

# St. John the Evangelist Catholic Academy

*Part of the Newman Catholic Collegiate*



## Mathematics Progression Ladders

### Year 4

- **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 4	Advancing 2	Deep 1	Deep 2
<p><b>NUMBER</b></p> <p><b>Number and place value</b></p>	<ul style="list-style-type: none"> <li>Count in multiples of 6, 9, 25 and 1000 <i>e.g. 625, 600, 575, 550, 525, 500, ...</i></li> <li>With support if necessary, there is counting backwards to zero and through zero and negative numbers are recognised.</li> <li>Find 1000 more or less than a given number <i>e.g. <math>45 + 1000</math>, <math>8904 - 1000</math></i></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 <i>including measures and measuring instruments</i></li> <li>Round any number to the nearest 10 or 100</li> <li>Solve number and practical problems that involve place value and rounding and with increasingly large positive numbers</li> <li>With reminders, Roman numerals to 100 (I to C) are read.</li> <li>Generally, any number is rounded accurately to the nearest 10, 100 or</li> </ul>	<ul style="list-style-type: none"> <li>Count in multiples of 6, 7, 9, 25 and 1000</li> <li>count backwards through zero to include negative numbers</li> <li>Find 1000 more or less than a given number</li> <li>Count backwards through zero to include negative numbers <i>e.g. 8, 6, 4, 2, 0, -2, -4, -6,...</i></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 <i>including measures and measuring instruments</i></li> <li>Round any number to the nearest 10 or 100</li> <li>Solve number and practical problems that involve place value and rounding and with increasingly large positive numbers</li> </ul>	<ul style="list-style-type: none"> <li>Count in multiples of 6, 7, 9, 25 and 1000</li> <li>read, write and order numbers to 10 000</li> <li>Find 1000 more or less than a given number</li> <li>Count backwards through zero to include negative numbers</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 <i>including measures and measuring instruments</i></li> <li>Round any number to the nearest 10, 100 or 1000</li> <li>Solve number and practical problems that involve place value and rounding and with increasingly large positive numbers</li> <li>Read Roman numerals to 100 (I to C) and know that over time, the numeral</li> </ul>

	<p><u>1000.</u></p> <ul style="list-style-type: none"> <li>• Estimation is generally accurate.</li> <li>• Patterns in results are looked for when problem solving.</li> <li>• Generally, there is a secure awareness of which operation to use when solving problems.</li> </ul>		<p>system changed to include the concept of zero and place value. e.g. 49 = XLIX</p> <ul style="list-style-type: none"> <li>• Some decimal numbers are recognised, e.g. in the number 132.73, the value of the number 7 is understood as 7/10ths.</li> <li>• solve number and practical problems that involve all of the above and with increasingly large positive numbers and begin to solve problems with negative numbers in context e.g. temperature</li> </ul>
<p><b>Addition and subtraction</b></p>	<ul style="list-style-type: none"> <li>• Use both mental and written methods with increasingly large numbers to aid fluency e.g. mentally calculate <math>540 + 400</math> or <math>900 - 360</math></li> <li>• Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</li> <li>• Three-digit numbers and ones and three-digit numbers and tens are added and subtracted mentally. Reminders may be needed to address mistakes. With prompts, three-digit number and hundreds are added and subtracted mentally</li> <li>• add and subtract numbers mentally, including:             <ul style="list-style-type: none"> <li>□ 4-digit numbers and hundreds</li> <li>□ 4-digit numbers and thousands</li> </ul> </li> <li>• Estimate and use inverse operations to check answers to a calculation e.g. <math>8702 - 499</math> is approximately <math>9000 - 500 = 8500</math>; check <math>8203 + 499 = 8702</math></li> </ul>	<ul style="list-style-type: none"> <li>• Use both mental and written methods with increasingly large numbers to aid fluency</li> <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 two-step problems in contexts, deciding which operations and methods to use and why e.g. investigate which amounts of money cannot be made using exactly three coins.</li> </ul>	<ul style="list-style-type: none"> <li>• Use both mental and written methods with increasingly large numbers to aid fluency e.g. mentally calculate <math>540 + 270</math> or <math>900 - 365</math></li> <li>• Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</li> <li>• add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate, crossing the thousands barriers with different numbers of digits e.g. 4-digit =? -3-digit</li> <li>• Three-digit numbers and ones, three-digit numbers and tens and three-digit numbers and hundreds are added and subtracted mentally and quickly. Generally, four-digit numbers and ones, tens or hundreds are added and subtracted mentally.</li> <li>• Estimate and use inverse operations to</li> </ul>

	<ul style="list-style-type: none"> <li>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why <i>e.g. It costs £3.50 for Ben to go swimming and £5:70 for his mum; how much change is there from £10?</i></li> </ul>		<p>check answers to a calculation</p> <ul style="list-style-type: none"> <li>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why <i>e.g. Mr Smith sets out on a 619 mile journey; he drives 320 miles before lunch and 185 miles after lunch; how much farther does he need to drive?</i></li> </ul>
<p><b>Multiplication and division</b></p>	<ul style="list-style-type: none"> <li>Recall multiplication and division facts for multiplication tables up to <math>10 \times 10</math></li> <li>Multiplication and division facts are recalled for 2, 3, 4, 5 and 10 multiplication tables at speed. Generally and with a few reminders or corrections, multiplication and division facts for multiplication tables up to 12 ! 12 can be recalled.</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 <i>e.g. <math>600 \div 3 = 200</math>; <math>4 \times 6 \times 2</math></i></li> <li>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout (see appendix)</li> <li>solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by</li> </ul>	<ul style="list-style-type: none"> <li>Recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math></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 <i>e.g. <math>420 = 70 \times 6</math>; <math>5 \times 4 \times 9</math></i></li> <li>Recognise and use factor pairs and commutativity in mental calculations <i>e.g. factor pairs of 20 are 1 and 20, 2 and 10, 4 and 5; addition and multiplication are commutative e.g. <math>2 \times 6 \times 5 = 2 \times 5 \times 6 = 10 \times 6</math></i></li> <li>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout</li> <li>The following mental calculations occur independently: - multiplying two-digit and three-digit numbers by 0 and 1 - dividing two-digit and three digit</li> </ul>	<ul style="list-style-type: none"> <li>recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math></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 <i>e.g. <math>640 \div 8 = 80</math>; <math>4 \times 6 \times 20</math></i></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>Use the formal written method for short division with exact answers when dividing by a one-digit number <i>e.g. <math>736 \div 8</math></i></li> <li>Solve problems involving multiplying and adding, including using the distributive</li> </ul>

	<p>one digit <i>e.g.</i> <math>34 \times 6 = (30 \times 6) + (4 \times 6)</math>, integer scaling problems and harder correspondence problems such as n objects are connected to m objects <i>e.g.</i> 3 skirts and 4 tops, how many different outfits?</p> <ul style="list-style-type: none"> <li>• Generally, place value and known multiplication and division facts are used to divide and multiply mentally, including multiplying by 0 and 1. Two-digit numbers can be multiplied by 2, 3, 4 and 5 mentally. Generally, three numbers can be multiplied together. Two-digit and three-digit numbers are multiplied by 0 and 1 and two-digit and three digit numbers are divided by 1 mentally with reminders occasionally needed.</li> <li>• Generally, factor pairs in mental calculations are used and recognised, <i>e.g.</i> <math>1 \times 48 = 48</math>, <math>2 \times 24 = 48</math>, <math>3 \times 16 = 48</math>..</li> <li>• The inverse relationship between multiplication and division is recognised. With some support, the inverse relationship between multiplication and division is used to solve problems and check calculations. Division facts can be found from a known multiplication fact</li> <li>• Understand the term factor</li> </ul>	<p>numbers by 1 - multiplying together three numbers. Place value and known multiplication and division facts are used to divide and multiply mentally, including multiplying by 0 and 1.</p> <ul style="list-style-type: none"> <li>• Use the formal written method for short division with exact answers when dividing by a one-digit number <i>e.g.</i> <math>456 \div 3</math></li> <li>• Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit <i>e.g.</i> <math>34 \times 6 = (30 \times 6) + (4 \times 6)</math>, integer scaling problems and harder correspondence problems such as n objects are connected to m objects <i>e.g.</i> the number of different choices on a menu</li> </ul>	<p>law to multiply two digit numbers by one digit <i>e.g.</i> <math>34 \times 6 = (30 \times 6) + (4 \times 6)</math>, integer scaling problems and harder correspondence problems such as n objects are connected to m objects <i>e.g.</i> 3 cakes shared equally between 10 children.</p> <ul style="list-style-type: none"> <li>• The inverse relationship between multiplication and division is used to check calculations and to solve problems independently.</li> </ul>
<p><b>Fractions (including decimals)</b></p>	<ul style="list-style-type: none"> <li>• Know that decimals and fractions are different ways of expressing proportions</li> </ul>	<ul style="list-style-type: none"> <li>• Know that decimals and fractions are different ways of expressing proportions</li> </ul>	<ul style="list-style-type: none"> <li>• Know that decimals and fractions are different ways of expressing proportions</li> </ul>

	<ul style="list-style-type: none"> <li>Recognise and show, using diagrams, families of common equivalent fractions</li> <li>Count using simple fractions and decimal fractions, both forwards and backwards e.g. <math>4^1/3, 4^2/3, 5, 5^1/3, 5^2/3, 6, 6^1/3; 3.2, 3.1, 3, 2.9, 2.8, \dots</math> and represent fractions and decimals on a number line</li> <li>Count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten e.g. <math>3/10 = 30/100 = 0.30 = 0.3</math></li> <li>Identify, name and write equivalent fractions of a given fraction, including tenths and hundredths e.g. <math>6/9 = 2/3</math></li> <li>Solve problems to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number e.g. find <math>4/9</math> of 18 counters</li> <li>Recognise and write decimal equivalents of any number of tenths or hundredths e.g. <math>9/10 = 0.9; 9/100 = 0.09</math></li> <li>Recognise and write decimal equivalents to <math>1/4; 1/2; 3/4</math></li> </ul>	<ul style="list-style-type: none"> <li>Recognise and show, using diagrams, families of common equivalent fractions</li> <li>Count using simple fractions and decimal fractions, both forwards and backwards and represent fractions and decimals on a number line</li> <li>Count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten</li> <li>Identify, name and write equivalent fractions of a given fraction, including tenths and hundredths</li> <li>Solve problems to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number e.g. What fraction of a day is 3 hours?</li> <li>Recognise and write decimal equivalents of any number of tenths or hundredths</li> <li>Recognise and write decimal equivalents to <math>1/4; 1/2; 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</li> </ul>	<ul style="list-style-type: none"> <li>Recognise and show, using diagrams, families of common equivalent fractions</li> <li>Count using simple fractions and decimal fractions, both forwards and backwards and represent fractions and decimals on a number line</li> <li>Count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten</li> <li>Identify, name and write equivalent fractions of a given fraction, including tenths and hundredths</li> <li>Add and subtract fractions with the same denominator e.g. <math>2/5 + 4/5 = 6/5</math></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 e.g. <math>1/5</math> of <input type="text"/> is 9</li> <li>Recognise and write decimal equivalents of any number of tenths or hundredths</li> <li>Recognise and write decimal equivalents to <math>1/4; 1/2; 3/4</math></li> </ul>
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	<ul style="list-style-type: none"> <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 units, tenths and hundredths</li> <li>With remainders of processes fractions with the same denominator within one whole are added and subtracted</li> <li>Generally, simple measure and money problems involving fractions and decimals to two decimal places are solved.</li> <li>When prompted decimals with one place are rounded to the nearest whole number.</li> <li>Generally any sets of numbers with two decimal places are ordered correctly</li> </ul>	<p>the answer as units, tenths and hundredths</p> <ul style="list-style-type: none"> <li>Round decimals with one decimal place to the nearest whole number <i>e.g. 32.5 rounds to 33; 49.7 rounds to 50</i></li> <li>Compare numbers with the same number of decimal places up to two decimal places <i>e.g. put in order: 2.56, 26.52, 2.65, 25.62, 2.62</i></li> <li>Solve simple measure and money problems involving fractions and decimals to two decimal places. <i>e.g. two parcels weigh 5.5kg altogether, one weighs 3.8kg, what is the mass of the other?</i></li> </ul>	<ul style="list-style-type: none"> <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 units, tenths and 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 two decimal places</li> <li>Solve simple measure and money problems involving fractions and decimals to two decimal places <i>e.g. Ben buys a toy costing £4.55 and <math>\frac{1}{4}</math> kg of sweets costing £3.20 per kilo; how much change does he receive from £10?</i></li> <li>Fractions with the same denominator within one whole are added and subtracted independently</li> <li>Problems involving increasingly harder fractions, such as improper fractions, fractions with different denominations, etc. are solved</li> <li>Decimal equivalents of any number of tenths or hundredths is recognised and written. Balancing equations are beginning to be solved.</li> </ul>
<b>MEASUREMENT</b>			
<b>Measurement</b>	<ul style="list-style-type: none"> <li>Convert between different units of measure (<i>e.g. kilometre to metre; hour</i>)</li> </ul>	<ul style="list-style-type: none"> <li>Convert between different units of measure (<i>e.g. kilometre to metre; hour</i>)</li> </ul>	<ul style="list-style-type: none"> <li>Convert between different units of measure (<i>e.g. kilometre to metre; hour</i>)</li> </ul>

	<p><i>to minute) e.g. <math>4\frac{1}{2}kg = 4500g</math>;</i></p> <ul style="list-style-type: none"> <li>Estimate, <b>compare</b> and calculate different measures, including money in pounds and pence <i>e.g. put in order: £1.20, 98p, £0.89, £1.08</i></li> <li><b>measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m</b></li> <li><b>read, write and convert time between analogue and digital 12- and 24-hour clocks</b></li> </ul>	<p><i>to minute) e.g. 90 minutes = <math>1\frac{1}{2}</math> hours</i></p> <ul style="list-style-type: none"> <li>Estimate, <b>compare</b> and calculate different measures, including money in pounds and pence</li> <li>Read, write and convert time between analogue and digital 12 and <b>24-hour</b> clocks <i>e.g. <math>\frac{1}{4}</math> to 8 in the evening can be written as 19:45</i></li> <li>Solve problems involving converting from hours to minutes; minutes to seconds; <b>years to months; weeks to days</b>. <i>e.g. which of these children are 3 years old:</i> <ul style="list-style-type: none"> <li>Isabel 39 months</li> <li>Ben 32 months</li> <li>Cara 50 months</li> <li>Dylan 42 months</li> </ul> </li> <li><b>find the area of rectilinear shapes by counting squares</b></li> </ul>	<p><i>to minute)</i></p> <ul style="list-style-type: none"> <li>Estimate, <b>compare</b> and calculate different measures, including money in pounds and pence <i>e.g. put in order: 4.2kg, 4700g, <math>4\frac{1}{2}kg</math>, 490g</i></li> <li>Read, write and convert time between analogue and digital 12 and <b>24-hour</b> clocks</li> <li><b>Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.</b></li> <li><b>Measure and calculate the perimeter of a rectilinear figure</b> (including squares) in centimetres and metres <i>e.g. find the perimeter of an L-shape where the lengths are given or can be measured</i></li> <li>Find the area of rectilinear shapes by counting squares <i>e.g. find the area of an L-shape drawn on squared paper</i></li> </ul>
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**GEOMETRY**

<p><b>Properties of shapes</b></p>	<ul style="list-style-type: none"> <li><b>Compare and classify geometric shapes, including quadrilaterals (e.g. parallelogram, rhombus, trapezium) and triangles (e.g. isosceles, equilateral, scalene), based on their properties and sizes e.g. sort triangles to find those that are isosceles and/or have a right</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Compare and classify geometric shapes, including quadrilaterals (e.g. parallelogram, rhombus, trapezium) and triangles (e.g. isosceles, equilateral, scalene), based on their properties and sizes e.g. sort quadrilaterals to find those with line symmetry or parallel</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Compare and classify geometric shapes, including quadrilaterals (e.g. parallelogram, rhombus, trapezium) and triangles (e.g. isosceles, equilateral, scalene), based on their properties and sizes</b></li> </ul>
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	<p><i>angle</i></p> <ul style="list-style-type: none"> <li>Complete a simple symmetric figure with respect to a specific line of symmetry</li> </ul>	<p><i>edges</i></p> <ul style="list-style-type: none"> <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, <i>without using a protractor</i></li> </ul>	<ul style="list-style-type: none"> <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, <i>without using a protractor</i></li> <li>Compare lengths and angles to decide if a polygon is regular or irregular. <i>e.g. regular polygons have edges with the same lengths and angles all the same size e.g. a square is the only regular quadrilateral</i></li> <li>Identify lines of symmetry in 2-D shapes presented in different orientations</li> </ul>
Position and direction	<ul style="list-style-type: none"> <li>Describe positions on a 2-D grid as coordinates in the first quadrant</li> <li>Plot specified points and draw sides to complete a given polygon. <i>e.g. find the coordinates of the missing vertex of a shape.</i></li> </ul>	<ul style="list-style-type: none"> <li>Describe positions on a 2-D grid as coordinates in the first quadrant</li> <li>Plot specified points and draw sides to complete a given polygon.</li> <li>Describe movements between positions as translations of a given unit to the left/right and up/down</li> </ul>	<ul style="list-style-type: none"> <li>describe positions on a 2-D grid as coordinates in the first quadrant</li> <li>Plot specified points and draw sides to complete a given polygon.</li> <li>Describe movements between positions as translations of a given unit to the left/right and up/down</li> </ul>
<b>STATISTICS</b>			
Use and interpret data	<ul style="list-style-type: none"> <li>Interpret and present discrete data using appropriate graphical methods, including bar charts, <i>using a greater</i></li> </ul>	<ul style="list-style-type: none"> <li>Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts</li> </ul>	<ul style="list-style-type: none"> <li>Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts</li> </ul>

	<p><i>range of scales</i></p> <ul style="list-style-type: none"><li>• Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs</li></ul>	<p><b>and time graphs</b>, <i>using a greater range of scales e.g. height of a sunflower plant, measured daily for 2 weeks</i></p> <ul style="list-style-type: none"><li>• Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs</li></ul>	<p><b>and time graphs</b>, <i>using a greater range of scales</i></p> <ul style="list-style-type: none"><li>• Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs</li><li>• <b>solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.</b></li></ul>
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