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St Josephs's Catholic Primary – Mathematics Progression

Number: Number and Place Value Progression

	Early Years Foundation Stage		Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
	Nursery 3/4	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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 ('cardinal principle').	• Count objects, actions and sounds. (DM) • Count beyond ten. (DM) • Verbally count beyond 20, recognising the pattern of the counting system. (ELG) • Understand the 'one more than/one less than' relationship between consecutive numbers.(DM)	• count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens • given a number, identify one more and one less	• count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	• count from 0 in multiples of 4, 8, 50 and 100; • find 10 or 100 more or less than a given number	• count backwards through zero to include negative numbers • count in multiples of 6, 7, 9, 25 and 1 000 • find 1 000 more or less than a given number	• interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero • count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	• use negative numbers in context, and calculate intervals across zero
Comparing Numbers	• Compare quantities using language: 'more than', 'fewer than'.	• Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. (ELG) • Compare numbers. (DM)	• use the language of: equal to, more than, less than (fewer), most, least	• compare and order numbers from 0 up to 100; use <, > and = signs	• compare and order numbers up to 1 000	• order and compare numbers beyond 1 000 • compare numbers with the same number of decimal places up to two decimal places	• read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	• read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
Identifying, representing and estimating numbers	• Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). • Show 'finger numbers' up to 5.	• Have a deep understanding of number to 10, including the composition of each number (ELG) • Subitise (recognise quantities without counting) up to 5. (ELG) • Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally. (ELG)	• identify and represent numbers using objects and pictorial representations including the number line	• identify, represent and estimate numbers using different representations, including the number line	• identify, represent and estimate numbers using different representations	• identify, represent and estimate numbers using different representations		
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. (DM)	• read and write numbers from 1 to 20 in numerals and words.	• read and write numbers to at least 100 in numerals and in words	• read and write numbers up to 1 000 in numerals and in words		• read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit • (appears also in Comparing Numbers)	• read, write, order and compare numbers up to • 10 000 000 and determine the value of each digit • (appears also in Understanding Place Value)
Understanding Place Value				• recognise the place value of each digit in a two-digit number (tens, ones)	• recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	• recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) • 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	• read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit • recognise and use • thousandths and relate them to tenths, hundredths and decimal equivalents	• 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) • 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

Rounding						• round any number to the nearest 10, 100 or 1 000 • round decimals with one decimal place to the nearest whole number	• round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000 • round decimals with two decimal places to the nearest whole number and to one decimal place	• round any whole number to a required degree of accuracy • solve problems which require answers to be rounded to specified degrees of accuracy
Problem Solving				• use place value and number facts to solve problems	• solve number problems and practical problems involving these ideas.	• solve number and practical problems that involve all of the above and with increasingly large positive numbers	• solve number problems and practical problems that involve all of the above	• solve number and practical problems that involve all of the above

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Number: Addition and Subtraction

	Early Years Foundation Stage		Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number Bonds		• Explore the composition of numbers to 10. (DM) • Automatically recall number bonds for numbers 0–5 and some to 10. (DM) • Have a deep understanding of number to 10, including the composition of each number (ELG) • Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. (ELG)	• represent and use number bonds and related subtraction facts within 20	• recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				
Mental Calculation			• add and subtract one-digit and two-digit numbers to 20, including zero • read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs • (appears also in Written Methods)	• add and subtract numbers using concrete objects, pictorial representations, and mentally, including: ○ a two-digit number and ones ○ a two-digit number and tens ○ two two-digit numbers ○ adding three one-digit numbers • show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot	• add and subtract numbers mentally, including: • a three-digit number and ones • a three-digit number and tens • a three-digit number and hundreds		• add and subtract numbers mentally with increasingly large numbers	• perform mental calculations, including with mixed operations and large numbers • use their knowledge of the order of operations to carry out calculations involving the four operations
Written Methods			• read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs • (appears also in Mental Calculation)		• add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	• add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	• add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	
Inverse operations, estimating and checking				• recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	• estimate the answer to a calculation and use inverse operations to check answers	• estimate and use inverse operations to check answers to a calculation	• use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	• use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.

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Problem Solving	• Solve real world mathematical problems with numbers up to 5.		• solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as
			• 7 = _ - 9
				• 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
				• solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change
					• solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	• solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	• solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	• solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
								• Solve problems involving addition, subtraction, multiplication and division

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Number: Multiplication and Division

	Early Years Foundation Stage		Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication and Division facts		• Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally. (ELG)	• count in multiples of twos, fives and tens	• count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward • recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	• count from 0 in multiples of 4, 8, 50 and 100 • recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	• count in multiples of 6, 7, 9, 25 and 1 000 • recall multiplication and division facts for multiplication tables up to 12 × 12	• count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	
Mental Calculation				• show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	• 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	• use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers • recognise and use factor pairs and commutativity in mental calculations	• multiply and divide numbers mentally drawing upon known facts • multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	• perform mental calculations, including with mixed operations and large numbers • associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8)
Written Calculation				• calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	• 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	• multiply two-digit and three-digit numbers by a one-digit number using formal written layout	• multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers • divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context	• multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context divide numbers up to 4 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 • use written division methods in cases where the answer has up to two decimal places
Properties of numbers: multiples, factors, primes, square and cube numbers						• recognise and use factor pairs and commutativity in mental calculations (repeated)	• identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. • know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers • establish whether a number up to 100 is prime and recall prime numbers up to 19 • recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)	• identify common factors, common multiples and prime numbers • use common factors to simplify fractions; use common multiples to express fractions in the same denomination (copied from Fractions)

Order of Operations								• use their knowledge of the order of operations to carry out calculations involving the four operations
Inverse Operations, estimating and checking answers					• estimate the answer to a calculation and use inverse operations to check answers (copied from Addition and Subtraction)	• estimate and use inverse operations to check answers to a calculation (copied from Addition and Subtraction)		• use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy
Problem Solving			• 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	• solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	• solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	• solve problems 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	• solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes • solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign • solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	• solve problems involving addition, subtraction, multiplication and division

Number: Fractions, including decimals and percentages

	Early Years Foundation Stage		Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Counting in fractional steps				• *Pupils should count in fractions up to 10, starting from any number and using the1/2 and 2/4 equivalence on the number line (Non Statutory Guidance)*	• count up and down in tenths	• count up and down in hundredths		

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Recognising fractions			• recognise, find and name a half as one of two equal parts of an object, shape or quantity • recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	• recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity	• recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators • recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10. • recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators	• recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	• recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (appears also in Equivalence)	
Comparing fractions					• compare and order unit fractions, and fractions with the same denominators		• compare and order fractions whose denominators are all multiples of the same number	• compare and order fractions, including fractions >1
Comparing decimals						• compare numbers with the same number of decimal places up to two decimal places	• read, write, order and compare numbers with up to three decimal places	• identify the value of each digit in numbers given to three decimal places
Rounding including						• round decimals with one decimal place to the nearest whole number	• round decimals with two decimal places to the nearest whole number and to one decimal place	• solve problems which require answers to be rounded to specified degrees of accuracy
Equivalence, including fractions, decimals and percentages				• write simple fractions e.g. 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2.	• recognise and show, using diagrams, equivalent fractions with small denominators	• recognise and show, using diagrams, families of common equivalent fractions • recognise and write decimal equivalents of any number of tenths or hundredths • recognise and write decimal equivalents to 1/4; 1/2; 3/4	• identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths • read and write decimal numbers as fractions (e.g. 0.71 = 71/100) • recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100 as a decimal fraction	• use common factors to simplify fractions; use common multiples to express fractions in the same denomination • associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8) • recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

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Addition and subtraction of fractions					• add and subtract fractions with the same denominator within one whole (e.g. 5/7 + 1/7 = 6/7)	• add and subtract fractions with the same denominator	• add and subtract fractions with the same denominator and multiples of the same number • recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. 2/5 + 4/5 = 6/5 = 11/5)	• add and subtract fractions with different denominators and mixed numbers, using the • concept of equivalent fractions
Multiplication and division of fractions							• multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	• multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. 1/4 × 1/2 = 1/8) • divide proper fractions by whole numbers (e.g. 1/3 ÷ 2 = 1/6)
Multiplication and division of decimals						• 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		• multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places • identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 • and 1000 where the answers are up to three decimal places • associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8) • use written division methods in cases where the answer has up to two decimal places
Problem Solving					• solve problems that involve all of the above	• 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 • solve simple measure and money problems involving fractions and decimals to two decimal places.	• solve problems involving numbers up to three decimal places • solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those with a denominator of a multiple of 10 or 25.	

Ratio and Proportion (Statements only appear in Year 6, but should be connected to previous learning, particularly fractions and multiplication and division)

	Early Years Foundation Stage		Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

								• solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts • solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison • solve problems involving similar shapes where the scale factor is known or can be found • solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Measurement

	Early Years Foundation Stage		Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

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Comparing and estimating	• Make comparisons between objects relating to size, length, weight and capacity.
	• Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'
		• Compare length, weight and capacity. (DM)	• compare, describe and solve practical problems for:
			  • lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half]
			  • mass/weight [e.g. heavy/light, heavier than, lighter than]
			  • capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter]
			  • time [e.g. quicker, slower, earlier, later]
			• sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]
				• compare and order lengths, mass, volume/capacity and record the results using >, < and =
				• compare and sequence intervals of time
					• compare durations of events, for example to calculate the time taken by particular events or tasks
					• 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 (appears also in Telling the Time)
						• estimate, compare and calculate different measures, including money in pounds and pence	• *calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes*
							• *estimate volume (e.g. using 1 cm3 blocks to build cubes and cuboids) and capacity (e.g. using water)*
								• *calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm3) and cubic metres (m3), and extending to other units such as mm3 and km3.*

Measuring and calculating			• measure and begin to record the following:
			  • lengths and heights
			  • mass/weight
			  • capacity and volume
			  • time (hours, minutes, seconds)
			• recognise and know the value of different denominations of coins and notes
				• choose and use appropriate standard units 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
				• recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value
				• find different combinations of coins that equal the same amounts of money
				• solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change
					• measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
					• measure the perimeter of simple 2-D shapes
					• add and subtract amounts of money to give change, using both £ and p in practical contexts
						• estimate, compare and calculate different measures, including money in pounds and pence
						• measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
						• find the area of rectilinear shapes by counting squares
							• *use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling.*
							• *measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres*
							• *calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes*
								• *solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate*
								• *recognise that shapes with the same areas can have different perimeters and vice versa*
								• *calculate the area of parallelograms and triangles*
								• *calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [e.g. mm3 and km3].*
								• *recognise when it is possible to use formulae for area and volume of shapes*

Telling the time			• tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. • recognise and use language relating to dates, including days of the week, weeks, months and years	• tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. • know the number of minutes in an hour and the number of hours in a day. (appears also in Converting)	• 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; 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	• read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)		

Converting				• know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)	• know the number of seconds in a minute and the number of days in each month, year and leap year	• convert between different units of measure (e.g. kilometre to metre; hour to minute) • read, write and convert time between analogue and digital 12 and 24-hour clocks • solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days	• *convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)* • *solve problems involving converting between units of time* • *understand and use equivalences between metric units and common imperial units such as inches, pounds and pints*	• *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* • *convert between miles and kilometres* • *solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate*

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Geometry – Properties of Shapes

	Early Years Foundation Stage		Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Identifying 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'.		• recognise and name common 2-D and 3-D shapes, including: • 2-D shapes [e.g. rectangles (including squares), circles and triangles] • 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].	• 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 • identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]		• identify lines of symmetry in 2-D shapes presented in different orientations	• identify 3-D shapes, including cubes and other cuboids, from 2-D representations	• recognise, describe and build simple 3-D shapes, including making nets • illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
Drawing and constructing	• Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc. • Combine shapes to make new ones – an arch, a bigger triangle, etc.	• Select, rotate and manipulate shapes to develop spatial reasoning skills. (DM) • Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can. (DM)			• draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	• complete a simple symmetric figure with respect to a specific line of symmetry	• draw given angles, and measure them in degrees (o)	• draw 2-D shapes using given dimensions and angles • recognise, describe and build simple 3-D shapes, including making nets
Comparing and classifying				• compare and sort common 2-D and 3-D shapes and everyday objects		• compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	• use the properties of rectangles to deduce related facts and find missing lengths and angles • distinguish between regular and irregular polygons based on reasoning about equal sides and angles	• compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons

Angles					• recognise angles as a property of shape or a description of a 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
					• identify horizontal and vertical lines and pairs of perpendicular and parallel lines
						• identify acute and obtuse angles and compare and order angles up to two right angles by size	• know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
							• identify:
							  • angles at a point and one whole turn (total 360o)
							  • angles at a point on a straight line and ½ a turn (total 180o)
							  • other multiples of 90o
								• recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

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Geometry – Position and Direction

	Early Years Foundation Stage		Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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'.	• Select, rotate and manipulate shapes to develop spatial reasoning skills. (DM)	• describe position, direction and movement, including half, quarter and three-quarter turns.	• 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 anti-clockwise)		• describe positions on a • 2-D grid as coordinates in the first quadrant • describe movements between positions as translations of a given unit to the left/right and up/down • plot specified points and draw sides to complete a given polygon	• identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed	• describe positions on the full coordinate grid (all four quadrants) • draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
Pattern	• 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. (DM)		• order and arrange combinations of mathematical objects in patterns and sequences				

Statistics

	Early Years Foundation Stage		Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Interpreting, constructing and presenting data				• interpret and construct simple pictograms, tally charts, block diagrams and simple tables • ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity • ask and answer questions about totalling and comparing categorical data	• interpret and present data using bar charts, pictograms and tables	• interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	• complete, read and interpret information in tables, including timetables	• interpret and construct pie charts and line graphs and use these to solve problems
Solving Problems					• solve one-step and two-step questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	• solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	• solve comparison, sum and difference problems using information presented in a line graph	• calculate and interpret the mean as an average

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Algebra

	Early Years Foundation Stage		Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Equations			• solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = * - 9	• recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.	• solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. • solve problems, including missing number problems, involving multiplication and division, including integer scaling		• use the properties of rectangles to deduce related facts and find missing lengths and angles	• express missing number problems algebraically • find pairs of numbers that satisfy number sentences involving two unknowns • enumerate all possibilities of combinations of two variables
Formulae						• Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit.		• use simple formulae • recognise when it is possible to use formulae for area and volume of shapes
Sequences			• sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening	• compare and sequence intervals of time • order and arrange combinations of mathematical objects in patterns				• generate and describe linear number sequences