R A Butler Academies

Progression Map

Maths

Skills in italics represent extension statements within that year group.

		Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number and Place Value	**Counting**	count from 0-20 count an irregular arrangement of up to 10 objects	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 *Find 1 or 10 more or less than a given number*	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 1000 find 1000 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 1000 000 *Count forwards and backwards in decimal steps* *Find 0.01 0.1 1 10 100 1000 and other powers of 10 more or less than a given number*	use negative numbers in context, and calculate intervals across zero *Count forwards or backwards in steps of integers decimals or powers of 10* *Find 0.001 0.01 0.1 1 10 100 1000 and other powers of 10 more or less than a given number*
	Comparing Numbers	compare quantities of identical objects compare quantities of non-identical objects compare groups up to 10 use the language of more than and fewer than	use the language of: equal to, more than, less than (fewer), most, least Given a number, identify one more or less	compare and order numbers from 0 up to 100; use <, > and = signs	compare and order numbers up to 1000 *Compare and order numbers with one decimal place*	order and compare numbers beyond 1000 compare numbers with the same number of decimal places up to two decimal places *Order decimal numbers of 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 *order and compare numbers including integers decimals and negative numbers*
	Identifying, representing and estimating numbers	select the correct numeral to represent 1-5, then 1-10 objects	identify and represent numbers using objects and pictorial representations including the number line *Identify odd and even numbers*	identify, represent and estimate numbers using different representations, including the number line *Partition numbers in different ways (eg 23 = 13 + 10 and 23 = 20 + 3)*	identify, represent and estimate numbers using different representations *Partiition 3 digit numbers in different ways (eg. 146 = 100 + 40 + 6 or 146 = 130 +16)*	identify, represent and estimate numbers using different representations	*identify represent and estimate numbers using the number line*	*Identify represent and estimate numbers using the number line*

	Reading and writing numbers	write the correct numeral for a given number	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 1000 in numerals and in words tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks *Read and write numbers with one decimal place* *Read Roman Numerals from I to XII*	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. *Read and write numbers up to 10,000* *Read and write numbers with 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 Roman numerals to 1000 (M) and recognise years written in Roman numerals.	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
	Understanding place value			recognise the place value of each digit in a two-digit number (tens, ones) *Understand the connection between the 10 times table and place value*	recognise the place value of each digit in a three-digit number (hundreds, tens, ones) *Identify the value of each digit to one decimal place* *Find the effect of multiplying a one or two-digit number by 10 or 100 and identify the value of the digits in the answer.*	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 *Identify the value of each digit to two decimal places* *Partition numbers (including decimals) in non-standard ways*	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 *Identify the value of each digits to three decimal places* *hello*	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit 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
	Rounding			*Round numbers to at least 100 to the nearest 10*	*Round numbers up to 1000 to the nearest 10*	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

		Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition and Subtraction	**Number bonds**	Bonds to 5 Number bonds 10 (tens frame) Number bonds to 10 (part-part whole model)	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 *Recall and use number bonds for multiples of 5 totaling 60 (for use in telling the time)*	*Derive and use addition/subtraction facts for 100* *Derive and use addition/subtraction facts for multiples of 100 totalling 1000*	*Recall and use addition and subtraction facts for 100* *Recall and use addition and subtraction facts for multiples of 100 totalling 1000* *Drive and use addition subtraction facts for one and 10 (with decimal numbers to one decimal place)*	*Recall and use addition and subtraction facts for one and 10 with decimal numbers to one decimal place* *derive and use addition and subtraction facts for one with decimal numbers to two decimal places*	*Recall and use addition and subtraction facts for one with decimals to two decimal places*
	Mental Calculations	Find one more and one less Combine two groups to find the whole Adding by counting on Subtract by counting back	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 *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting)* *Select a mental strategy appropriate for the numbers in the calculation*	add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting)* *Select a mental strategy appropriate for the numbers in the calculation*	*Add and subtract mentally combinations of two and three digit numbers and decimals to one decimal place* *Choose an appropriate strategy to solve a calculation based upon the numbers involved* *select a mental strategy appropriate for the numbers involved in the calculation*	add and subtract numbers mentally with increasingly large numbers *add and subtract numbers mentally with decimals to two decimal places hello* *Choose an appropriate strategy to solve a calculation based upon the numbers involved* *select a mental strategy appropriate for the numbers involved in the calculation*	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 *Choose an appropriate strategy to solve a calculation based upon the numbers involved* *select a mental strategy appropriate for the numbers involved in the calculation*
	Structures			*Understand subtraction as take away and difference*	*Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context*			

	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 decimals with one decimal place using the formal written methods of column addition and subtraction where appropriate*	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) *Add and subtract decimals with two decimal places using the formal written method of column addition and subtraction*	Add and subtract whole numbers and decimals using formal written methods
	Inverse operaitons, estimating and checking answers			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.
	Problem Solving	Sorting into groups	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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Multiplication and Division	**Multiplication and division facts**	Doubling Halving and sharing Odds and evens	count in multiples of twos, fives and tens *Recall and use doubles of all numbers to 10 and corresponding halves*	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 *Derive and use doubles of all numbers to 100 and corresponding halves* *Derive and use doubles of all multiples of 50 to 500*	*count in multiples of 6, 7, 9, 25 and 1 000* recall multiplication and division facts for multiplication tables up to 12 × 12 *use partitioning to double or halve any number including decimals to one hello decimal place*	count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 *use partitioning to double or halve any number including decimals to two decimal places*	*Use partitioning to double or half any number*
	Structures			*Understand multiplication as repeated addition* *Understand division as sharing and grouping and that a division calculation can have a remainder*	*Understand that division is the inverse of multiplication and vice versa* *Understand how multiplication and division statements can be represented by arrays* *Understand division as sharing and grouping and use each appropriately*			
	Mental calculations			show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot *Derive and use doubles of simple two-digit numbers (numbers in which the ones total less than 10)* *Derive and use halves of simple two-digit even numbers (numbers in which the tens are even)*	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 *Choose an appropriate strategy to solve a calculation based upon the numbers involved*	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 *Choose an appropriate strategy to solve a calculation based upon the numbers involved*	multiply and divide numbers mentally drawing upon known facts multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 *choose an appropriate strategy to solve a calculation based on the numbers involved*	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. $^{3}/_{8}$) *choose an appropriate strategy to solve a calculation based on the numbers involved*
	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 *Divide numbers up to 3 digits by a one digit number using the formal written method of short division and interpret remainders appropriately for the context*	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	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 calculate, estimate and compare volume of cubes and cuboids using standard units, including centimeter cubed (cm^3) and cubic meters (m^3), and extending to other units such as mm^3 and km^3
	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	estimate and use inverse operations to check answers to a calculation	*use estimation or inverse cheque answers to calculations determine, in the context of a problem, an appropriate degree of accuracy*	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 solve problems involving similar shapes where the scale factor is known or can be found

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Fractions, Decimals and Percentages	**Counting in fraction steps**			*Count on and back in steps of ½ and ¼ up to the value of 10*	count up and down in tenths *Count on and back in steps of ¾*	count up and down in hundredths *Count on and back in steps of unit fractions*	*Count on and back in mixed number steps such as 1 ½*	
	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 *Understand that a fraction can describe part of a whole* *Understand that a unit fraction represents one equal part of a whole*	recognise, find, name and write fractions $^{1}/_{3}$, $^{1}/_{4}$, $^{2}/_{4}$ and $^{3}/_{4}$ of a length, shape, set of objects or quantity *Understand and use the terms numerator and denominator* *Understand that a fraction can describe part of a set* *Understand that the larger the denominator is, the more pieces it is split into and therefore, the smaller each part will be*	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 *Show practically or pictorially that a fraction is one whole number divided by another (eg, ¾ = 3 divided by 4)* *Understand that finding a fraction of an amount relates to a division*	recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten *Understand that a fraction is one whole number divided by another (eg. ¾ is 3 divided by 4)* *Recognise find and write fractions of a discrete set of objects including those with a range of numerators and denominators*	recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	
	Comparing fractions				compare and order unit fractions, and fractions with the same denominators	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 decimals					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			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.
	Addition and subtraction of decimals				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. $^2/_5 + ^4/_5 = ^6/_5 = 1^1/_5$)	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. $^1/_4 \times ^1/_2 = ^1/_8$) multiply one-digit numbers with up to two decimal places by whole numbers divide proper fractions by whole numbers (e.g. $^1/_3 \div 2 = ^1/_6$)
	Multiplicaiton and divition 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 one-digit numbers with up to two decimal places by whole numbers 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 placed
	Percentages							Find percentages of amounts
	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. *Solve problems involving fractions and decimals to three decimal places*	solve problems involving fractions decimals and percentages

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Ratio and Proportion								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.

Measurment

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Comparing and estimating		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 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) *Continue to estimate and measure tempterature to the nearest degree using thermomemters*	estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring) *Order temperatures including those below 0 degrees centigrade*	calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes (also included in measuring) estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water) *continue to order temperatures including those below zero degrees*	calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3.
Measuring and calculating	Daily routine Recognise length, height and distance Understand the difference between weight and capacity	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** (liters/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 *continue to recognize and use the symbols for pounds (£) and pence (p) and understand that the decimal point separates pounds and pence.* *Recognize that ten 10p coins equal £1 and that each coin is 1/10th of £1* *Solve problems involving money and measures and simple problems involving passage of tiem*	estimate, compare and calculate **different measures,** including **money in pounds and pence** measure and calculate the **perimeter** of a rectilinear figure find the area of rectilinear shapes by counting squares *Write amounts of money using decimal notation* *recognise that 100 1p coins equal £1 and that each coin is 1/100th of £1* *solve problems involving money and measures hello*	measure, compare, add and subtract: **lengths** (m/cm/mm); **mass** (kg/g); **volume/capacity** (l/ml) measure the **perimeter** of simple 2-D shapes calculate and compare the area of squares and rectangles including using standard units, square centimeters (cm^2) and square meters (m^2) and estimate the area of irregular shapes recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) *Use read and write standard units of length and mass hello*	estimate, compare and calculate **different measures,** including **money in pounds and pence** measure and calculate the **perimeter** of a rectilinear figure calculate the area of parallelograms and triangles calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimeters (cm^3) and cubic meters (m^3), and extending to other units [e.g. mm^3 and km^3]. recognise when it is possible to use formulae for area and volume of shapes *Calculate differences in temperature including those that involve a positive and negative temperature*

	Telling the time	Daily routine Order and sequence events measure short periods of 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.	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 solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Converting)	solve problems involving converting between units of time *Continue to read write and convert time between analogue and digital 12 and 24 hour clocks*	
	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. kilometer to meter; 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 solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate convert between miles and kilometers

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Geometry: Properties of shape	**Identifying shapes and their properties**	recognise 2-D and 3-D shapes; using mathematical terms selects a particular named shape	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 parallel and perpendicular lines	identify lines of symmetry in 2-D shapes presented in different orientations *Continue to identify horizontal and vertical lines and pairs of perpendicular and parallel lines*	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	Make simple patterns Explore more complex patterns			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 themhello 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	order two or three items by length and height order two items by weigh or capacity		compare and sort common 2-D and 3-D shapes and everyday objects		*Use a variety of sorting diagrams to* compare and classify *numbers and* 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 360^{o}) * angles at a point on a straight line and ½ a turn (total 180^{o}) * other multiples of 90^{o}	recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

		Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Geometry: Position and direction	**Position, direction and movement**	describe the position of an object	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 square grid labelled with letters and numbers*	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 first quadrant of a coordinate grid* *plot specified points and complete shapes*	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	Use common shapes to create patterns and build models		order and arrange combinations of mathematical objects in patterns and sequences				

		Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Statistics	**Interpreting, constructing and presenting data**		*Sort objects, numbers and shapes to a given criterion and their own* *Present and interpret data in block diagrams using practical equipment* *Ask and answer simple questions by counting the number of objects in each category* *Ask and answer simple questions by comparing categorical data*	interpret and construct simple pictograms, tally charts, block diagrams and simple tables ask and answer 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 *Use sorting diagrams to compare and sort objects, numbers and common 2D and 3D shapes*	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 *complete and interpret information in a variety of sorting diagrams* *calculate and interpret the mode median and range*	interpret and construct pie charts and line graphs and use these to solve problems *Continue to complete and interpret information in a variety of sorting diagrams*
	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 *solve comparison some and difference problems using information presented in all types of graphs*

		Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Algebra	**Equations**		solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and **missing number problems** such as 7 = □ - 9 represent and use number bonds and related subtraction facts within 20	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and **missing number** problems. recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100	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	*Solve addition and subtraction problems involving missing numbers*	use the properties of rectangles to deduce related facts and find **missing lengths and angles** *solve addition and subtraction problems with missing numbers hello hello*	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 *Recognise and create repeating patterns with numbers, objects and shapes*	compare and sequence intervals of time order and arrange combinations of mathematical objects in patterns	*Describe and extend number sequences involving counting on or back in different steps*	*Describe and extend number sequences involving counting on or back in different steps, including sequences with multiplication and division steps*	*describe and extend number sequences including those with multiplication or division steps and where the step size is a decimal*	Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit. *Describe and extend a number sequences including those with multiplication and division steps inconsistent steps alternating steps and those where the step size is a decimal*