St Jude's Catholic Primary School

Maths Whole School Progression Map

		EYFS		KS1 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance*		KS2 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance*			
		Pre-school	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Mathematical vocabulary		Use a wider range of vocabulary Understand why questions such as "why do you think…? Understand a question or instruction that has two parts, such as: "Get your coat and wait at the door".	Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts	To read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at year 1.	To read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.	To read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.	To read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.	To read, spell and pronounce mathematical vocabulary correctly.	To read, spell and pronounce mathematical vocabulary correctly.

Number and Place Value	Counting	Recite numbers past 5. Say one number for each item in order: 1,2,3,4,5. Know that the last number reached when counting a small set of objects tells you how many there are in total.	Count objects, actions and sounds. Count beyond ten.	To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. To identify one more and one less than a given number. To count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens	To count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.	*To find 10 or 100 more or less than a given number* *To count from 0 in multiples of 4, 8, 50 and 100.*	*To count in multiples of 6, 7, 9, 25 and 1000.* *To count backwards through zero to include negative numbers.* *To find 1000 more or less than a given number.*	To count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. To interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.	To use negative numbers in context, and calculate intervals across zero

	Identifying, Representing and Estimating Numbers	Experiment with their own symbols and marks as well as numerals.	Subitise. Link the number symbol (numeral) with its cardinal number value.						
	Reading and writing numbers	Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. Experiment with their own symbols and marks as well as numerals.	Link the number symbol (numeral) with its cardinal number value.	To read and write numbers from 1 to 20 in numerals and words.	To read and write numbers to at least 100 in numerals and in words.	To read and write numbers up to 1000 in numerals and in words.		To read and write numbers to at least 1 000 000 and determine the value of each digit.	To *say*, read and write, numbers up to 10 000 000 *accurately* and determine the value of each digit.

	Compare and order numbers	Compare quantities using language: 'more than', 'fewer than'. Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'	Compare numbers. Understand the 'one more than/one less than' relationship between consecutive numbers.	To use the language of: equal to, more than, less than (fewer), most, least	To compare and order numbers from 0 up to 100; use <, > and = signs.	To compare and order numbers up to 1000.	To order and compare numbers beyond 1000. To compare numbers with the same number of decimal places up to two decimal places (copied from Fractions)	To order and compare numbers to at least 1 000 000 and determine the value of each digit.	To order and compare numbers up to 10 000 000 *accurately* and determine the value of each digit.

	Understanding Place Value		Understand the ‘one more than/one less than’ relationship between consecutive numbers. Explore the composition of numbers to10.		To recognise the place value of each digit in a two-digit number (tens, ones)	To recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	To recognise the place value of each digit in a four-digit number. *(thousands, hundreds, tens, ones)* *To 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 (copied from Fractions)*	*To read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)* *To recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (copied from Fractions)*	To read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers) To identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1 000 where the answers are up to three decimal places (copied from Fractions)

	Rounding						To round any number to the nearest 10, 100 or 1000. *To round decimals with one decimal place to the nearest whole number (copied from Fractions)*	To round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. To round decimals with two decimal places to the nearest whole number and to one decimal place (copied from Fractions)	To round any whole number to a required degree of accuracy. To solve problems which require answers to be rounded to specified degrees of accuracy (copied from Fractions)

	Roman Numerals						To read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	To read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	
	Problem solving		Solve real world mathematical problems with numbers up to 5. Begin to describe a sequence of events, real or fictional, using words such as ‘first’, ‘then…’	*To practise ordinal numbers and solve simple concrete problems.*	To use place value and number facts to solve *related* problems *to develop fluency*.	To solve number problems and practical problems involving these ideas.	To solve number and practical problems that involve all of the above and with increasingly large positive numbers.	To solve number problems and practical problems that involve all of the above.	To solve number and practical problems that involve all of the above.

Addition and subtraction	Mental calculations	Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle'). Show 'finger numbers' up to 5.	Subitise. Explore the composition of numbers to 10. Automatically recall number bonds 0-5 and some to 10.	To add and subtract one-digit and two-digit numbers to 20, including zero. *To realise the effect of adding or subtracting zero.*	*To extend the language of addition and subtraction to include sum and difference.* To show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. To add and subtract numbers using an efficient strategy, explaining their method verbally using concrete objects, pictorial representations, and mentally, including: a	To add and subtract numbers mentally, including: *two-digit numbers, where the answers could exceed 100*, a three-digit number and ones, a three-digit number and tens and a three-digit number and hundreds.	*To continue to practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency.*	To add and subtract numbers mentally with increasingly large numbers.	To perform mental calculations, including with mixed operations and large numbers. To use their knowledge of the order of operations to carry out calculations involving the four operations

					two-digit number and ones, a two-digit number and tens, two two-digit numbers, add three one-digit numbers.				

	Number bonds	Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). Show 'finger numbers' up to 5.	Subitise. Explore the composition of numbers to 10. Automatically recall number bonds 0-5 and some to 10.	To *memorise*, represent and use number bonds and related subtraction facts within 20.	To recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20. To recall and use addition and subtraction facts to 20 *to become fluent in deriving associative facts (e.g. 10 – 7 = 3, 100 – 70 = 30)* and derive and use related facts up to 100.				

	Written calculation			To read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs.		*To use the understanding of place value and partitioning to enable* adding and subtracting numbers with up to three digits, using formal written methods of columnar addition and subtraction *to become fluent*.	To add and subtract numbers with up to four digits using the formal written methods of columnar addition and subtraction where appropriate.	To add and subtract whole numbers with more than four digits, including using formal written methods of columnar addition and subtraction fluently.	
	Inverse Operations, Estimating and Checking Answers	Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').	Explore the composition of numbers to 10.		To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	To estimate the answer to a calculation and use inverse operations to check answers.	To estimate and use inverse operations to check answers to a calculation.	To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.	To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.

	Order of Operations								To use their knowledge of the order of operations to carry out calculations involving the four operations.

	Problem solving	Solve real world mathematical problems with numbers up to 5. Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'		To *discuss* and solve one-step problems *(in familiar practical contexts)* that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.	To solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods. To solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (copied from Measurement)	To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why To Solve problems involving addition, subtraction, multiplication and division

Multiplication and Division	Mental calculations		Explore the composition of numbers to 10.		*To begin to use other multiplication tables and recall multiplication facts, including using related division facts to perform written and mental calculations.* *To begin to relate multiplication and division facts to fractions and measures (e.g., 40 ÷ 2 = 20, 20 is a half of 40).* To show that multiplication of two numbers can be done in any order (commutative) and division of one number	To 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 *efficient* mental *methods, for example, using commutativity and associativity,* and progressing to formal *reliable* written *methods of short multiplication and division.*	*To combine their knowledge of number facts and rules of arithmetic to solve mental and written calculations, e.g. 2 x 6 x 5 = 10 x 6 = 60.* *To practise mental methods and extend this to three-digit numbers to derive associative facts, (e.g. 600 ÷ 3 = 200 can be derived from 2 x 3 = 6).* To recognise and use factor pairs and commutativity in mental calculations. To use place value, known and derived	To multiply and divide numbers mentally drawing upon known facts. To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	To perform mental calculations, including with mixed operations and large numbers. *To associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8) (copied from Fractions)*

					by another cannot, *to develop multiplicative reasoning*.		facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.		

	Multiplication and division facts		Explore the composition of numbers to 10.	*To count in multiples of twos, fives and tens (copied from Number and Place Value)* *To make connections between arrays, number patterns, and counting in twos, fives and tens.* *Through grouping and sharing small quantities, pupils begin to understand: multiplication and division; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities.*	*To count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (copied from Number and Place Value)* To recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	*To count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value)* To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	*To count in multiples of 6, 7, 9, 25 and 1 000 (copied from Number and Place Value)* To recall multiplication and division facts for multiplication tables up to 12 × 12.	*To count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (copied from Number and Place Value)* *To apply all the multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations.*	*To continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency.*

	Written calculation				To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs.	To 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 *(included in mental calculation section)*	To multiply two-digit and three-digit numbers by a one-digit number using the formal written layout.	To multiply numbers up to four digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers fluently. To divide numbers up to four digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context fluently. To multiply and divide whole numbers and those involving decimals by	To multiply multi-digit numbers up to four digits by a two-digit whole number using the formal written method of long multiplication. To divide numbers up to four digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. To divide numbers up to four digits by a two-digit number using

								10, 100 and 1000.	the formal written method of short division where appropriate, interpreting remainders according to the context. Perform mental calculations, including with mixed operations and large numbers.

	Properties of numbers						To recognise and use factor pairs and commutativity in mental calculations (repeated)	*To use and understand the terms factor, multiple and prime, square and cube numbers and use them to construct equivalence statements.* To identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. To know and use the vocabulary of prime numbers, prime factors	To identify common factors, common multiples and prime numbers. To use common factors to simplify fractions; use common multiples to express fractions in the same denomination (copied from Fractions) To calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm3) and cubic metres (m3), and extending

								and composite (non-prime) numbers. To establish whether a number up to 100 is prime and recall prime numbers up to 19. To recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}).	to other units such as mm3 and km3 (copied from Measures)
	Order of operations								To use their knowledge of the order of operations to carry out calculations involving the four operations.

	Problem solving			To solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.	To solve *simple* problems *in contexts, deciding which of the four operations to use and why.* These include missing number problems, involving multiplication and division, including *measuring* and positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	To solve *two-step* problems *in contexts* involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems, such as n objects are connected to m objects.	To solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. To solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. To solve problems involving multiplication and division, including scaling by simple fractions	To solve problems involving addition, subtraction, multiplication and division. To use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. To solve problems involving similar shapes where the scale factor is known or can be found (copied from Ratio and Proportion)

								and problems involving simple rates.	
Fractions, Decimals and Percentages	Counting				*To count in fractions up to 10, starting from any number and using the $\frac{11}{22}$ and $\frac{2}{4}\frac{2}{4}$ equivalence on the number line.*	To 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 ten.	To count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	*To extend counting from year 4, using decimals and fractions including bridging zero, for example on a number line.* *To continue to practise counting forwards and backwards in simple fractions.*	

	Recognising, finding and naming fraction			To recognise, find and name a half as one of two equal parts of an object, shape or quantity. To recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. *To connect halves and quarters to the equal sharing and grouping of sets of objects and to measures, as well as recognising and combining halves and quarters as parts of a whole.*	To recognise, find, name, identify and write fractions $\frac{1}{3}$ $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ of a length, number, shape, set of objects or quantity and know that all parts must be equal parts of the whole. *To connect unit fractions to equal sharing and grouping, to numbers when they can be calculated, and to measures, finding fractions of lengths, quantities, sets of objects or shapes. They meet $\frac{3}{4}$ as the first example of a non-unit fraction.*	*To understand the relation between unit fractions as operators (fractions of), and division by integers.* To recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators To recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10. To recognise, find and write fractions of a	*To make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities.* *To know that decimals and fractions are different ways of expressing numbers and proportions.* *To understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths.* To recognise that	To identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. To recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (appears also in Equivalence)	

						discrete set of objects: unit fractions and non-unit fractions with small denominators.	hundredths arise when dividing an object by one hundred and dividing tenths by ten		
	Comparing and ordering fraction					To compare and order unit fractions, and fractions with the same denominators.		To compare and order fractions whose denominators are all multiples of the same number.	To compare and order fractions, including fractions > 1.

	Adding and subtracting fractions					To add and subtract fractions with the same denominator within one whole.	To add and subtract fractions with the same denominator	To add and subtract fractions with the same denominator and denominators that are multiples of the same number. To recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number.	To add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions *starting with fractions where the denominator of one fraction is a multiple of the other and progress to varied and increasingly complex problems*.

	Multiplying and dividing fraction							*To continue to develop their understanding of fractions as numbers, measures and operators by finding fractions of numbers and quantities.* To multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	To multiply simple pairs of proper fractions, writing the answer in its simplest form. To multiply one-digit numbers with up to two decimal places by whole numbers To divide proper fractions by whole numbers.

	Equivalence				To write simple fractions for example, $\frac{11}{22}$ of 6 = 3 and recognise the equivalence $\frac{2}{4}$ $\frac{2}{4}$ and $\frac{11}{22}$.	To recognise and show, using diagrams, equivalent fractions with small denominators.	To use factors and multiples to recognise equivalent fractions and simplify where appropriate. To recognise and show, using diagrams, families of common equivalent fractions. To recognise and write decimal equivalents of any number of tenths or hundredths. To recognise and write decimal equivalents to $\frac{11}{44}$, $\frac{11}{22}$, $\frac{33}{44}$.	To read and write decimal numbers as fractions. To identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths To recognise and use thousandths and relate them to tenths, hundredths, decimal equivalents *and measures*. To recognise the per cent symbol (%) and understand that per cent relates to 'number of	To recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. To use common factors to simplify fractions; use common multiples to express fractions in the same denomination. To associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8)

								parts per hundred’, and write percentages as a fraction with denominator 100, and as a decimal.		

	Comparing and ordering decimal						To learn decimal notation and the language associated with it, including in the context of measurements. To represent numbers with one or two decimal places in several ways, such as on number lines. To compare numbers, amounts and quantities with the same number of decimal places up to two decimal places.	To read, *say,* write, order and compare numbers with up to three decimal places.	To identify the value of each digit in numbers given to three decimal places.

	Rounding decimal						To round decimals with one decimal place to the nearest whole number.	To round decimals with two decimal places to the nearest whole number and to one decimal place.	To solve problems which require answers to be rounded to specified degrees of accuracy
	Adding and subtracting decimal							*To mentally add and subtract tenths, and one-digit whole numbers and tenths.* *To practise adding and subtracting decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1.*	

	Multiplying and dividing decimal						To 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 ones, tenths and hundredths.		To multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. To associate a fraction with division and calculate decimal fraction equivalents for a simple fraction. To multiply one-digit numbers with up to two decimal places by whole numbers *in practical contexts, such as measures and money*. *To multiply and divide numbers with*

									up to two decimal places by one-digit and two-digit whole numbers in practical contexts involving measures and money. To use written division methods in cases where the answer has up to two decimal places. *To recognise division calculations as the inverse of multiplication.*

	Problem solving					To solve problems that involve all of the above.	To 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. To solve simple measure and money problems involving fractions and decimals to two decimal places.	To solve problems involving numbers up to three decimal places. To *make connections between percentages, fractions and decimals and relate this to finding 'fractions of' to solve* problems which require knowing percentage and decimal equivalents of $\frac{11}{22}$, $\frac{11}{44}$, $\frac{11}{55}$, $\frac{22}{55}$, $\frac{44}{55}$ and those fractions with a denominator of a multiple of 10 or 25.	To solve problems which require answers to be rounded to specified degrees of accuracy *and checking the reasonableness of their answers*.

Algebra	Algebra			*To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ - 9 (copied from Addition and Subtraction)* *To represent and use number bonds and related subtraction facts within 20 (copied from Addition and Subtraction)*	*To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems. (copied from Addition and Subtraction)* *To recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (copied from Addition and Subtraction)*	*To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. (copied from Addition and Subtraction)* *To solve problems, including missing number problems, involving multiplication and division, including integer scaling (copied from Multiplication and Division)*		*To use the properties of rectangles to deduce related facts and find missing lengths and angles (copied from Geometry: Properties of Shapes)*	To introduce the language of algebra as a means for solving a variety of problems. To introduce the use of symbols and letters to represent variables and unknowns in mathematical familiar situations, such as: missing numbers, lengths, coordinates and angles. To use simple formulae. To generate and describe linear number sequences. To express missing number

									problems algebraically. To find pairs of numbers that satisfy an equation with two unknowns. To enumerate possibilities of combinations of two variables.

Measurement	Describe, Measure, Compare and Solve (All Strands)	Make comparisons between objects relating to size, length, weight and capacity.	Compare length, weight and capacity.	To compare, describe and solve practical problems for: lengths and heights, mass/weight, capacity and volume, time. To measure and begin to record the following: lengths and heights, mass/weight, capacity and volume, time. To sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	To choose and use appropriate standard units *with increasing accuracy using their knowledge of the number system* to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. *To use the appropriate language and record using standard abbreviations.*	To measure *using the appropriate tools and units,* compare *(including simple scaling by integers)* add and subtract *using mixed units*: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).	To estimate, compare and calculate different measures, including money in pounds and pence.	To use all four operations to solve problems involving measure using decimal notation, including scaling *and conversions*.	*To use a number line, to add and subtract positive and negative integers for measures such as temperature.* To solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.

					To compare and order lengths, mass, volume/capacity and record the results using >, < and =. To compare and sequence intervals of time				

	Converting Units of Measure (All Strands)				To know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)	To know the number of seconds in a minute and the number of days in each month, year and leap year	To use multiplication to convert from larger to smaller units. To convert between different units of measure and build on their understanding of place value and decimal notation to record metric measures, including money. To convert between different units of measure To read, write and convert time between analogue and digital 12 and 24-hour clocks To solve problems	To use the knowledge of place value and multiplication and division to convert between standard units. To convert between different units of metric measure. To understand and use approximate equivalences between metric units and common imperial units. To solve problems involving converting between units of time	To use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places. To convert between miles and kilometres. To know approximate conversions to tell if an answer is sensible. To solve problems

							involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Telling the Time)		involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Measuring and Calculating)

	Telling time	Begin to describe a sequence of events, real or fictional, using words, such as 'first', 'then...'		To sequence events in chronological order using language. To recognise and use language relating to dates, including days of the week, weeks, months and years. To tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	To read, tell and write the time to five minutes, including quarter past/to the hour/half hour and draw the hands on a clock face to show these times. To know the number of minutes in an hour and the number of hours in a day. To compare and sequence intervals of time.	To tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. To estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours. To use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight.	To read, write and convert time between analogue and digital 12- and 24-hour clocks. To solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	To solve problems involving converting between units of time.	

						To know the number of seconds in a minute and the number of days in each month, year and leap year. To compare durations of events.			

	Perimeter, Area and Volume					To measure the perimeter of simple 2D shapes. To measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	To measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. To know perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit. To find the area of rectilinear shapes by counting squares. To relate area to arrays and multiplication.	To measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres including using the relations of perimeter. Note: Missing measures questions can be expressed algebraically. To calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²), use the area of rectangles to find unknown lengths and estimate the	To recognise that shapes with the same areas can have different perimeters and vice versa. To recognise when it is possible to use formulae for area and volume of shapes. To relate the area of rectangles to parallelograms and triangles and calculate their areas, understanding and using the formulae (in words or symbols) to do this. To calculate the area of parallelograms and triangles.

								area of irregular shapes. Note: Missing measures questions can be expressed algebraically. To calculate the area from scale drawings using given measurements. To estimate volume.	To calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units (for example, mm^3 and km^3).

Properties of Shapes	Recognise 2D and 3D Shapes and Their Properties	Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: ‘sides’, ‘corners’; ‘straight’, ‘flat’, ‘round’.	Select, rotate and manipulate shapes in order to develop spatial reasoning skills	To recognise, handle and name common 2D and 3D shapes in different orientations/sizes and relate everyday objects fluently. *To recognise that rectangles, triangles, cuboids and pyramids are not always similar to each other.*	Pupils read and write names for shapes that are appropriate for their word reading and spelling. To handle, identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line. To *handle*, identify and describe the properties of 3D shapes, including the number of edges, vertices and faces. To identify 2D shapes on the	To describe the properties of 2D and 3D shapes using accurate language. To extend knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygon and polyhedron. To recognise 3D shapes in different orientations and describe them.	To identify lines of symmetry in 2D shapes presented in different orientations. To recognise line symmetry in a variety of diagrams, including where the line of symmetry does not dissect the original shape.	To identify 3D shapes, including cubes and other cuboids, from 2D representations.	To illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. To express algebraically the relationship between angles and lengths. To recognise, describe and build simple 3-D shapes, including making nets (appears also in Drawing and Constructing)

					surface of 3D shapes.				
	Compare and Classify Shapes	Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: ‘sides’, ‘corners’; ‘straight’, ‘flat’, ‘round’.	Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.		To identify, compare and sort common 2D and 3D shapes and everyday objects on the basis of their properties and use vocabulary precisely.		To compare lengths and angles to decide if a polygon is regular or irregular. To compare and classify geometric shapes, including different quadrilaterals and triangles, based on their properties and sizes.	To distinguish between regular and irregular polygons based on reasoning about equal sides and angles. To use the properties of rectangles to deduce related facts and find missing lengths and angles	To compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons using known measurements.

	Drawing 2D Shapes and Constructing 3D Shapes				*Pupils draw lines and shapes using a straight edge.*	To connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts. To identify horizontal and vertical lines and pairs of perpendicular and parallel lines. To draw 2D shapes and make 3D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	To draw with increasing accuracy and develop mathematical reasoning to analyse shapes and their properties and confidently describe the relationships between them. To complete a simple symmetric figure with respect to a specific line of symmetry.	To become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor. To use conventional markings for parallel lines and right angles	To draw 2D shapes and nets accurately using given dimensions and angles using measuring tools, conventional markings and labels for lines and angles. To recognise, describe and build simple 3D shapes, including making nets.

	Angles					To recognise angles as a property of shape or a description of a turn. To identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn To identify whether angles are greater than or less than a right angle.	To identify acute and obtuse angles and compare and order angles up to two right angles by size in preparation for using a protractor.	To know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles. To draw given angles, and measure them in degrees. To identify: angles at a point and one whole turn (total 360˚), angles at a point on a straight line and $\frac{1}{2}\frac{1}{2}$ a turn (total 180˚) and other multiples of 90˚. *To use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides.*	To recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

								To use the properties of rectangles to deduce related facts and find missing lengths and angles *by using angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems*.	

Position and direction	Position, Direction and Movement	Understand position through words alone – for example, "The bag is under the table," – with no pointing. Describe a familiar route. Discuss routes and locations, using words like 'in front of' and 'behind'.	Draw information from a simple map.	To describe position, direction and movement, including whole, half, quarter and three-quarter turns *in both directions and connect clockwise with the movement on a clock face.* *To use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside.*	To use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise).		To describe positions on a 2D grid as coordinates in the first quadrant. To plot specified points and draw sides to complete a given polygon. To describe movements between positions as translations of a given unit to the left/right and up/down.	To identify, describe and represent the position of a shape following a reflection *(in lines that are parallel to the axes)* or translation, using the appropriate language, and know that the shape has not changed.	To describe positions on the full coordinate grid (all four quadrants). To draw and *label* simple shapes – *rectangles (including squares), parallelograms and rhombuses, specified by coordinates in the four quadrants, predicting missing coordinates using the properties of shapes.* To translate simple shapes *where coordinates may be expressed algebraically* on the coordinate plane and

									reflect them in the axes.
	Patterns	Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs' etc. Extend and create ABAB patterns – stick, leaf, stick, leaf. Notice and correct an error in a repeating pattern.	Continue, copy and create repeating patterns.	To order and arrange combinations of mathematical objects and *shapes, including those in different orientations,* in patterns and sequences.					

Statistics	Record, Present and Interpret Data				*To record, interpret, collate, organise and compare information.* To interpret and construct simple pictograms, tally charts, block diagrams and simple tables *(e.g. many-to-one correspondence in pictograms with simple ratios 2, 5, 10 scales).* To ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.	To interpret and present data using bar charts, pictograms and tables *and use simple scales with increasing accuracy.*	*To understand and use a greater range of scales in data representations.* To interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	*To begin to decide which representations of data are most appropriate and why.* *To connect coordinates and scales to the interpretation of time graphs.* To complete, read and interpret information in tables, including timetables.	*To connect conversion from kilometres to miles in measurement to its graphical representation* *To connect work on angles, fractions and percentages to the interpretation of pie charts.* To interpret and construct pie charts and line graphs *(relating to two variables)* and use these to solve problems.

					To ask and answer questions about totalling and comparing categorical data.				
	Solve problem					To solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables.	To solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	To solve comparison, sum and difference problems using information presented in a line graph.	*To know when it is appropriate to find the mean of a data set.* To calculate and interpret the mean as an average.

Ratio and Proportion									*To recognise proportionality in contexts when the relations between quantities are in the same ratio, e.g. recipes.* To solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. To solve problems involving the calculation of percentages and the use of percentages for comparison *including linking percentages*

									or 360° to calculating angles of pie chart. To solve problems involving similar shapes where the scale factor is known or can be found. To solve problems involving unequal *quantities,* sharing and grouping using knowledge of fractions and multiples.