

Ad Meliora Academy Trust Mathematics

Reffley Academy Mathematics Curriculum

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The mathematics curriculum, at Reffley Academy, has been planned to:

- Give pupils fluency in the fundamentals of maths through intelligent practice (see implementation).
- Develop conceptual understanding as well as the ability to recall and apply knowledge.
- To reason and problem solve using strategies that are explicitly taught.
- To develop independent learning behaviours through maths lessons.
- To develop as confident and articulate communicators, using the specific mathematical vocabulary that is specifically taught.
- To develop resilience, curiosity and stamina to enable reasoning and problem solving with increased confidence.
- Ensures learning is without limits – all children are given the opportunity to succeed at their own level.

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Intent	Implementation	Impact
To ensure all children: • Become fluent in the fundamentals of maths through intelligent practice (see implementation). • Develop conceptual understanding as well as the ability to recall and apply knowledge. • To reason and problem solve using strategies that are explicitly taught. • To develop independent learning behaviours through maths lessons. • To develop as confident and articulate communicators, using the specific mathematical vocabulary that is specifically taught. • To develop resilience, curiosity and stamina to enable reasoning and problem solving with increased confidence.	• Power Maths is used as the teaching scheme. The recommended overview and timings are used to give a broad and balanced maths curriculum at an age-appropriate level. • Daily maths lessons follow the structure of Power Maths. • Lessons are structured to ensure 'intelligent practice' in fluency, reasoning and problem solving • Intelligent practice is the precise designing of pupil activities and practice questions, so that, rather than pupils repeating a mechanical activity, they are taken down a path where the thinking process is practiced with increasing creativity. • An additional 15 minutes is allocated during the day for maths knowledge sessions, called Strive for Five. These are timetabled for years 1-6 to develop rapid recall and retention and/or to develop reasoning and understanding for instant recall. • Times Tables Rockstars is used to developing fluency in the recall of multiplication tables.	Know more • Pupils are taught age related content through the use of Power Maths. • Pre-teaching takes place where required to enable the majority of children to access the lesson. • For a small minority, work is differentiated so that children can access the concept at their ability. • Working walls showcase worked examples so that children can refer to them when undertaking their independent work. • Relevant vocabulary is explicitly taught. • End of term tests are used to ascertain what children know. Do more • Power Maths is structured so that concepts are taught in real life contexts. • Lessons have a challenge activity that gives pupils the opportunity to practice/use their problem solving skills. • There is a specific focus of number work and learning tables to enable rapid recall of facts. • Focus days take place to give children the opportunity to apply their mathematical knowledge. • Test papers are analysed to ascertain gaps in children's knowledge, where needed, intervention is delivered to address these gaps. Remember more • Lessons have a reflection section where pupils reflect on their learning. • Pupils revisit and embed concepts in daily 'Strive for Five' mini lessons • Stem sentences are taught and used to enable children to articulate their mathematical knowledge. • Pupils are taught to use the working wall to jog their memory when they are stuck. • Adults make links wherever possible, for example when turning to page 64 a year 2 teacher would say, 'How many tens and ones make up this number?' • End of key stage tests are used to inform leaders and the wider audience what pupils have remembered from their learning across the key stage.

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Maths Overview

Year	
EYFS	In the Early Years we use a range of activities from White Rose Maths #MathsEveryoneCan. This guidance underpins the Educational Programme for Mathematics (DFE March 2021) and supports the delivery of a curriculum that embeds mathematical thinking and talk. It supports the ethos of the EYFS whilst at the same time enabling the creation of a mathematically rich curriculum. It allows for key mathematical concepts to be revisited and developed across the year. It provides a variety of opportunities to develop the understanding of number, shape, space and measure and spatial thinking. Our learning is underpinned by the NCETM and the six key areas of early mathematics learning (Cardinality and Counting; Comparison; Composition; Pattern; Shape and Space; Measures). We use Numberblocks and have reference to the supporting materials provided by NCETM. In Reception we also follow lessons from the Cambridge Maths Hub Mastering Number programme. This programme develops solid number sense, including fluency and flexibility with number facts, which has a lasting impact on future learning for all children.

Year	Power Maths Units			
Year 1	Strand	Unit	Number of Lessons	
	Number – number and place value	1	Numbers to 10	12
	Number – number and place value	2	Part-whole within 10	5
	Number – addition and subtraction	3	Addition and subtraction within 10 (1)	6
	Number – addition and subtraction	4	Addition and subtraction within 10 (2)	12
	Geometry – properties of shape	5	2D and 3D shapes	5
	Number – number and place value	6	Numbers to 20	7
	Number – addition and subtraction	7	Addition within 20	6
	Number – addition and subtraction	8	Subtraction within 20	8
	Number – number and place value	9	Numbers to 50	11
	Measurement	10	Introducing length and height	5
	Measurement	11	Introducing weight and volume	7
	Number – multiplication and division	12	Multiplication	6
	Number – multiplication and division	13	Division	5
	Number – fractions	14	Halves and quarters	5
	Geometry – position and direction	15	Position and direction	3
	Number – number and place value	16	Numbers to 100	9
	Measurement	17	Time	7
Measurement	18	Money	3	
Year 2	Strand	Unit	Number of Lessons	
	Number – number and place value	1	Numbers to 100	10
	Number – addition and subtraction	2	Addition and subtraction (1)	12
	Number – addition and subtraction	3	Addition and subtraction (2)	9
	Measurement	4	Money	9
	Number – multiplication and division	5	Multiplication and division (1)	9
	Number – multiplication and division	6	Multiplication and division (2)	9
	Statistics	7	Statistics	7
	Measurement	8	Length and height	5
	Geometry – properties of shape	9	Properties of shapes	12
	Number – fractions	10	Fractions	14
	Geometry – position and direction	11	Position and direction	4
	Number – addition and subtraction	12	Problem solving and efficient methods	12
	Measurement	13	Time	9
Measurement	14	Weight, volume and temperature	10	

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Year 3	Strand	Unit		Number of Lessons
	Number – number and place value	1	Place value within 1,000	11
	Number – addition and subtraction	2	Addition and subtraction (1)	10
	Number – addition and subtraction	3	Addition and subtraction (2)	9
	Number – multiplication and division	4	Multiplication and division (1)	15
	Number – multiplication and division	5	Multiplication and division (2)	14
	Measurement	6	Money	5
	Statistics	7	Statistics	5
	Measurement	8	Length	11
	Number – fractions	9	Fractions (1)	11
	Number – fractions	10	Fractions (2)	9
	Measurement	11	Time	11
	Geometry – properties of shapes	12	Angles and properties of shapes	9
	Measurement	13	Mass	6
	Measurement	14	Capacity	6

Year	Power Maths Units			
Year 4	Strand	Unit		Number of Lessons
	Number – number and place value	1	Place value – 4-digit numbers (1)	9
	Number – number and place value	2	Place value – 4-digit numbers (2)	9
	Number – addition and subtraction	3	Addition and subtraction	15
	Measurement	4	Measure – perimeter	5
	Number – multiplication and division	5	Multiplication and division (1)	11
	Number – multiplication and division	6	Multiplication and division (2)	15
	Measurement	7	Measure – area	5
	Number – fractions (including decimals)	8	Fractions (1)	7
	Number – fractions (including decimals)	9	Fractions (2)	8
	Number – fractions (including decimals)	10	Decimals (1)	10
	Number – fractions (including decimals)	11	Decimals (2)	7
	Measurement	12	Money	9
	Measurement	13	Time	5
	Statistics	14	Statistics	5
	Geometry – properties of shapes	15	Geometry – angles and 2D shapes	10
	Geometry – position and direction	16	Geometry – position and direction	6

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Year 5	Strand	Unit		Number of Lessons
	Number – number and place value	1	Place value within 100,000	8
	Number – number and place value	2	Place value within 1,000,000	8
	Number – addition and subtraction	3	Addition and subtraction	10
	Statistics	4	Graphs and tables	5
	Number – multiplication and division	5	Multiplication and division (1)	10
	Measurement	6	Measure – area and perimeter	7
	Number – multiplication and division	7	Multiplication and division (2)	11
	Number – fractions (including decimals and percentages)	8	Fractions (1)	8
	Number – fractions (including decimals and percentages)	9	Fractions (2)	12
	Number – fractions (including decimals and percentages)	10	Fractions (3)	7
	Number – fractions (including decimals and percentages)	11	Decimals and percentages	12
	Number – fractions (including decimals and percentages)	12	Decimals	15
	Geometry – properties of shapes	13	Geometry – properties of shapes (1)	7
	Geometry – properties of shapes	14	Geometry – properties of shapes (2)	5
	Geometry – position and direction	15	Geometry – position and direction	4
	Measurement	16	Measure – converting units	10
	Measurement	17	Measure – volume and capacity	4

Year	Power Maths Units
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Year 6	Strand	Unit		Number of Lessons
	Number – number and place value	1	Place value within 10,000,000	7
	Number – addition, subtraction, multiplication and division	2	Four operations (1)	10
	Number – addition, subtraction, multiplication and division	2	Four operations (2)	9
	Number – fractions	4	Fractions (1)	11
	Number – fractions	5	Fractions (2)	9
	Geometry – position and direction	6	Geometry – position and direction	4
	Number – fractions (including decimals and percentages)	7	Decimals	9
	Number – fractions (including decimals and percentages)	8	Percentages	9
	Algebra	9	Algebra	11
	Measurement	10	Measure – imperial and metric measures	5
	Measurement	11	Measure – perimeter, area and volume	11
	Ratio and proportion	12	Ratio and proportion	9
	Geometry – properties of shapes	13	Geometry – properties of shapes	12
	Number – number and place value	14	Problem solving	14
	Statistics	15	Statistics	10

Maths Progression – National Curriculum knowledge

Number and place value	
Year 1	- 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 - identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least - read and write numbers from 1 to 20 in numerals and words
Year 2	- count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward - recognise the place value of each digit in a two-digit number (tens, ones) - identify, represent and estimate numbers using different representations, including the number line - compare and order numbers from 0 up to 100; use and = signs - read and write numbers to at least 100 in numerals and in words - use place value and number facts to solve problems.
Year 3	- count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number - recognise the place value of each digit in a three-digit number (hundreds, tens, ones) - compare and order numbers up to 1000 - identify, represent and estimate numbers using different representations - read and write numbers up to 1000 in numerals and in words - solve number problems and practical problems involving these ideas
Year 4	- count in multiples of 6, 7, 9, 25 and 1000 - find 1000 more or less than a given number - count backwards through zero to include negative numbers - recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) - order and compare numbers beyond 1000 - identify, represent and estimate numbers using different representations - round any number to the nearest 10, 100 or 1000 - solve number and practical problems that involve all of the above and with increasingly large positive numbers - 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.
Year 5	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit

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	- count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 - interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero - round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 - solve number problems and practical problems that involve all of the above - read Roman numerals to 1000 (M) and recognise years written in Roman numerals.
Year 6	- read, write, order and compare numbers up to 10 000 000 and determine the value of each digit - round any whole number to a required degree of accuracy - use negative numbers in context, and calculate intervals across zero - solve number and practical problems that involve all of the above
Number – addition and subtraction	
Year 1	- read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs - represent and use number bonds and related subtraction facts within 20 - add and subtract one-digit and two-digit numbers to 20, including zero - solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$.
Year 2	- 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 - recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 - 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 - recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.
Year 3	- 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 with up to three digits, using formal written methods of columnar addition and subtraction - estimate the answer to a calculation and use inverse operations to check answers - solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction
Year 4	- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate - estimate and use inverse operations to check answers to a calculation - solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.
Year 5	- add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) - add and subtract numbers mentally with increasingly large numbers - use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy - solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
Year 6	- 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 long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context - divide numbers up to 4 digits by a two-digit number using 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

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	• identify common factors, common multiples and prime numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • 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 • use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
Number – multiplication and division	
Year 1	• 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.
Year 2	• recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ($\times$), division ($\div$) and equals (=) signs • show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.
Year 3	• recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables • 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 • 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.
Year 4	• recall multiplication and division facts for multiplication tables up to 12×12 • 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 two-digit and three-digit numbers by a one-digit number using formal written layout • 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.
Year 5	• 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 (nonprime) numbers • establish whether a number up to 100 is prime and recall prime numbers up to 19 • 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 • multiply and divide numbers mentally drawing upon known facts • 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 and divide whole numbers and those involving decimals by 10, 100 and 1000 Mathematics – key stages 1 and 2 33 Statutory requirements • recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) • 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
Year 6	• 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 long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context • divide numbers up to 4 digits by a two-digit number using 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

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	- identify common factors, common multiples and prime numbers - use their knowledge of the order of operations to carry out calculations involving the four operations - 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 - use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
Number – fractions	
Year 1	- 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.
Year 2	- recognise, find, name and write fractions $\frac{1}{2}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity - write simple fractions for example, $\frac{2}{4}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.
Year 3	- count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 - recognise, find and write fractions of a discrete set of objects: unit fractions and nonunit fractions with small denominators - recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators - recognise and show, using diagrams, equivalent fractions with small denominators - add and subtract fractions with the same denominator within one whole [for example, $\frac{7}{5} + \frac{7}{5} = \frac{14}{5}$] - compare and order unit fractions, and fractions with the same denominators - solve problems that involve all of the above
Number – fractions (including decimals)	
Year 4	- recognise and show, using diagrams, families of common equivalent fractions - count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. - 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 - add and subtract fractions with the same denominator - recognise and write decimal equivalents of any number of tenths or hundredths - recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ - 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 - round decimals with one decimal place to the nearest whole number - compare numbers with the same number of decimal places up to two decimal places - solve simple measure and money problems involving fractions and decimals to two decimal places.
Number – fractions (including decimals and percentages)	
Year 5	- compare and order fractions whose denominators are all multiples of the same number - identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths - recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{5}{2} + \frac{5}{4} = \frac{5}{6} = 1\frac{5}{6}$] - add and subtract fractions with the same denominator and denominators that are multiples of the same number - multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams - read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$] - recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents - round decimals with two decimal places to the nearest whole number and to one decimal place - read, write, order and compare numbers with up to three decimal places - solve problems involving number up to three decimal places - 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, and as a decimal - solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{4}$ and those fractions with a denominator of a multiple of 10 or 25.
Year 6	- use common factors to simplify fractions; use common multiples to express fractions in the same denomination - compare and order fractions, including fractions > 1 - add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions

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	- multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $4 \frac{1}{2} \times 2 \frac{1}{2} = 8 \frac{1}{2}$] - divide proper fractions by whole numbers [for example, $3 \frac{1}{2} \div 2 = 6 \frac{1}{2}$] - associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$] - identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places - multiply one-digit numbers with up to two decimal places by whole numbers - use written division methods in cases where the answer has up to two decimal places - solve problems which require answers to be rounded to specified degrees of accuracy - recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
Ratio and proportion	
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
Algebra	
Year 6	- use simple formulae - generate and describe linear number sequences - express missing number problems algebraically - find pairs of numbers that satisfy an equation with two unknowns - enumerate possibilities of combinations of two variables.
Measurement	
Year 1	- compare, describe and solve practical problems for: - lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] - mass/weight [for example, heavy/light, heavier than, lighter than] - capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] - time [for example, quicker, slower, earlier, later] - 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 - sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] - recognise and use language relating to dates, including days of the week, weeks, months and years - tell the time to the hour and half past the hour and draw the hands on a clock face to show these times
Year 2	- 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 - compare and order lengths, mass, volume/capacity and record the results using >, < and = - 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 - compare and sequence intervals of time - 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.
Year 3	- 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 - 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 and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight

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	- know the number of seconds in a minute and the number of days in each month, year and leap year - compare durations of events [for example to calculate the time taken by particular events or tasks].
Year 4	- Convert between different units of measure [for example, kilometre to metre; hour to minute] - measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres - find the area of rectilinear shapes by counting squares - estimate, compare and calculate different measures, including money in pounds and pence Mathematics – key stages 1 and 2 28 Statutory requirements - 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
Year 5	- convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) - understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints - measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres - calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes - estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water] - solve problems involving converting between units of time - use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.
Year 6	- solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate - 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 - recognise that shapes with the same areas can have different perimeters and vice versa - recognise when it is possible to use formulae for area and volume of shapes - 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 [for example, mm³ and km³].
Geometry – properties of shapes	
Year 1	- Pupils should be taught to: - recognise and name common 2-D and 3-D shapes, including: 2-D shapes [for example, rectangles (including squares), circles and triangles] 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].
Year 2	- 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] - compare and sort common 2-D and 3-D shapes and everyday objects
Year 3	- draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them - 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
Year 4	- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes - identify acute and obtuse angles and compare and order angles up to two right angles by size - identify lines of symmetry in 2-D shapes presented in different orientations - complete a simple symmetric figure with respect to a specific line of symmetry.
Year 5	- identify 3-D shapes, including cubes and other cuboids, from 2-D representations - know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles - draw given angles, and measure them in degrees (°)

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	- identify: - angles at a point and one whole turn (total 360°) - angles at a point on a straight line and 2 1 a turn (total 180°) - other multiples of 90° - 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.
Year 6	- draw 2-D shapes using given dimensions and angles - recognise, describe and build simple 3-D shapes, including making nets - compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons - illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius - recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
Geometry – position and direction	
Year 1	describe position, direction and movement, including whole, half, quarter and threequarter turns.
Year 2	- order and arrange combinations of mathematical objects in patterns and sequences - 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).
Year 4	- 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.
Year 5	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.
Year 6	- 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.
Statistics	
Year 2	- 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.
Year 3	- interpret and present data using bar charts, pictograms and tables - solve one-step and two-step questions [for example, ‘How many more?’ and ‘How many fewer?’] using information presented in scaled bar charts and pictograms and tables.
Year 4	- interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. - solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs
Year 5	- solve comparison, sum and difference problems using information presented in a line graph - complete, read and interpret information in tables, including timetables
Year 6	- interpret and construct pie charts and line graphs and use these to solve problems - calculate and interpret the mean as an average

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Please note reasoning and problem solving is interweaved throughout the power maths units. Some units cover more than one strand but they have been placed in the main strand they cover.	
Strand 1 - Number – number and place value	
Year	Content overview
EYFS	- Have a deep understanding of number to 10, including the composition of each number. - Subitise (recognise quantities without counting) up to 5. - Recognise the pattern of the counting system. - Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. - Verbally count, (recognising the pattern of the counting system)
Year 1	Unit 1 Numbers to 10 - 12 lessons - Confidently count forwards and backwards to and from 10. - Recognise one more and one less than a number up to 10, represent this using concrete, pictorial and abstract representations - Compare and order numbers to 10. - Use ordinal numbers to describe the order of things or events. Unit 2 Part-whole within 10 - 5 lessons - Know numbers to 10 - Introduction to the part-whole model, focusing on different ways of partitioning numbers to 10. - Use the part whole model to write and compare number bonds Unit 6 Numbers to 20 - 7 lessons - Count, compare and order numbers to 20. Unit 9 numbers to 50 - 11 lessons - Understand numbers to 50 - their place value and relative sizes (this will enable children to extend their calculation skills and number knowledge to larger numbers) - Count in multiples of 2 and 5. - Know the multiples of 2 end in 0, 2, 4, 6 or 8 and that multiples of 5 end in 0 or 5. - Solve word problems by identifying the number sentences that relate to the problems Unit 16 Numbers to 100-9 lessons - Identify patterns in 2-digit numbers - 1 more and 1 less, 10 more and 10 less - Partition numbers and identify the place value of digits within a number. - Compare two 2-digit numbers, and then three or more numbers up to 100. - Explore number bonds to 100 - link number bonds to 100 with number bonds to 10
Year 2	Unit 1 Numbers to 100 - Sort, compare and order numbers to 100. - Use representations to show a number's 'tens' and 'ones', use this to compare and order. - Use part-whole models and place value grids to show partitioning of numbers, use to support reasoning when comparing and ordering. - Count forwards and backwards efficiently in steps of 2, 3, 5, and 10.
Year 3	Unit 1 - Place value within 1,000 - Be able to count in 50s and 100s. - Know that a 3-digit number is made up of some 100s, 10s and 1s – be able to represent this in different ways (for example, on a place value grid with counters or in a part-whole model). - Know where different numbers lie on a number line to 1,000 - Compare and order 3-digit numbers
Year 4	Unit 1 - Place value – 4-digit numbers (1) - Count in 10s, compare and order 4-digit numbers. Unit 2 – Place value – 4 digit numbers (2) - Know that 4-digit numbers are made up of 1,000s, 100s, 10s and 1s - Compare, order and round numbers to the nearest 10, 100 and 1,000. - Count forwards and backwards on number lines, including backwards through zero and into negative numbers.
Year 5	Unit 1: Place value within 100,000 - To be able to work with numbers up to 100,000. Unit 2: Place value within 1,000,000 - Develop fluency by partitioning and recombining them in different ways.

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	• Use a number line to find and identify numbers up to 1,000,000, compare and order them. • Round numbers in the 100,000s. • Develop understanding of negative numbers and how they relate and compare to positive numbers. • Calculate with both negative and positive numbers. • Identify rules in number sequences and accurately follow and complete them.
Year 6	Unit 1 - Place value within 10,000,000 • Investigate properties of numbers up to 10,000,000. • Investigate the partitioning of larger numbers and use them in different contexts. • Develop understanding and use of number lines up to 10,000,000 - plot numbers on to partially completed number lines. • Compare and order numbers and round them up to the nearest 1,000,000. • Investigate negative numbers, how they compare to positive numbers and their use in contexts. Unit 14 - Problem solving • Solve problems about number, measurement and geometry. • Give reasoning and select appropriate methods. Note: the unit enables teachers to assess confidence, ability to fluently apply understanding in different ways, using both mental and written methods, and to use the relationships between numbers to consider more flexible or creative approaches.
Strand 2 Number Addition and subtraction	
EYFS	• Compare quantities up to 10 in different contexts, recognise when one quantity is greater than, less than or the same as the other quantity. • Have a deep understanding of number to 10, including the composition of each number. • Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts. • Subitise (recognise quantities without counting) up to 5. • Verbally count beyond 20, recognising the pattern of the counting system
Year 1	Unit 3 Addition and subtraction within 10 (1) • Know 'count all' and 'count on' strategies ('count all' strategy is when all parts are added together to make a whole; 'count on' strategy asks children to start with a number and count on) • Know that addition calculations can be performed in any order (commutativity of addition) Unit 4 Addition and subtraction within 10 (2) • Know how to subtract by counting how many are left, break apart a whole and find the difference. • Know how to model using concrete and pictorial representations: taking away cubes, crossing out pictures and counting back on a number-line. • Can reason with subtraction facts and compare them to numbers using the < and > symbols. Unit 7 Addition within 20 • Know how numbers can be split apart into bonds, and how to represent numbers using manipulatives, as well as on number lines and number tracks. Unit 8 Subtraction within 20 • Know that addition and subtraction are the inverse of each other. • Be able to see the patterns between each set of ten numbers.
Year 2	Unit 2 Addition and subtraction (1) • Can talk about fact of equations, and relate addition and subtraction operations. • Can use the inverse of one operation to check calculations using the other operation. • Can 'make 10' to aid mental calculations. • Introduction to the column method Unit 3 Addition and subtraction (2) • Can use the column method with addition and subtraction involving two 2-digit numbers. • Use known number facts within mental calculations and use understanding of the inverse as a way to check their calculations. The final stage of children's learning allows the bar model to be used to represent a word problem, to allow children to self-identify the operation needed to complete the calculation. Unit 12 Problem solving and efficient methods • Can use the four operations when problem solving. • Can use the bar model • To use an efficient method and can justify their choice of methods, rather than simply using the column method for all questions.
Year 3	Unit 2 Addition and subtraction (1)

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	- Children explore additions and subtractions gradually, beginning with adding and subtracting 1s, until by the end of the unit they are adding and subtracting 2-digit numbers. Note: this unit prepares children to understand these calculations in formal methods, though the focus is on making decisions regarding the parts and wholes of numbers and on justifying the accuracy of mental methods where appropriate. Unit 3 Addition and subtraction (2) - Explore calculations which do or do not require exchange, developing fluency, accuracy and confidence. - Apply checking strategies to decide whether an answer is reasonable or likely to be an error
Year 4	Unit 3 Addition and subtraction Can estimate and answer-check. Note: this unit provides essential preparation for beginning to add and subtract numbers with more than four digits.
Year 5	Unit 3 Addition and subtraction - Extend knowledge of addition and subtraction using formal methods for numbers with up to 5 digits. - Build confidence with problem solving and explore efficient methods for addition and subtraction calculations, including those that can be solved mentally
Year 6	Unit 2 Four operations (1) - Develop fluency with efficient columnar written methods for addition and subtraction, without and with exchanges. - Use the columnar method for multiplication of 4-digit numbers by 1- and 2-digit numbers. - Develop understanding of the written methods for division. Unit 3 Four operations (2) Number – addition, subtraction, multiplication and Division - Recognise and find common factors and multiples. - Know prime numbers are a special example of numbers with specific factors. - Investigate the effects of squaring and cubing, linking this to knowledge about the dimensions of the namesake shapes. - Know the order of operations, investigate its effect on calculations and consider why it is important to have an agreed order. - Know that brackets can affect the order of operations. - Complete calculations, solve problems and diagnose mistakes in calculations. - Solve mental calculations with small and large numbers. - Use known number facts to solve problems involving related number facts
Strand 3 Number – multiplication and division	
EYFS	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.
Year 1	Unit 12 Multiplication - Understand multiplication as repeated addition, understanding the difference between equal and not equal groups. - Use knowledge of skip counting in 2s, 5s and 10s and use concrete, pictorial and abstract representations to find the total of multiple equal groups and of doubles. - Solve simple multiplication word problems (more abstract problems). Unit 13 Division - Introduced to the concept of equal groups, represented in various concrete, pictorial and abstract ways, including the number line. - Be able to share a given number of objects equally across a given number of groups to find out how many are in each group. - Solve word problems.
Year 2	Unit 5 Multiplication and division (1) - Know what equal groups means. - Be able to recognize groups that are not equal. - Know what an array is (a representation of multiplication) - Understand what x means in context (repeated addition sentences and multiplication sentences are available as a reference). - Know what an equal bar model is. - Use language such as ‘times bigger’ or ‘twice as many’ Unit 6 Multiplication and division (2) - Know how to calculate with two methods of division (grouping and sharing) - Know the division sign ($\div$).

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	- Know the importance of equal groups when dividing, and how to distinguish between the number of equal groups and the number in one group. - Know that the bar model can be used to represent both grouping and sharing problems. - Be able to make the link between division and multiplication facts. - Be able to match a multiplication sentence to the inverse division sentence, and to work out missing numbers based on facts from one of the operations. - Can use a 100 square to spot patterns for numbers that can be divided by 2, 5 and 10. - Make generalisations between different division facts and fact families, for example, all numbers that can be divided by 5 end in 0 or 5. - Explore what it means for a number to be even and odd. T - Start to recognise when numbers are odd by considering the ones digit.
Year 3	Unit 4 Multiplication and division (1) - Know the Y3 times tables and be able to recall rapidly. - Know the difference between equal sharing and equal grouping. - Have a basic understanding of remainders. - Use the bar model to represent simple one-step multiplication and division problems. - Solve simple two-step problems that involve all of the four operations. Unit 5 Multiplication and division (2) - Compare multiplication and division statements using and =. - Develop understanding of multiplication facts to link this knowledge to related multiplication and division calculations, for example, linking $2 \times 3 = 6$ and $2 \times 30 = 60$. - Become familiar with the expanded method for multiplication and the partition method for dividing (leading to remainders). - Solve mixed multi-step problems and puzzles involving all four operations.
Year 4	Unit 5 Multiplication and division (1) - Can multiply and divide by multiples of 10 and 100, and then at multiplying and dividing by 0 and 1. - Use visual representations to tackle multiplication and division questions. Unit 6 Multiplication and division (2) - Explore the distributive and associative properties of multiplication. - Use the compressed single line (standard) formal multiplication. - Solve more complex problems building on n objects related to m objects, find all solutions and notice how to use multiplication to solve questions. - Use partitioning to divide 2- and 3-digit numbers by a 1-digit number. - Recap on the concept of a remainder after division, and move on to predicting whether a number will have a division and what the number could be if the remainder is given. - Solve simple 2-step problems that involve all of the four operations.
Year 5	Unit 5 Multiplication and division (1) - Develop understanding of multiples and factors, recognising what they are and how they are found. - Know about prime numbers and how they are different to composite numbers. - Investigate how to use factors, including prime factors, to investigate and manipulate numbers. - Investigate square and cube numbers, linked to concrete understanding of the shape namesakes. - Know how to identify and use the inverse operations to help solve and check calculations when calculating the multiplication and division of whole numbers by 10, 100 and 1,000. Unit 7 Multiplication and division (2) - Extend understanding of multiplication and division using a range of methods to calculate with up to 4-digit numbers, multiplying by 2-digit numbers or dividing by 1-digit numbers while dealing with exchange. - Develop reasoning and problem solving skills while interpreting remainders.
Year 6	Unit 2 Four operations (1) - Develop fluency with efficient columnar written methods for addition and subtraction, without and with exchanges. - Deepen understanding of the columnar method for multiplication of 4-digit numbers by 1- and 2-digit numbers and develop an understanding of written methods for division. - Apply new learning to contextual word problems. Unit 3 Four operations (2) Number – addition, subtraction, multiplication and division - Recognise and find common factors and multiples. - Know that prime numbers are a special example of numbers with specific factors. - Investigate the effects of squaring and cubing, linking this to what they know about the dimensions of the namesake shapes.

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	- Know about the order of operations, investigating its effect on calculations and considering why it is important to have an agreed order. - Know how brackets can affect the order of operations. - Solve problems and diagnose mistakes in calculations. - Using learnt methods to solve mental calculations with small and large numbers. - Consider where mental methods are appropriate and where written methods are appropriate. - Use number facts they already know to solve problems involving related number facts
Strand 4 – Fractions (including decimals and percentages KS2)	
Year 1	Unit 14 Halves and quarters - Find halves and quarters - Apply skills learned to solve word problems
Year 2	Unit 10 Fractions - Can identify equal parts in a range of contexts, including shape, numbers, measurements and money. - Know fraction specific key language - numerator and denominator and can explain what each word means in context. - Know about unit fractions where the numerator is always one, focusing on halves, thirds and quarters. - Know about non-unit fractions and learn about the equivalence between them, particularly between $\frac{1}{2}$ and $\frac{2}{4}$. - Count up in quarters and halves on a number line, including crossing through whole number barriers.
Year 3	Unit 9 Fractions (1) - Introduction to fractions as numbers. - Use the bar model and the number line to make a whole out of two fractional parts. - Explore tenths and fractions as a number - Calculate a unit and non-unit fraction of a set of objects. Unit 10 Fractions (2) - Recognise and show (using diagrams) equivalent fractions with small denominators. T - Use a fraction wall to find equivalent fractions. - Order fractions on a number line and compare two fractions using bar models and the comparison signs $<$ $>$ or $=$. - Can add and subtract two or more fractions with the same denominator, answering questions in more than one way and comparing the efficiency of each method. - Solve fraction problems - Find fractions of measures.
Year 4	Unit 8 Fractions (1) - Introduction to hundredths and development of understanding of equivalent fractions - Explore fractions greater than 1 in the form of mixed numbers and improper fractions. Unit 9 Fractions (2) - Add and subtract fractions where the answers are greater than 1. - Know that, as long as the denominators are equal, numerators can be added. - Explore subtracting a fraction from a whole number. - Find a fraction of an amount, working with divisions within times-tables learnt. Note: it is vital that children see the connection with division and are able to use visual representations, such as fraction strips, to represent a given problem. Unit 10 Decimals (1) - Begin to write fractional amounts in decimal notation. - Recognise a decimal point and the tenth and hundredth columns. A - Can divide by 10 and 100 to result in answers containing decimal numbers. Unit 11 Decimals (2) - Find number bonds of tenths and hundredths to 1 and show how this links to their bonds to 10 and 100. - Represent decimals on place value grids and use these grids to help compare decimals (with the same number of digits). - Use diagrams to understand the decimal equivalents of simple fractions, such as a half and a quarter. - Round decimals to the nearest whole number by considering their position on a number line.
Year 5	Unit 8 Fractions (1) - Can find equivalent fractions by simplifying and expanding. - Know that equivalent fractions represent the same number differently. - Can convert between mixed numbers and improper fractions and be able to use these in real-life contexts, using pictorial representations to demonstrate their understanding.

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	- Investigate and complete number sequences and compare and order two or more fractions. - Know that fractions represent division calculations and can use this, with the understanding of equivalent fractions, to find efficient methods of solving division calculations. - Investigate how remainders in division calculations can be represented as fractions and how this can be used in context to answer real-life problems accurately. Unit 9 Fractions (2) - Add and subtract related fractions by finding a common denominator. Unit 10 Fractions - Can multiplying fractions and mixed numbers by whole numbers. - Can use visual and written strategies to show fractional amounts. - Efficiently solve problems for fractions as operators. Unit 11 Decimals and percentages - Develop fluency with common decimals, fractions and percentages. - Know a range of strategies to convert between equivalent decimals, percentages and fractions. Unit 12 Decimals - Can use formal methods of addition and subtraction to numbers with up to three decimal places. - Can multiply and divide decimal numbers by 10, 100 and 1,000. - Efficiently solve problems with decimal numbers.
Year 6	Unit 4 Fractions (1) - Can compare, add and subtract unrelated fractions using common denominators and formal methods. Unit 5 Fractions (2) - Can multiply a proper fraction by a whole number and find a fraction of an amount. - Problem solve in fractions using the four operations. Unit 7 Decimals - Can calculate with decimals. - Can multiply and divide decimals by multiples of 10, 100 and 1,000; convert between fractions and decimals; and multiply and divide decimals by whole numbers. Note: the learning from this unit will support children in calculating with measures, particularly converting between standard units, and it will support understanding of fractions, decimals and percentages, and how they are related. Unit 8 Percentages - Know a range of strategies to find percentages of amounts. - Apply strategies to convert between percentages, decimals and fractions. - Use knowledge to solve related puzzles and multi-step problems.
Strand 5 Geometry – properties of shape	
EYFS	- Investigate 2D and 3D shapes - Making simple patterns - Exploring more complex patterns - Composing and decomposing shapes
Year 1	Unit 5 2D and 3D shapes - Name the different shapes and identify the features that determine how they are classified. - Can make distinction between 2D and 3D shapes. - Identify individual shapes within composite shapes (where several shapes are joined together) and explore the relationship between 2D and 3D shapes. - Explore sequences using shapes, and to identify patterns.
Year 2	Unit 9 Properties of shapes - Can describe and sort shapes based on the shapes' mathematical properties, using the correct terminology. - Can describe and categorise shapes based on their number of sides, vertices, edges and faces.
Year 3	Unit 12 Angles and properties of shapes - Be introduced to right angles. - Explore vertical and horizontal lines of symmetry. - Describe and construct 3D shapes. - Know that angles are a measure of a turn. - Know that a right angle is a quarter turn, two quarter turns make a half turn, three right angles make a three-quarter turn and four right angles make a full turn. - Know that angles less than a right angle are called acute angles and angles greater than a right angle (but less than two right angles) are called obtuse angles.

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	- Know the names of 2D shapes - triangles (right-angled and isosceles), quadrilaterals (square, rectangle, rhombus, trapezium, parallelogram and kite), pentagons, hexagons and octagons. - Know the names of 3D shapes: cube, cuboid, pyramid, prism, cylinder, sphere and cone.
Year 4	Unit 15 Geometry – angles and 2D shapes - Know the following angles - acute, obtuse and right angles. - Use right angles as a way of recognising when angles are acute or obtuse. - Compare and order angles in ascending and descending order. - Know that shapes can be regular or irregular and will discover what this means and how it relates to the angles they know. - Know about different types of triangles and different types of quadrilaterals. - Deduce facts about shapes and solve shape based problems and puzzles. - Develop understanding of symmetry, both inside and outside of shapes, can complete symmetrical shapes and patterns.
Year 5	Unit 13 Geometry – properties of shapes (1) - Can measuring using a protractor. - Can make predictions, check calculations and discuss the properties of shapes and angles Unit 14 Geometry – properties of shapes (2) - Use rulers and protractors to identify angles and properties of shapes - Identify parallel and perpendicular lines as well as 2D and 3D shapes - Predict results based on prior knowledge before proving them with the apparatus.
Year 6	Unit 13 Geometry – properties of shapes - Further develop understanding of properties of shapes. - Accurately draw shapes using knowledge of angles and properties in shapes and use of a protractor - Can reason with shapes and explore different methods.
Strand 6 Geometry – position and direction	
Year 1	Unit 15 Position and direction - Can describe rotations as quarter, half, three-quarter and whole turns - Can combine turns with lateral movement to give and follow route instructions. - Can describe the position of an object in relation to other objects, using the words ‘above’, ‘below’, ‘left’, ‘right’ and ‘between’.
Year 2	Unit 11 Position and direction Can describe degrees of turn and their knowledge of 2D shapes.
Year 4	Unit 16 Geometry – position and direction Know what a coordinate grids is and use them to describe positions of points and translations from one point to another.
Year 5	Unit 15 Geometry – position and direction Know about the position and orientation of shapes and how to reflect and translate points and shapes using coordinates.
Year 6	Unit 6 Geometry – position and direction - Know about coordinates in all four quadrants. - Can combine knowledge of properties of shapes and coordinates to reason and solve problems involving shapes on a coordinate grid. - Know about reflections and translations on a coordinate grid.
Strand 7 - Measurement	
EYFS	Time – My day
Year 1	Unit 10 Introducing length and height - Can compare and measure the height and length of objects using non-standard and standard units of measure. - Can compare and measure and know the importance of aligning starting points. - Know the relationship between number lines and scales on a ruler, use this understanding to calculate differences in length. - Use key language such as longer, longest, shorter, shortest, taller and tallest when comparing length and height. Unit 11 Introducing weight and volume - Know the use of uniform non-standard units (such as cubes and cups) to measure weight and capacity. - Explore part-whole and part-part relationships: for example, if a saucepan holds 10 cups of milk and 4 cups are poured out, how much is left in the pan? Unit 17 Time

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	- Strengthen understanding of the hands of a clock, including the second hand. - Develop understanding of units of measurement of time (hours, minutes and seconds). - Use the following vocabulary to develop their understanding of durations of time and the ordering of events in time: 'before', 'after', 'yesterday', 'today', 'tomorrow', 'day', 'week', 'date', 'month', 'year', 'calendar', 'faster or slower', 'longer or shorter' and 'earlier or later'. - Use number lines to calculate simple addition and subtraction word problems involving time. Unit 18 Money - Recognising coins and banknotes, and understanding their relative and absolute values. - Develop familiarity with money in a range of everyday settings. - Develop understanding of money as a measurement – the value of a coin or note depends on both the numerical value assigned to it, and the unit (pounds or pence) that is involved.
Year 2	Unit 4 Money - Can add and subtract money using part-whole models and bar models - Find the most efficient counting strategy, such as counting on from the coin or note of highest value to find the total. - Use pounds, pence and notes and pounds and pence together. Unit 8 Length and height - Measure own height and make comparisons with others' heights - extended to looking at heights and lengths more generally. - Use simple standard units and reading a simple scale accurately Unit 13 Time - Tell and write the time to five minutes, including quarter past and to the hour. - Link intervals of time to the number line, and know the number of minutes in an hour, and hours in a day. - Use the number line to understand start and end times, and the interval of time between the two. - Solve problems including word problems, and comparing and sequencing questions Unit 14 Weight, volume and temperature - Accurately measuring mass, volume, capacity and temperature using standard measurement. - Be able to make chains of linked reasoning about measures - Use of different scales (such as scales that increase in 2s, 5s and 10s) and how to work out the value of each increment on the scale.
Year 3	Unit 6 Money - Convert amounts such as 720p into pounds and pence and vice versa. - Use x pounds and y pence or £x and yp. - Solve addition and subtraction problems relating to money by adding separately and convert for amounts bridging a pound. Unit 8 Length - Know how mm, cm and m relate to one another and convert between single and mixed units. - Compare, order, add and subtract measurements of length and calculate the perimeter of 2D shapes. Unit 11 Time - Develop a deeper understanding of the length of a year, a month, a day, an hour, a minute and a second - Solve problems involving reading and measuring time. Unit 13 Mass - Know how to measure and read a scale, focusing upon unmarked intervals. - Compare and order different masses. - Add and subtract different amounts, using a range of strategies. - Apply knowledge to real-life problems. Unit 14 Capacity - Interpret a range of scales and apply knowledge of place value and the number system. - Compare and order measurements, and convert between millilitres and mixed units of litres and millilitres. - Use knowledge of four operations to solve problems involving capacity
Year 5	Unit 6 Measure – area and perimeter - Know simple formulae such as perimeter = $2 \times (\text{length} + \text{width})$ and Area = length $\times$ width. - Be able to work inversely and use a systematic approach to find rectangles with a given perimeter or area. Unit 16 Measure – converting units - Solve problems using conversion between units (both metric and imperial), including conversion and scaling of amounts; and timetables, including converting between units of time when the conversion does not result in a whole number answer. Unit 17 Measure – volume and capacity

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	• Know how to measure and calculate the area of a shape • Be able to estimate the amount of space taken up by an object and the amount a container can hold.
Year 6	Unit 10 Measure – imperial and metric measures • Can convert between units and apply conversions to problem-solving contexts. • Recap on equivalences of metric units and work with numbers with up to two decimal places. • Can use reasoning to describe when a number should be multiplied or divided to convert and by how much. • Know the relationship between miles and kilometres, and how to apply the 5 : 8 ratio to convert between them. • Solve problems with imperial measurements Unit 11 Measure – perimeter, area and volume • Explore the relationship between the area and perimeter of different 2D shapes. • Can generate formulae for the area of triangles and parallelograms and the volume of cubes and cuboids and use them to calculate areas, volumes and missing lengths. • Apply knowledge of perimeter, area and volume to solve problems, in particular when calculating unknown lengths, perimeters and areas of composite rectilinear shapes.
Strand 8 - Statistics	
Year 2	Unit 7 Statistics • Interpret charts and diagrams using knowledge of addition and subtraction, counting and multiplication involving 2s, 5s and 10s. • Know symbols that represent one or more pieces of data and tally marks for counting
Year 3	Unit 7 Statistics • Know and can read pictograms, bar charts and complex tables. • Use keys where one symbol represents more than 1. • Apply calculation and reasoning skills, including addition and subtraction, and counting in multiples of 2, 5 and 10.
Year 4	Unit 14 Statistics • Read pictograms, bar charts and tables • Be able to use a wide range of scales and interpret quarter symbols in pictograms, as well as reading from bars which are a quarter of the way between two marked points on a bar chart. • Review data presented in line graphs and the distinction between continuous and discrete data. • Solve multi-step problems, which use information presented in a range of charts and tables.
Year 5	Unit 4 Graphs and tables • Interpret line graphs that display discrete and continuous data, interpret dual line graphs. • Make, complete and interpret two-way tables, which break down data into more categories.
Year 6	Unit 15 Statistics • Learn what the mathematical mean is and how to calculate it. • Consider when to use the mean, for example when comparing sets of data of different sizes. • Know what a pie chart is and how to interpret one. • Compare tally charts and bar charts and learn when a pie chart is the best way to display data. C • Interpret and create line graphs.
Strand 9 - Algebra	
Year 6	Unit 9 Algebra • Generalise mathematical concepts and problems, representing them algebraically as expressions, formulae and equations. • Represent rules found using pictures and abstract written recording, using letters to represent variables within a sequence. • Follow a number pattern, find outputs from a given input number and use a rule to find a specific value and answer. • Investigate and record formulae for finding values linked to mathematical concepts such as the perimeter and area of 2D shapes. • Solve equations using algebraic notation one-step, two-step where there is one solution, and equations with multiple solutions.
Strand 10 – Ratio and proportion	
Year 6	Unit 12 Ratio and proportion • Recognise, describe and compare ratios and to represent them in different ways. • Use ratio notation to record and interpret ratios. • Know how ratios relate to fractions.

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| | <ul style="list-style-type: none">• Calculate amounts from a given ratio, including totals and parts of groups, and find the difference between unequal parts of a group.• Solve word problems and 2-step problems involving ratio and proportion.• Interpret scales on plans and maps, using them to calculate actual size or distance.• Enlarge shapes by a given scale factor, know whether two shapes are similar and use calculations to deduce the scale factor. |
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