

# St. John the Evangelist Catholic Academy

*Part of the Newman Catholic Collegiate*



## Mathematics Progression Ladders

### Year 2

- **Blue highlighting** denotes specific material moved down from a higher year.
- **Yellow highlighting** denotes content not explicit in the PNS for the year. It often indicates little more than an expansion and clarification of what was already being taught using the PNS. Also highlighted is the same material in all 3 terms, where it is typically taught in the autumn term, but used and reinforced in subsequent terms.
- **Purple text** denotes repeated statements.
- *Italics* indicate illustrative examples, non-statutory notes and guidance from the new PoS. (NB most of the non-statutory notes and guidance are new, from a higher year, or beyond the PNS.)

Year 2	Advancing 2	Deep 1	Deep 2
<b>NUMBER</b>			
<b>Number and place value</b>	<ul style="list-style-type: none"> <li>count in steps of 2 and 5 from 0, and tens from any number, forward or backward <i>e.g. 93, 83, 73, 63, ...</i></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>read and begin to write numbers to at least 100 in numerals and in words <i>e.g. forty</i></li> <li>compare and order numbers from 0 up to 100</li> <li>use place value and number facts to solve problems</li> <li>Use term 'multiple'</li> <li>estimate number of objects up to 20</li> <li>The language of equal to, more than, less than, most and least is generally used correctly.</li> <li>Generally, the starting point in a problem is found.</li> <li>identify odd and even numbers</li> </ul>	<ul style="list-style-type: none"> <li>count in steps of 2, 3, and 5 from 0, and tens from any number, forward or 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>read and write numbers to at least 100 in numerals and in words <i>e.g. forty-five</i></li> <li>compare and order numbers from 0 up to 100; use &lt;, &gt; and = signs</li> <li>use place value and number facts to solve problems.</li> <li>partition numbers in different ways <i>e.g. 23 = 20 + 3 = 10 + 13</i></li> </ul>	<ul style="list-style-type: none"> <li>count in steps of 2, 3, and 5 from 0, and tens from any number, forward or 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>read and write numbers to at least 100 in numerals and in words</li> <li>read and write numbers beyond 100 in numerals and words</li> <li>compare and order numbers from 0 up to 100; use &lt;, &gt; and = signs</li> <li>use place value and number facts to solve problems.</li> <li>partition numbers in different ways <i>e.g. 23 = 20 + 3 = 10 + 13</i></li> <li>compare and order numbers beyond 100</li> <li>estimate numbers on an empty number line</li> <li>understand the importance of 0 as a place holder in 2 and 3 digit numbers</li> <li>round numbers to the nearest 10</li> <li>The language of equal to, more than, less than, fewer, most and least is used</li> </ul>

			<p>correctly and independently.</p> <ul style="list-style-type: none"> <li>• The place value of each digit in a two-digit number is recognised without support.</li> <li>• <u>Place value and number facts are used to solve problems.</u></li> <li>• <u>The starting point in a problem is found independently.</u></li> <li>• <u>Method can explained/ reasoned.</u></li> </ul>
<p><b>Addition and subtraction</b></p>	<ul style="list-style-type: none"> <li>• add and subtract numbers using concrete objects, pictorial representations, and mentally, including:             <ul style="list-style-type: none"> <li>○ a two-digit number and ones</li> <li>○ a two-digit number and tens <i>e.g.</i> <math>87 - 30 = 57</math></li> </ul> </li> <li>• solve problems with addition and subtraction:             <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> </li> <li>• <b>begin to recall and use addition and subtraction facts to 20</b>, <i>e.g.</i> <math>19 - 7 = 12</math> and derive and use related facts up to 100</li> <li>• <i>e.g.</i> <math>30 = 90 - 60</math></li> <li>• recognise and use the inverse relationship</li> </ul>	<ul style="list-style-type: none"> <li>• add and subtract numbers using concrete objects, pictorial representations, and mentally, including:             <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 <i>e.g.</i> <math>34+29</math></li> <li>○ adding three one-digit numbers <i>e.g.</i> <math>6 + 5 + 4</math></li> </ul> </li> <li>• solve problems with addition and subtraction:             <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> </li> <li>• <b>recall and use addition and subtraction facts to 20 fluently</b>, and derive and use related facts up to 100</li> </ul>	<ul style="list-style-type: none"> <li>• add and subtract numbers using concrete objects, pictorial representations, and mentally, including:             <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 <i>e.g.</i> <math>63-29</math></li> <li>○ Adding three one-digit numbers <i>e.g.</i> <math>9 + 7 + 9</math></li> </ul> </li> <li>• solve problems with addition and subtraction:             <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> </li> <li>• <b>recall and use addition and subtraction facts to 20 fluently</b>, and derive and use related facts up to 100</li> </ul>

between addition and subtraction and use this to check calculations and missing number problems.

- show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- understand and use 'sum' and 'difference'

• recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.

- show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot

- use the language 'sum' and 'difference' e.g. find two numbers with a difference of 6 (3 and 9, 10 and 16..);

• recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.

- show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot

- use the language 'sum' and 'difference' e.g. three numbers sum to 12, two numbers are 3 and 7, what is the third number?
- Missing number problems are solved independently by using the inverse relationship between addition and subtraction.
- begin to solve + and - in columns without crossing boundaries
- Three one-digit numbers are added mentally.

<p><b>Multiplication and division</b></p>	<ul style="list-style-type: none"> <li>•begin to recall and use multiplication and division facts for the 2, and 10 multiplication tables, including recognising odd and even numbers <i>e.g.</i> <math>22 \div 2 = 11</math></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>•recognise and use the inverse relationship between multiplication and division in calculations</li> <li>•relate multiplication and division to grouping and sharing discrete (<i>e.g.</i> counters and continuous quantities <i>e.g.</i> water</li> <li>•solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts <i>e.g.</i> share 18 counters between 3 children</li> <li>•Odd and even numbers are recognised without support.</li> <li>•Generally, calculations involving</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>•recognise and use the inverse relationship between multiplication and division in calculations</li> <li>•relate multiplication and division to grouping and sharing discrete <i>e.g.</i> counters and continuous quantities <i>e.g.</i> water, and relating these to fractions and measures <i>e.g.</i> <math>40\text{cm} \div 2 = 20\text{cm}</math>; <math>20\text{cm}</math> is <math>\frac{1}{2}</math> of <math>40\text{cm}</math></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>	<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>•recognise and use the inverse relationship between multiplication and division in calculations</li> <li>•relate multiplication and division to grouping and sharing discrete <i>e.g.</i> counters and continuous quantities <i>e.g.</i> water, and relating these to fractions and measures <i>e.g.</i> <math>40\text{cm} \div 2 = 20\text{cm}</math>; <math>20\text{cm}</math> is <math>\frac{1}{2}</math> of <math>40\text{cm}</math></li> <li>•solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts <i>e.g.</i> there are 10 pencils in a box, I have 5 boxes and 3 spare pencils, how many do I have altogether?</li> </ul>

	<p>multiplication and division are completed accurately. Generally, the signs <math>\times</math>, <math>\div</math>, <math>=</math> are used correctly</p> <ul style="list-style-type: none"> <li>• Generally, an understanding that multiplication of two numbers can be done in any order and division of one number by another cannot is shown.</li> <li>• Mental methods are developing in order to solve multiplication and division problems.</li> </ul>		<ul style="list-style-type: none"> <li>• There is a secure understanding that multiplication of two numbers can be done in any order and division of one number by another cannot</li> <li>• Mental calculations can be recorded as number sentences and problems involving multiplication and division, using mental methods, can be solved correctly and independently</li> </ul>
<p><b>Fractions</b></p>	<ul style="list-style-type: none"> <li>• recognise, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a shape</li> <li>• When reminders are provided, simple fractions are written, e.g. <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math> and <math>\frac{1}{2}</math> of <math>6 = 3</math></li> <li>• <math>\frac{1}{2}</math>, <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of an object, shape or quantity are recognised and named when prompts are given.</li> <li>• <math>\frac{1}{2}</math>, <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity are generally recognised, named and written.</li> <li>• Generally, the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math> is recognised as a decimal or percentage.</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity e.g. <i>how long is <math>\frac{1}{3}</math> of a ribbon which is 60 cm long?</i></li> <li>• write simple fractions e.g. <math>\frac{1}{2}</math> of <math>6 = 3</math> and recognise the equivalence of two quarters and one half.</li> <li>• count in fractions e.g. <math>0</math>, <math>\frac{1}{2}</math>, <math>1</math>, <math>1\frac{1}{2}</math>, <math>2</math>, <math>2\frac{1}{2}</math>, ...</li> </ul>	<ul style="list-style-type: none"> <li>• recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity</li> <li>• write simple fractions e.g. <math>\frac{1}{2}</math> of <math>6 = 3</math> and recognise the equivalence of two quarters and one half.</li> <li>• count in fractions e.g. <math>3\frac{1}{4}</math>, <math>3\frac{2}{4}</math>, <math>3\frac{3}{4}</math>, <math>4</math>, <math>4\frac{1}{4}</math>, ...</li> <li>• More complicated fractions are written independently, e.g. finding <math>\frac{1}{3}</math>, <math>\frac{1}{6}</math> and <math>\frac{1}{5}</math> and <math>\frac{1}{3}</math> of <math>12 = 4</math>.</li> <li>• <math>\frac{1}{2}</math>, <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of an object, shape or quantity are recognised and named independently.</li> <li>• <math>\frac{1}{2}</math>, <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity are recognised, named and written.</li> <li>• recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape,</li> </ul>

			<p>set of objects or quantity</p> <ul style="list-style-type: none"> <li>The equivalence of <math>\frac{2}{4}</math>, <math>\frac{1}{2}</math> and harder fractions, such as <math>\frac{1}{3}</math>, <math>\frac{2}{3}</math>, <math>\frac{1}{5}</math>, etc., is recognised without prompts.</li> </ul>
<b>MEASUREMENT</b>			
<p><b>Measurement</b></p>	<ul style="list-style-type: none"> <li>choose and use appropriate standard units to estimate and measure <b>length/height</b> in any direction (m/cm) to the nearest appropriate unit, using rulers</li> <li>choose and use appropriate standard units to measure length/height in any direction (m/cm); mass (kg/g); temperature (<math>^{\circ}\text{C}</math>); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels</li> <li>compare <b>and order</b> lengths</li> <li>recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</li> <li>find different combinations of coins to equal the same amounts of money</li> <li>e.g. find different ways to make 25p</li> <li>solve simple problems in a practical context involving addition and subtraction of money of the same unit including giving change e.g. I buy a toy for £14; how much change do I get from £20?</li> </ul>	<ul style="list-style-type: none"> <li>choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g) to the nearest appropriate unit, using rulers, scales</li> <li>compare <b>and order</b> lengths, masses and record the results using <math>&gt;</math>, <math>&lt;</math> and <math>=</math></li> <li>recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</li> <li>find different combinations of coins to 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 e.g. I buy 2 bags of sweets for 20p each, how much change will I get from 50p?</li> <li>compare and sequence intervals of time</li> <li>tell and write the time <b>to five minutes</b>, including quarter past/to the hour and <b>draw the hands on a clock face to show these times.</b></li> </ul>	<ul style="list-style-type: none"> <li>choose and use appropriate standard units to estimate and measure: length/height in any direction (m/cm); mass (kg/g); <b>temperature (<math>^{\circ}\text{C}</math>)</b>; <b>capacity</b> (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels</li> <li>compare <b>and order</b> lengths, masses, volume/capacity <b>and record the results using <math>&gt;</math>, <math>&lt;</math> and <math>=</math></b></li> <li>recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value e.g. make 73p using the fewest coins</li> <li>find different combinations of coins to 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 e.g. I buy a cake for 60p and a biscuit for 25p, how much change will I get from £1?</li> <li>compare and sequence intervals of time</li> </ul>

	<ul style="list-style-type: none"> <li>•compare and sequence intervals of time</li> <li>•tell and write the time quarter past/to the hour and draw the hands on a clock face to show these times <i>e.g. draw the hands on a clock face to show <math>\frac{1}{4}</math> to 6, making sure the hour hand is located correctly</i></li> </ul>	<ul style="list-style-type: none"> <li>•<b>know the number of minutes in an hour and the number of hours in a day.</b></li> </ul>	<ul style="list-style-type: none"> <li>•tell and write the time <b>to five minutes</b>, including quarter past/to the hour and draw the hands on a clock face to show these times.</li> </ul>
<b>GEOMETRY</b>			
<b>Properties of shapes</b>	<ul style="list-style-type: none"> <li>•identify and describe the properties of 2-D shapes, including the number of sides and symmetry in a vertical line</li> <li>•<i>draw lines and shapes using a straight edge</i></li> <li>•identify and describe the properties of 3-D shapes, including the number of <b>vertices and faces</b></li> <li>•compare and sort common 2-D and 3-D shapes and everyday objects</li> <li>•<i>e.g. sort 3-D shapes in different ways such as whether they have triangular faces, all straight edges...</i></li> <li>•<i>recognise and name, polygons e.g. pentagon, hexagon, octagon and cones</i></li> <li>•<b>2-D and 3-D shapes are sorted using more than one criterion.</b></li> </ul>	<ul style="list-style-type: none"> <li>•identify and describe the properties of 2-D shapes, including the number of sides and symmetry in a vertical line</li> <li>•<i>draw lines and shapes using a straight edge</i></li> <li>•identify and describe the properties of 3-D shapes, including the number of <b>edges, vertices and faces</b></li> <li>•compare and sort common 2-D and 3-D shapes and everyday objects <i>e.g. sort 3-D shapes in different ways such as whether they are prisms, whether they have more than 8 edges...</i></li> <li>•<i>recognise and name quadrilaterals, polygons e.g. pentagon, hexagon, octagon, prisms and cones</i></li> <li>•<b>identify 2-D shapes on the surface of 3-D shapes, for example a circle on a cylinder and a triangle on a pyramid</b></li> </ul>	<ul style="list-style-type: none"> <li>•identify and describe the properties of 2-D shapes, including the number of sides and symmetry in a vertical line</li> <li>•<i>draw lines and shapes using a straight edge</i></li> <li>•identify and describe the properties of 3-D shapes, including the number of <b>edges, vertices and faces</b></li> <li>•compare and sort common 2-D and 3-D shapes and everyday objects <i>e.g. sort 2-D shapes in different ways such as whether they are quadrilaterals and have line symmetry...</i></li> <li>•<i>recognise and name quadrilaterals, polygons e.g. pentagon, hexagon, octagon, prisms and cones</i></li> <li>•<b>identify 2-D shapes on the surface of 3-D shapes, for example a circle on a cylinder and a triangle on a pyramid</b></li> </ul>

<p><b>Position and direction</b></p>	<ul style="list-style-type: none"> <li>order and arrange combinations of mathematical objects in patterns, including those in different orientations e.g. a turning shape, draw the next shape in the pattern</li> </ul> 	<ul style="list-style-type: none"> <li>order and arrange combinations of mathematical objects in patterns, including those in different orientations</li> <li>use mathematical vocabulary to describe position, direction and movement, including distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise), and movement in a straight line.</li> <li>Use the concept and language of angles to describe 'turn' by applying rotations, including in practical contexts (e.g. pupils themselves moving in turns, giving instructions to other pupils to do so, and programming robots using instructions given in right angles)</li> </ul>	<ul style="list-style-type: none"> <li>order and arrange combinations of mathematical objects in patterns, including those in different orientations</li> <li>use mathematical vocabulary to describe position, direction and movement, including distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise), and movement in a straight line.</li> <li>Use the concept and language of angles to describe 'turn' by applying rotations, including in practical contexts (e.g. pupils themselves moving in turns, giving instructions to other pupils to do so, and programming robots using instructions given in right angles)</li> </ul>
<p><b>STATISTICS</b></p>			
<p><b>Use and interpret data</b></p>	<ul style="list-style-type: none"> <li>interpret and begin to construct simple pictograms, tally charts, block diagrams and simple tables</li> <li>answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li> <li>answer questions about totalling and comparing categorical data.</li> </ul>	<ul style="list-style-type: none"> <li>interpret and construct simple pictograms e.g. where the symbol represents 2, 5 or 10 units, tally charts, block diagrams and simple tables</li> <li>answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li> <li>answer questions about totalling and comparing categorical data.</li> </ul>	<ul style="list-style-type: none"> <li>interpret and construct simple pictograms e.g. where the symbol represents 2, 5 or 10 units, tally charts, block diagrams and simple tables</li> <li>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>