

St. John the Evangelist Catholic Academy

Part of the Newman Catholic Collegiate



Mathematics Progression Ladders

Year 3

- **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 3	Basic 1	Basic 2	Advancing 1
NUMBER			
<p>Number and place value</p>	<ul style="list-style-type: none"> Count from 0 in multiples of 4, 50 and 100; find 10 or 100 more or less than a given number <i>e.g. 10 more than 395</i> Recognise the place value of each digit in a three-digit number (hundreds, tens, ones) Identify, represent and estimate numbers using different representations <i>including those related to measure e.g. using place value cards to show $985 = 900 + 80 + 5$; tally marks; base 10 apparatus.</i> <i>Apply partitioning related to place value using varied and increasingly complex problems e.g. $146 = 100$ and 40 and 6, $146 = 130$ and 16</i> Read and write numbers to at least 1000 in numerals Compare and order numbers up to 1000 Solve number problems and practical problems involving place value and rounding. understand importance of 0 as a place holder in numbers up to 1000 round numbers to the nearest 100 	<ul style="list-style-type: none"> Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number There is a process of counting backwards to zero but prompts may be needed. Recognise the place value of each digit in a three-digit number (hundreds, tens, ones) Identify, represent and estimate numbers using different representations <i>including those related to measure</i> read Roman numerals up to 12 Roman numerals on a clock can be read <i>Apply partitioning related to place value using varied and increasingly complex problems</i> Read and write numbers to at least 1000 in numerals and in words <i>e.g. three hundred and forty-six</i> Compare and order numbers up to 1000 compare and order numbers up to 1000, using $>$, $<$ and $=$ round numbers to nearest 10 or 100 Solve number problems and practical problems involving place value and 	<ul style="list-style-type: none"> Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number use multiples of 2, 3, 4, 5, 8, 10, 50 and 100 Recognise the place value of each digit in a three-digit number (hundreds, tens, ones) Identify, represent and estimate numbers using different representations <i>including those related to measure</i> read Roman numerals to 50 (I to L) <i>Apply partitioning related to place value using varied and increasingly complex problems</i> Read and write numbers to at least 1000 in numerals and in words read and write numbers beyond 1000 in numerals and in words Compare and order numbers up to 1000 compare and order numbers beyond 1000, using $>$, $<$ and $=$ Solve number problems and practical problems involving place value and rounding

rounding

Addition and subtraction

- Add and subtract numbers mentally, including:
 - a three-digit number and ones
 - a three-digit number and tens
 - a three-digit number and hundreds *e.g. 858 - 300*
 - two-digit numbers where the answer could exceed 100 *e.g. 99+18*
- Add and subtract numbers with up to three digits
- add or subtract two 2-digit numbers where answers may exceed 100
- use columnar method for + and - with 2-digit numbers, crossing tens boundaries
- Estimate the answer to a calculation and use inverse operations to check answers *e.g. 702 - 249 is approximately 700 - 250 = 450; check 453 + 249 = 702*
- Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction *e.g. investigate the numbers which could go in the boxes when*

$$2 \times \square = 7 + \square$$

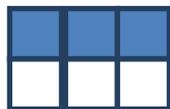
- Add and subtract numbers mentally, including:
 - a three-digit number and ones
 - a three-digit number and tens *e.g. 476 + 50*
 - a three-digit number and hundreds.
 - two-digit numbers where the answer could exceed 100
- Add and subtract numbers with up to three digits, using formal written methods of columnar addition
- With the support of a teacher, the correct formal written methods are used to add and subtract numbers up to four-digits.
- Estimate the answer to a calculation and use inverse operations to check answers
- Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction *e.g. There are 46 boys and 58 girls in Year 3, but 12 children are away; how many Year 3 children are at school?*

- Add and subtract numbers mentally, including:
 - a three-digit number and ones
 - a three-digit number and tens *e.g. 824 - 30*
 - a three-digit number and hundreds
 - two-digit numbers where the answer could exceed 100 *e.g. 68+47*
- Add and subtract numbers with up to three digits, using the efficient written methods of columnar addition and subtraction
- add and subtract numbers mentally, including:
 - 4 digit numbers and ones
 - 4 digit numbers and tens
- With different numbers of digits *e.g. 3-digit +/- 2-digit*
- Estimate the answer to a calculation and use inverse operations to check answers
- Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction *e.g. investigate the numbers which could go in the boxes when*

			<table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td style="width: 20px; height: 20px;"></td><td style="text-align: center;">3</td></tr> </table> = <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td style="width: 20px; height: 20px;"></td><td style="text-align: center;">2</td></tr> </table> <table border="1" style="display: inline-table;"> <tr><td style="width: 20px; height: 20px;"></td><td style="text-align: center;">6</td></tr> </table>		3		2		6
	3								
	2								
	6								
<p>Multiplication and division</p>	<ul style="list-style-type: none"> Recall and use multiplication and division facts for the 3 and 4 multiplication tables solve mathematical statements for multiplication and division using known tables x2, x3, x4, x8, x5, x10 derive facts for x4, x8 by doubling know multiplication and division facts for 6 and 9 times tables use place value, known and derived facts to multiply and divide mentally, including: <ul style="list-style-type: none"> □ multiplying by 0 and 1 □ dividing by 1 e.g. $2 \times 3 = 6$ so $600 \div 3 = 200$ Develop efficient mental methods, for example, using commutativity e.g. $2 \times 7 \times 5 = 2 \times 5 \times 7 = 10 \times 7 = 70$ and multiplication and division facts to derive related facts e.g. using $3 \times 2 = 6$, $6 \div 3 = 2$ and $2 = 6 \div 3$ to derive $30 \times 2 = 60$, $60 \div 3 = 20$ and $20 = 60 \div 3$ Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know including for two-digit numbers times one-digit numbers, using mental methods e.g. 22×3 Solve problems, including missing number 	<ul style="list-style-type: none"> Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables Develop efficient mental methods, for example, using commutativity and multiplication and division facts to derive related facts Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods e.g. 34×5 or $64 \div 4$ With the support of a teacher and the use of concrete objects, two-digit numbers can be multiplied and divided by 2, 3, 4 and 5. When reminders of strategies to support are given, simple multiplication and division facts can be solved mentally, including multiplying and dividing by 1. With the support of a teacher and pictorial representations, factor pairs are recognised There is an awareness of the inverse relationship between multiplication and division. With the support of a teacher, this is used to solve problems 	<ul style="list-style-type: none"> Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables know facts for 2,3,4,5,8,10 times tables up to x12 Develop efficient mental methods, for example, using commutativity e.g. $4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$ and multiplication and division facts to derive related facts begin to use formal method of short multiplication Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods e.g. 46×8 or $81 \div 3$ Solve problems, including missing number problems, involving multiplication and division, including integer scaling problems (e.g. change a recipe for 2 people to make enough for 6 people) and correspondence problems in which n objects are connected to m objects. e.g. 3 hats and 4 coats, how many different outfits? Or Share 6 cakes equally between 4 children. 						

	<p>problems, involving multiplication and division e.g. $90 = 3 \times$</p>	<p>and at times check calculations. With support, division facts can be found from a known multiplication fact.</p> <ul style="list-style-type: none"> Solve problems, including missing number problems, involving multiplication and division e.g. $240 = \square \times 4$ 	
<p>Fractions</p>	<ul style="list-style-type: none"> Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 e.g. 3 cakes shared between 10 children gives $\frac{3}{10}$ each. Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators e.g. find $\frac{1}{3}$ of 9 beads, then $\frac{2}{3}$ of 9 beads understand the relation between unit fractions as operators (fractions of), and division by integers e.g. to find $\frac{1}{3}$, you divide by 3; to find $\frac{1}{5}$, you divide by 5 Recognise and use fractions as numbers on the number line: unit fractions and non-unit fractions with small denominators Recognise and show, using diagrams, equivalent fractions with small 	<ul style="list-style-type: none"> Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 Connect tenths to place value, decimal measures and to division by 10 e.g. $\frac{7}{10} = 0.7$ Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators e.g. there are 8 marbles and three of them are red; what fraction of the marbles are red? Understand the relation between unit fractions as operators (fractions of), and division by integers e.g. to find $\frac{1}{3}$, you divide by 3; to find $\frac{1}{5}$, you divide by 5 Recognise and use fractions as numbers on the number line: unit 	<ul style="list-style-type: none"> Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 Connect tenths to place value and decimal measures (not restricted to decimals between 0 and 1) and to division by 10 e.g. $\frac{13}{10} = 1.3$ Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators e.g. find $\frac{4}{5}$ of 30 Understand the relation between unit fractions as operators (fractions of), and division by integers e.g. to find $\frac{1}{3}$, you divide by 3; to find $\frac{1}{5}$, you divide by 5 Recognise and use fractions as numbers on the number line: unit fractions and non-unit fractions with

denominators e.g. $\frac{1}{2} = \frac{3}{6}$



- Solve problems that involve fractions e.g. Amy ate $\frac{1}{4}$ of her 12 sweets and Ben ate $\frac{1}{2}$ of his 8 sweets, who ate more sweets?
- Add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$] with appropriate fractions

fractions and non-unit fractions with small denominators

- Recognise and show, using diagrams, equivalent fractions with small denominators
- Compare and order unit fractions, and fractions with the same denominators e.g. put in order $\frac{3}{8}, \frac{1}{8}, \frac{7}{8}, \frac{5}{8}$
- Solve problems that involve fractions
- With concrete objects and pictorial representations, fractions with the same denominator within one whole are added and subtracted, e.g. $\frac{2}{7} + \frac{3}{7} = \frac{5}{7}$
- With the support of a teacher, there is problem solving involving $\frac{1}{2}$ and $\frac{1}{4}$ as a fraction, decimal and percentage
- With the support of a teacher and practical apparatus, the effect of dividing a one or two-digit number by 10 is found and the value of the digits in the answer are identified as ones, tenths and hundredths.
- When models are provided, such as concrete objects and pictorial images, measure and money problems involving fractions and decimals to two decimal places are solved.
- With support decimals with one place are rounded to the nearest whole number

small denominators

- Recognise and show, using diagrams, equivalent fractions with small denominators
- Add and subtract fractions with the same denominator within one whole e.g. If $\frac{1}{3}$ of a cake is eaten then $\frac{2}{3}$ remains or $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$
- Compare and order unit fractions, and fractions with the same denominators e.g. put in order $\frac{1}{2}, \frac{1}{8}, \frac{1}{4}, \frac{1}{6}$
- Solve problems that involve fractions e.g. Ali, Ben and Cara have 24 fish. $\frac{2}{3}$ of them belong to Ali, $\frac{1}{4}$ belong to Ben and the rest belong to Cara; how many fish belong to Cara?

		<ul style="list-style-type: none"> • With support, two numbers with two decimal places are ordered correctly. • When concrete objects, pictorial representations and the support of a teacher are provided, the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ is recognised • With the support of a teacher, a decimal equivalent to $\frac{1}{10}$ is recognised • There is an emerging understanding of the decimal equivalent to $\frac{1}{4}$. 	
MEASUREMENT			
<p>Measurement</p>	<ul style="list-style-type: none"> • Measure, compare, add and subtract: length (m/cm/mm) e.g. how much ribbon is left when 36cm is cut from 1m? Which is longer: $6\frac{1}{2}$cm or 62mm? 5m or 450cm? Measure and draw lines to the nearest $\frac{1}{2}$ cm. Know the approximate length of a book, a room, a handspan... • Add and subtract amounts of money to give change, using both £ and p in practical contexts e.g. I buy 2 packs of sweets for 75p each; how much change will I get from £2? • Tell and write the time from an analogue clock e.g. draw hands on a clock face to show 'ten to four', making sure the hour hand is located correctly • Record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, 	<ul style="list-style-type: none"> • Measure, compare, add and subtract: length (m/cm/mm) mass (kg/g) e.g. find 3 vegetables which weigh between 100g and 300g. Read 250g on a scale labelled every 100g. Which is heavier: 1kg 300g or $1\frac{1}{2}$kg? Know the approximate mass of a book, an apple, a baby, a man... • measure the perimeter of simple 2-D shapes • Add and subtract amounts of money to give change, using both £ and p in practical contexts e.g. I have a £2 coin, two £1 coins, three 50p coins, a 20p and seven 5p coins; how much more do I need to make £10? • Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour digital clocks 	<ul style="list-style-type: none"> • measure, compare, add and subtract: length (m/cm/mm); mass (kg/g); volume/capacity (l/ml) e.g. Read 300ml on a scale labelled every 200ml. Order a set of containers by capacity, using a measuring jug and water to check. Know the approximate capacity of a cup, a jug, a bucket... • measure the perimeter of simple 2-D shapes e.g. measure accurately the sides of a triangle in cm or mm, in order to find the perimeter • add and subtract amounts of money to give change, using both £ and p in practical contexts e.g. Ali is saving 80p each week, to buy a toy costing £5; how many weeks will it take him? • tell and write the time from an analogue clock, including using Roman

	<p>afternoon, noon and midnight</p> <ul style="list-style-type: none"> • Compare durations of events, for example to calculate the time taken by particular events or tasks. • tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks • estimate and read time with increasing accuracy to the nearest minute • know the number of seconds in a minute 	<ul style="list-style-type: none"> • Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight • Compare durations of events, for example to calculate the time taken by particular events or tasks. • Know the number of seconds in a minute and the number of days in each month, year and leap year 	<p>numerals from I to XII, and 12-hour and 24-hour digital clocks</p> <ul style="list-style-type: none"> • estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight • Compare durations of events, for example to calculate the time taken by particular events or tasks. • Know the number of seconds in a minute and the number of days in each month, year and leap year
<p>GEOMETRY</p>			
<p>Properties of shapes</p>	<ul style="list-style-type: none"> • Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations; and describe them <i>e.g. number of faces, edges and vertices (singular: vertex), e.g. guess my shape: it has a square face and four triangular faces (square-based pyramid)</i> • Identify right angles (as a quarter turn) • Recognise and name prism • 	<ul style="list-style-type: none"> • Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations; and describe them • Recognise that angles are a property of shape or a description of turn • Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle • Describe the properties of shapes using accurate language, including 	<ul style="list-style-type: none"> • Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations; and describe them • Recognise that angles are a property of shape or a description of turn • Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle • Describe the properties of shapes using accurate language, including

		<p><i>symmetrical/not symmetrical, lengths of lines, and acute and obtuse angles e.g. sort triangles into those with an obtuse angle and those without</i></p> <ul style="list-style-type: none"> •Horizontal and vertical lines are identified correctly. •When prompts are given, geometric shapes, including triangles and quadrilaterals, are classified. With support from a teacher, different types of triangles, such as equilateral, scalene, isosceles and right-angled, are classified. With the support of a teacher, the net for a cube is created 	<p><i>symmetrical/not symmetrical, lengths of lines, and acute and obtuse angles</i></p> <ul style="list-style-type: none"> •Identify horizontal and vertical lines and pairs of perpendicular and parallel lines
Geometry: Position and Direction			
	<ul style="list-style-type: none"> •know and use the terms 'North,' 'South,' 'East' and 'West.' 	<ul style="list-style-type: none"> •know and use the terms 'North,' 'North-East,' 'East,' 'South-East,' 'South,' 'South-West,' 'West' and 'North-West.' 	<ul style="list-style-type: none"> •know and use all terms relating to compass directions •be able to move between compass directions in half and quarter turns
STATISTICS			
Use and interpret data	<ul style="list-style-type: none"> •Interpret and present data using bar charts, pictograms and tables, <i>understanding and using simple scales e.g. 2, 5, 10 units per cm with increasing accuracy.</i> •Solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables. •Interpret data presented in many contexts 	<ul style="list-style-type: none"> •Interpret and present data using bar charts, pictograms and tables, <i>understanding and using simple scales e.g. 2, 5, 10 units per cm with increasing accuracy.</i> •Solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables. •Interpret data presented in many contexts 	<ul style="list-style-type: none"> •Interpret and present data using bar charts, pictograms and tables, <i>understanding and using simple scales e.g. 2, 5, 10 units per cm with increasing accuracy.</i> •Solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables. •Interpret data presented in many contexts

