6}{9}</math></li> <li>+/- fractions of the same denominator (can include whole numbers)</li> <li>Solve problems that involve fractions and decimals in different contexts.</li> </ul>	<ul style="list-style-type: none"> <li>Identify acute, right and obtuse angles.</li> <li>Compare and order angles.</li> <li>Identify lines of symmetry in 2D shapes presented in different manners.</li> <li>Complete a simple symmetric shape with a line of symmetry.</li> </ul>

	<ul style="list-style-type: none"> <li>Count backwards through zero to include negative numbers.</li> <li>Read Roman Numerals to 100.</li> <li>Count in: 6, 7, 9, 25 and 1000.</li> </ul>	<ul style="list-style-type: none"> <li>Subtract numbers up to 4 digits, using formal written methods of columnar subtraction.</li> <li>Estimate the answer to a calculation and use inverse operations to check answers.</li> <li>Solve 1 and 2 step problems, including missing number problems, deciding on which operation to use.</li> <li>Add and subtract amounts of money to give change, using both £ and p in practical contexts (decimals).</li> <li>Recall all multiplication facts to <math>12 \times 12</math>.</li> <li>Mentally multiply 3 numbers together.</li> <li>Recognise and use factor pairs.</li> <li>Solve problems involving multiplying and adding.</li> <li>Use place value facts to multiply mentally e.g. <math>16 \times 5</math> can be done as <math>10 \times 5</math> and <math>6 \times 5</math>.</li> </ul> <p>Or.... If I know <math>7 \times 6=42</math> then... <math>70 \times 6 = 420</math></p> <ul style="list-style-type: none"> <li>Multiply 2 and 3-digit numbers by a 1 digit.</li> <li>Recall all division facts (within times tables)</li> <li>Divide 1- and 2-digit numbers by 10 and 100.</li> <li>Use place value facts to help divide larger numbers mentally e.g. <math>600 \div 3 = 200</math></li> <li>Divide 2 and 3-digit numbers by 1 digit</li> <li>Solve division problems throughout.</li> </ul>	<ul style="list-style-type: none"> <li>Count up and down in hundredths – recognise that hundredths arise from dividing one-digit numbers by 100.</li> <li>Recognise and write decimal equivalents of any number of tenths and hundredths.</li> <li>Recognise decimal equivalents for <math>\frac{1}{4}</math> <math>\frac{1}{2}</math> and <math>\frac{3}{4}</math></li> <li>Round numbers with one decimal place to nearest whole number</li> </ul>	<ul style="list-style-type: none"> <li>Identify, compare and classify 2D shapes based on their properties and sizes.</li> <li>Focus on quadrilaterals and triangles.</li> <li>Find the area of rectilinear shapes (by counting squares).</li> <li>Measure and calculate the perimeter of rectilinear shapes in cm and m.</li> <li>Understand units of time e.g. minutes in an hour, how many weeks in a fortnight etc.</li> <li>Tell the time to the nearest minute: analogue 12h and 24h and digital.</li> <li>Convert time between the clocks.</li> <li>Convert accurately between different units of measure e.g. <math>4\text{km} = \underline{\hspace{1cm}}\text{m}</math> or 300 seconds = <math>\underline{\hspace{1cm}}</math> minutes.</li> <li>Estimate, compare and calculate different measures.</li> <li>Read, write and plot coordinates in first quadrant.</li> <li>Plot points and draw sides to complete polygons.</li> <li>Translation – draw new positions and describe movement of shapes (left, right, up or down).</li> <li>Present discrete and continuous data e.g. bar charts, tables and line graphs.</li> <li>Interpret and solve comparison, sum and difference problems.</li> </ul>
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## Mathematical Vocabulary

EYFS	Year 1	Year 2	Year 3	Year 4
<b>Number / Place Value:</b> Number Count How Many? More / Less Number Line Read Write Answer  Add Adding Number Bonds Take away Altogether  Double Pattern Repeat Same Share  Shape Circle Triangle Square Rectangle Side Corner Cube Cuboid Cone Sphere Flat Straight Round Same Different	<b>Number / Place Value:</b> <i>Same as previous year groups, plus:</i> Forwards / Backwards Numeral Most / Least Two-digit Tens Ones More Than / Less Than Equal to Concrete Pictorial  <b>4 Calculations (+ - x ÷):</b> <i>Same as previous year groups, plus:</i> Count on Addition Plus Total Count back Subtract Missing Number One-Digit Part Whole Number Facts Fact Family Signs Share Halving Doubling Groups of	<b>Number / Place Value:</b> <i>Same as previous year groups, plus:</i> Place Value Order Compare Using > < symbols Sequence Odd / Even Partition  <b>4 Calculations (+ - x ÷):</b> <i>Same as previous year groups, plus:</i> Find the sum Find the difference Minus Mental Near Double Next Ten Bond to Ten Count Up Commutative Symbol Operation Inverse Method Solve Problems Times Lots of Repeated Addition Arrays Divide Division Dots Equal groups Half / Dividing by 2	<b>Number / Place Value:</b> <i>Same as previous year groups, plus:</i> Hundreds Three-digit Estimate  <b>4 Calculations (+ - x ÷):</b> <i>Same as previous year groups, plus:</i> Calculation Quantities Formal Method Expanded Column Regroup Exchange Multiple 10x Bigger Grid Method Multiplication / Division Facts Scaling Up Remainders	<b>Number / Place Value:</b> <i>Same as previous year groups, plus:</i> Thousands Four-digit Placeholder Round Nearest 10, 100 and 100 Negative Number Roman Numeral  <b>4 Calculations (+ - x ÷):</b> <i>Same as previous year groups, plus:</i> Compact Column Product Factor Pairs 100x Bigger Short Division Quotient

Big Little Long Longer Longest Short Shorter Shortest Tall Heavier Lighter Light Heavy Full Empty Size	<p><b>Fractions:</b> <i>Same as previous year groups, plus:</i> Fraction Equal Parts Group Whole Shape Half – 2 equal parts Equal Sharing Quarter – 4 equal parts</p> <p><b>Geometry, Measures &amp; Statistics:</b> <i>Same as previous year groups, plus:</i> 2D Shape Pentagon Hexagon Octagon Curved Straight 3D Shape Pyramid  ¼ Turn ½ Turn Movement Direction  Before After Next First Today Yesterday Tomorrow Morning Afternoon Evening All days of the week</p>	<p><b>Fractions:</b> <i>Same as previous year groups, plus:</i> Part of a Whole Quantity Third – 3 equal parts Numerator Denominator Two Quarters Equivalent Three Quarters</p> <p><b>Geometry, Measures &amp; Statistics:</b> <i>Same as previous year groups, plus:</i> Two-Dimensional Heptagon Line of Symmetry Symmetrical Vertical Properties Three-Dimensional Triangular Prism Square Based Pyramid Triangular Based Pyramid Faces Edges Vertices Vertex Surface Compare Sort  Right Angle Rotate ¾ Turn Left Right Clockwise Anti-Clockwise</p>	<p><b>Fractions &amp; Decimals:</b> <i>Same as previous year groups, plus:</i> Unit Fractions Non-Unit Fractions Decimal Numbers Decimal Point Tenths 10 Tenths = 1 Whole</p> <p><b>Geometry, Measures &amp; Statistics:</b> <i>Same as previous year groups, plus:</i> Polygon Vertical Lines Horizontal Lines Parallel Lines Perpendicular Lines  Comparing turns and angles E.g. 2 right angles = ½ turn Degree Angle  Millimetres Perimeter  Roman Numerals (Clock Face) 12-hour 24-hour All 1-minute intervals AM PM Midday Midnight Leap Year Fortnight Duration</p>	<p><b>Fractions &amp; Decimals:</b> <i>Same as previous year groups, plus:</i> Common equivalence Improper Fractions – Greater than a whole Hundredths 100 Hundredths = 1 Whole 10 Hundredths = 1 Tenth Nearest Whole Number Decimal Equivalence Convert</p> <p><b>Geometry, Measures &amp; Statistics:</b> <i>Same as previous year groups, plus:</i> Quadrilateral Rhombus Kite Parallelogram Trapezium Equilateral Triangle Isosceles Triangle Scalene Triangle Right Angled Triangle Regular Irregular Classify  Acute Obtuse Straight Line Degrees  Symmetric Figure Co-ordinate Quadrant Translate Plot Points Grid</p>
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	<p>All months of the year O'Clock Half Past Hour Minute Hands Clock Face</p> <p>Length – longer / shorter Weight – heavier / lighter Liquid – empty / full / less than half / more than half</p> <p>Coins (Name all) Notes (all) Money Buy Sell</p>	<p>How Many Right Angles in each turn?</p> <p>Centimetres Metres Mass Kilograms Grams Temperature Celsius Scales Metre Sticks Measuring Tape Thermometers Capacity Millilitres Litres</p> <p>Pounds £ Pence p Change Two-Step Problem Combinations Past the hour To the Hour All 5-minute intervals Minutes Seconds</p> <p>Block Diagram Data Vertical Horizontal Tally Charts Table Pictogram Venn Diagram Row Column Most / Least Popular Compare</p>	<p>Construct Interpret One-Step Two-Step Bar Chart How Many More... How Many Fewer... What's the Difference... X-Axis Y-Axis Graph</p>	<p>Kilometre Convert Area Rectilinear</p> <p>Digital Arrive Depart Century Millenium</p> <p>Discrete Data Continuous Data Time Graph</p>
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## SMSC in Maths

### Spiritual

Developing a deep thinking and questioning, encouraging our children to take risks. This enables our pupils to explore and try new ideas without the fear of failure. This is fundamental in building children's spiritual growth and self-esteem.

We aim to give our children an appreciation of the richness and power of Maths. We want them to understand the purpose and why it is being taught to them.

When possible, the subject is explored outside and the environment around them is utilised.

### Social

In the classroom, we look for opportunities for pupils to discuss their understanding, building their self-confidence. We encourage collaborative learning - developing team working skills with concrete resources and having empathy for our peers. This allows all children to build a mathematical voice. We regularly use online, interactive resources to create team challenges for increased pupil engagement.

### Moral

Within the classroom, we encourage respect and empathy with our peers. We value listening to others views and opinions when children are reasoning and explaining their mathematical thinking. Mistakes are accepted and turned into learning opportunities.

### Cultural

We share the appreciation with all pupils that mathematics, it's language and symbols is universal and has developed many different cultures from around the world. We also explore the mathematics applied in different cultures such as patterns, symmetry and tessellations.

### British Values

Our children listen to their peers and consider the views and opinions of others. During collaborative learning, they take turns and develop their teamwork. The concept of democracy is developed with our pupils during the Statistics element of the Maths curriculum. Children will vote and interpret information, making links to voting. Children follow the rules of the classroom and understand that there are consequences when they are not followed.