St John's Catholic School Maths Progression Map

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value & Reasoning	• Count to and across 100, forwards and backwards, in ones, beginning with 0 or 1 or from any given number • Count forwards and backwards in twos, fives and tens from 0 (to the 10th multiple) • Read and write numbers in numerals to 100 • Read and write numbers in words to 20 and match to the numerals • Given a number between 1 and 100, identify one more and one less • Identify and represent numbers within 100 using objects, structured apparatus and number lines • Begin to recognise place value in two digit numbers beyond 20 using practical apparatus • Use the language of equal to, more than, less than (fewer), most, least when comparing numbers/sets of objects to 100.	• Count in steps of 2, 3, 5 and in tens from 0 forwards and backwards to the 12th multiple. • Counts on in tens from any one-digit or two-digit number to at least 100. • Read and write numbers to at least 100 in numerals and words; position numbers on a number line. • Identify the number that is ten more or less within 100, and beyond. • Order and compare numbers from 0 to 100; use and = signs. • Recognise the place value of each digit in a two-digit number, including with the use of practical resources, with confidence. • Partition two-digit numbers into tens and ones and in different ways.	• Read and write numbers to 1,000 in numerals and words. • Count from 0 in multiples of 4, 8, 50 and 100 to the 12th multiple. • Identify the number that is ten or one hundred more or less than a given number within 1,000. • Order and compare numbers up to 1,000. • Recognise the place value of each digit in a three-digit number to 1,000.	• Read and write numbers to 10,000 in numerals and words • Count in multiples of 6, 7, 9, 25 and 1000 • Count backwards through 0 to include negative whole numbers • Identify the number that is ten, one hundred or one thousand more or less than a given number to 10,000 • Order and compare numbers within 10,000 • Round three and four-digit numbers to the nearest 10, 100 or 1000 • Consistently recognise the place value of each digit in a four-digit number, including zero as a place holder • Read Roman numerals to 100 (C)	• Read and write numbers to 1,000,000 (one million) and determine the value of each digit • Given a number, identify the number that is ten, one hundred, one thousand, ten thousand or one hundred thousand more or less within 1,000,000 • Order and compare numbers within 1,000,000 • Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 or 100,000 • Interpret negative numbers in context e.g. temperature • Read Roman numerals to 1,000 (M) and **begin** to recognise years in Roman numerals e.g. this year (MMXV)	• Read and write numbers to 10,000,000 • Order and compare numbers to 10,000,000 • Round any number to 10,000,000 to the nearest 10, 100, 1,000, 10,000, 100,000 or 1,000,000 • Recognise the place value of each digit in numbers to 10,000,000 • Use negative numbers in context and calculate intervals across zero • Read Roman numerals to at least 1,000 (M) and recognise years in Roman numerals e.g. the year of their birth
Number – operations & Reasoning	• Read, write and interpret addition (+), subtraction (-) and equals (=) signs to record work. • Add one-digit and two-digit numbers to at least 20, including zero, using apparatus, e.g. a number track/line. • Subtract one-digit and two-digit numbers to at least 20, including zero, using apparatus, e.g. a number track/line. • Represent and use number bonds and related subtraction facts with numbers to 20. • Make connections between	• Mentally subtract two two-digit numbers with the use of jottings, such as empty number line, where regrouping is required. • Add three one-digit numbers using knowledge of number pairs .g. 8 + 9 + 2 = 10 + 9 =19. • Recall and use addition and subtraction facts to 20 fluently. • Use related facts (facts to 10, facts to 20) to derive addition and subtraction facts to 100 e.g. 60 + 40 = 100; 100–40 = 60. • Calculate mathematical statements within known	• Mentally add a three-digit number and ones; tens; hundreds within 1000, including the use of jottings such as a number line. • Mentally subtract from a three-digit number ones; tens; hundreds within 1000, including the use of jottings such as a number line. • Use a range of mental strategies to add and subtract (for example, add 99 to a two-digit or three-digit number by adding 100 and adjusting). • Add numbers with up to three digits using the formal written method.	• Mentally add a three-digit number and a four-digit number, including with the use of jottings such as a number line • Mentally subtract a three-digit number from a three-digit or four-digit number (including with the use of jottings such as a number line) • Use estimation and inverse operations to check calculations • Add numbers with up to 4 digits, including decimal numbers, using the formal written method • Subtract numbers with up to	• Add numbers mentally, including the use of jottings, with increasingly large numbers using a range of strategies • Subtract numbers mentally, including the use of jottings, with increasingly large numbers and using a range of strategies • Add numbers with 5 digits, including decimal numbers with up to three decimal places, using the formal written method • Subtract whole numbers with 5 digits, including numbers with up to three decimal places,	• Add numbers with up to 7 digits, including decimal numbers with up to three decimal places using the formal written method, with confidence. • Subtract numbers with up to 7 digits, including decimal numbers with up to three decimal places using the formal written method, with confidence. • Add and subtract mentally with increasingly large numbers and with decimal numbers, including with mixed operations, using a range of efficient strategies.

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	arrays and counting in repeated groups of two, five and ten, including in practical contexts. • Recall and use doubling facts for numbers up to double 10. • Recall and use halving facts for numbers up to half of 20. • Group small quantities, up to 20, in groups of two, five and ten, including using arrays. • Begin to recognise odd and even numbers up to 20. • Opportunities for reasoning	multiplication tables and write them using the x, ÷ and = signs • Demonstrate an understanding of commutativity e.g. 2 x 10 =20 so 10 x 2 =20. • Represent multiplication as repeated addition and as arrays using known multiples e.g. 2s, 3s, 5s and 10s. • Recall the doubles of multiples of 10 to 100 (e.g. double 30 is 60) and recall the related halves (e.g. half of 60 is 30). • Begin to use informal methods such as empty number lines for multiplication and division using known times tables. • Recognise odd and even numbers within 100. • Opportunities for reasoning	• Subtract numbers with two digits and begin to subtract three-digit numbers using the formal written method. • Recall and use multiplication facts for the 3, 4 and 8 times tables up to the 12th multiple. • Recall and use division facts for the 3, 4 and 8 times tables up to the 12th multiple. • Multiply a teen number by a one-digit number using the formal written method, with known multiples e.g. 14 x 3; 18 x 4. • Use the formal written layout for division using known times tables e.g. 32 divided by 4. • Determine remainders e.g. recognise that 25 divided by 8 will give a remainder of 1. • Opportunities for reasoning	4 digits, including decimal numbers, using the formal written method • Recall and use **most** multiplication facts for all times tables up to 12 x 12 • Recall and use **most** division facts for all times tables up to 12 x 12 • Use **known** multiplication and division facts and place value to derive other related facts • Multiply numbers by ten and one hundred, including numbers with one decimal place • Divide whole numbers by ten and one hundred, including answers with one decimal place • Use factor pairs in mental calculations to multiply three numbers together • Using **known** multiplication facts, multiply mentally (including the use of jottings) a two-digit number by a one-digit number using the distributive law (partitioning), with confidence • Multiply two-digit or three-digit numbers by a one-digit number using the formal written method of short multiplication • Use the formal written method of short division to divide any two- digit or three-digit number by a one-digit number, including examples with remainders • Opportunities for reasoning	using the formal written method. • Find all factor pairs of a number and begin to find common factors of two numbers • Recognise and use simple cube numbers and the notation for cubed (3) such as 23=2 x 2 x 2 = 8 • Understand and use the vocabulary of prime numbers and begin to use the vocabulary of prime factors and composite (non-prime) numbers • Recall all prime numbers up 19 • Begin to establish whether a number up to 100 is prime using knowledge of factors • Multiply and divide numbers mentally drawing on known facts, understanding of place value and using a range of strategies, such as partitioning • Multiply and divide whole numbers and those involving decimals (with up to three decimal places) by ten, one hundred and one thousand • Multiply numbers with 2 and 3 digits by a two-digit number using the formal written method of long multiplication • Divide numbers with up to 4 digits by a one-digit number using the formal written method of short division, with whole number answers or with remainders • Begin to express remainders as a fraction • Opportunities for reasoning	• Recognise and use in a range of contexts: • Multiples, common multiples, factors, common factors, prime factors, prime numbers to at least 19; some prime numbers to 100; composite (non-prime), square numbers to at least 144, some cube numbers e.g. 23, 33, 43, 53,10' • Calculate mentally, using efficient strategies (such as manipulating expressions using commutative and distributive properties to simplify the calculation), including with mixed operations • Multiply multi-digit numbers up to 4 digits, including decimal numbers with up to two decimal places, by a two-digit number using the **formal written method of long multiplication** • Divide numbers up to 4 digits by a two-digit whole number using a **formal written method of long division,** with and without remainders; interpret the remainder as appropriate for the context • Use estimation to check answers to calculations and determine an appropriate degree of accuracy Know the order of operations, including the use of brackets, to carry out calculations involving all four operations (BODMAS) • Opportunities for reasoning

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Number – fractions & Reasoning	• Find half of a number/set of objects with numbers to 20 using practical resources. • Recognise, find and name a quarter as one of four equal parts of an objects or shape. • Find a quarter of a number/set of objects with numbers to 20 using practical resources.	• Identify fractions 1/2, 1/3, 1/4, 2 /4 and 3/4 of a shape and know that all parts must be equal parts of the whole. • Find 1/2, 1/3, 1/4, 2 /4 and 3/4 of a length, set of objects or quantity including with the use of practical resources and diagrams. • Recognise the equivalence of 1/2 and 2/4 using simple diagrams and resources.	• Recognise, find and write fractions of a number and a discrete set of objects, including unit fractions and non-unit fractions (with small denominators), using diagrams and resources to support e.g. 2/5 of 30. • Recognise and use fractions as ordered numbers on a 0-1 number line. • Recognise and show, using diagrams, a range of simple equivalent fractions with small denominators such as 1/3 = 2/6, 4/8 = ½. • Order a set of unit fractions, using diagrams such as a fraction wall to support. • Compare and order non-unit fractions with the same denominators using diagrams, such as a fraction wall to support. • Add and subtract fractions with the same denominator within one whole	• Recognise and show, using diagrams to support, families of common equivalent fractions e.g. 3/ 4 or 2/3 • Add fractions with the same denominator, including where the total is greater than one whole • Subtract fractions with the same denominator, including crossing one whole • Find unit and non-unit fractions of numbers and quantities; **begin** to relate to multiplication and division • Understand that hundredths are an object divided by 100 or a tenth divided by 10 • Recognise and write decimal equivalents of any number of tenths or hundredths • Recognise and write the decimal equivalent for 3/ 4 • Understand the effect of dividing a one-digit or two-digit number by 10 and 100 • Understand place value in numbers with one and two decimal places • Round decimals with one decimal place to the nearest whole number • Compare and order numbers with the **same** number of decimal places up to two decimal places	• Compare and order fractions whose denominators are all multiples of the same number • Identify, name and write equivalent fractions of a given fraction using knowledge of factors and multiples • Recognise mixed numbers and improper fractions and convert from one form to the other • Add fractions with denominators that are multiples of the same number, including where the total is greater than one whole • Subtract fractions with denominators that are multiples of the same number, including crossing one whole • Multiply proper fractions and simple mixed numbers by whole numbers, supported by materials and diagrams e.g. 13/4 x 3 = 3 3/4 • Find unit and non-unit fractions of whole number quantities e.g. 1/6 of 420; 5/6 of 30; relate to multiplication and division • Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents e.g. 125/1000 = 0.125 • Read, write, order and compare numbers with up to three decimal places, including sets of numbers with different numbers of decimal places e.g. 5.25 > 5.125 • Round decimals with two decimal places to the nearest whole number and to one decimal place • Write percentages as a fraction with the denominator 100 and as a decimal e.g. 50% = 50/100 = 0.5 • Calculate percentage of quantities using percentage,	• Compare and order fractions, including mixed numbers and improper fractions e.g. which is greater 4/5 or 2/3? 234 or 9/4? • Use common multiples to express fractions in the same denomination e.g. 2/3 and 3/5 can be expressed as 10/15 and 9/15. • Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions and common multiples. • Multiply simple pairs of fractions, writing the answer in its simplest form e.g. 2/3 x 1/2 = 2/6 = 1/3. • Divide simple proper fractions by whole numbers e.g. 1/3 + 2 = 1/6 • Associate a fraction with division to calculate decimal/fraction equivalence e.g. % =3 ÷ 4 = 0.75. • Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. • Calculate percentage of quantities e.g. 75% of 360, and use percentages for comparison. • Use scale factor (of two or three) to enlarge shapes and find the scale factor of similar shapes. • Use notation to describe ratio of two quantities. • Understand proportion as a way to express relationships using fractions.

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					decimal and fraction equivalents of 1/2, 1/4, 1/10 and other fractions with a denominator of a multiple of 10 e.g. 50% of £240 = £120, 10% of £240 = £24, 25% of £240 = £60	
Measures & Reasoning	• Measure and begin to use simple standard units: length and height (m and cm), mass/weight (kg), capacity (l) and time (hours, minutes and seconds). • Tell the time to the hour and the half past the hour using an analogue clock. • Recognise and use language relating to dates, including days of the week, months of the year. • Know that there are seven days in a week; 12 months in a year. • Recognise and know the value of different denominations of coins to £1; begin to recognise and know the value of £5 and £10 notes.	• Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales and measuring vessels. • Read scales in divisions of twos, fives and tens in a practical situation where all the numbers are given ; where not all the numbers are given. • Compare and order lengths, mass, volume/capacity and record the results using >, < and =. • Read °C on a thermometer to the nearest appropriate unit (positive temperatures only). • Read the time to five minutes on an analogue clock. • Know the number of minutes in an hour and the number of hours in a day. • Know the relationship between £ and p.	• Know and use the relationship between m and mm. • Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) including mixed units of measurement with accuracy. • Measure the perimeter of simple 2-D shapes. • Add and subtract amounts of money within £10, in practical contexts, including giving change. • Tell and write the time to the nearest minute from an analogue clock, including clocks with Roman numerals from I to XII, and from 12-hour digital clocks. • Know the number of days in each month	• Use the relationship between metric units of measure to convert confidently • Measure and calculate the perimeter of any rectangle or other rectilinear shape in centimetres and metres • Express the formula for finding the perimeter of a rectangle in words • Relate the area of rectangles to arrays and multiplication • Estimate, compare and calculate different measures including money in pounds and pence • Read, write and convert time between analogue and digital time. • Read, write and convert time between 12 and 24 hour clocks	• Use multiplication, division and place value to confidently convert between different units of metric measure • Understand and begin to use approximate equivalences between metric units and common imperial units, such as inches, pounds and pints • Calculate the perimeter of a composite rectilinear figure in centimetres and metres, including examples where the length of some sides is not given • Calculate and compare the area of rectangles, including squares, using standard units and notation • Estimate the area of irregular shapes by counting squares • Understand the term volume and cubic centimetres including the notation cm^3	• Convert between kilometres and miles. • Recognise that shapes with the same area can have different perimeters and vice versa. • Find the area of triangles, understanding and using the formulae (in words and symbols). • Find the area of parallelograms, understanding and using the formulae (in words and symbols). • Calculate, estimate and compare volumes of cubes and cuboids using standard units of cm^3 and m^3; use other units e.g. mm^3, km^3; use the formula for finding volume (using symbols). • Use, read, write and convert between **all** standard units of metric measures (with up to three decimal places) and between **all** units of time, with confidence.
Geometry – Shape, position & direction & Reasoning	• Recognise, name and sort common 2-D shapes (including shapes in different orientations and sizes); begin to describe their properties. • Recognise, name and sort common 3-D shapes (including shapes of different sizes); begin to describe their properties. • Recognise and create repeating patterns with shapes. • Use the language of position, direction and movement, such	• Identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line. • Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces confidently. • Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]. • Confidently compare and sort common 2-D and 3-D shapes	• Recognise that three right angles make three quarters of a turn and that four make a complete turn. • Identify whether angles are greater or less than a right angle, using the terms acute and obtuse. • Describe the properties of 2-D shapes using accurate language, including lengths of lines, obtuse/acute angles and whether a shape is symmetrical or non-symmetrical.	• Compare and classify geometric shapes including different quadrilaterals and triangles, based on their properties and sizes • Compare and order angles up to 180°, without using a protractor • Identify all lines of symmetry in 2-D shapes, including shapes presented in different orientations • Complete a simple symmetric figure with respect to a specific line of symmetry, with	• Identify 3-D shapes, including cubes and other cuboids, from 2-D representations • Estimate and compare acute, obtuse and reflex angles • Measure given angles in degrees using a protractor to the nearest degree • Draw given angles using a protractor to the nearest degree • Calculate missing angles at a point • Distinguish between regular	• Illustrate and name parts of a circle, including radius, diameter and circumference; know that the diameter is twice the radius. • Draw a range of 2-D shapes using given dimensions and angles with increasing accuracy. • Identify, compare and classify a wide range of geometric shapes (2-D and 3-D) based on their properties and sizes. • Use conventional markings for parallel lines and angles.

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	as forwards, backwards, left, right and between. • Describe position, direction and movement, including whole, half and quarter turns (and begin three quarter turns) in practical contexts.	(including everyday objects) according to their properties. • Begin to recognise right angles in 2-D shapes. • Order and arrange combinations of shapes in patterns and sequences. • Describe rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise) including in practical contexts such as programming robots using instructions given in right angles	• Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	confidence • Plot specified points and draw sides to complete a given polygon using coordinates in the first quadrant • Begin to describe movements between positions as translations of a given unit to the left/right and up/down using co-ordinates in the first quadrant	and irregular polygons based on reasoning about equal sides and angles • Use conventional markings for parallel lines and right angles • Identify, describe and represent the position of a polygon following a reflection or translation using appropriate language and know the shape has not changed, including the use of coordinates in the first quadrant	• Recognise and make nets of a range of polyhedron. • Find missing angles in a triangle and any quadrilateral; express missing angles algebraically. • Calculate missing angles that are vertically opposite; express missing angles algebraically • Identify and describe positions on the full coordinate grid (all four quadrants). • Draw and translate shapes on the coordinate plane (all four quadrants) and reflect them in the axes
Data Handling, Statistics & Algebra & Reasoning	• Interpret simple tables and pictograms. • Begin to construct simple pictograms	• Interpret and construct simple pictograms, tally charts, block diagrams and tables. • Interpret simple block diagrams with scales in divisions of twos where all numbers on the scale are given. • Understand pictograms with simple scales e.g. where one face represents 2 children/ one book represents 5 books.	• Understand and use simple scales (for example units of 2, 5, 10) in pictograms and bar charts with increasing accuracy.	• Interpret and present **discrete** and **continuous** data using appropriate graphical methods, including bar charts and time graphs • Interpret and use a greater range of scales with increasing accuracy	• Complete, read and interpret information in timetables using 12 hour and 24 hour digital time • Use information presented in line graphs using a greater range of scales	• Use symbols and letters to represent variables and unknown numbers and quantities, with confidence • Express more complex missing number problems algebraically by finding pairs of numbers that satisfy an equation with two unknowns e.g.a x 12 = 30 + b • Enumerate **all** possibilities of combinations of two variables e.g. m x n = 60. • Construct and interpret line graphs using a greater range of scales. • Construct and interpret simple pie charts. • Calculate and interpret the mean as an average in different contexts. • Generate and describe a linear number sequence in words and algebraically.