Maths Intent

Maths at Beaminster St Mary's

At Beaminster St Mary's, we aim to instil a fascination for Maths and foster an enduring love of number and the manipulation of numbers. Through engaging, real life anchor tasks, children develop an appreciation for the practical uses of Maths, as well as its aesthetic nature.

A key focus of our learning is the use of concrete manipulatives – physical objects that expose the underlying mathematical concepts - helping our children to recognise that Maths is a search for pattern and relationship.

We believe real Maths is about conjecturing, verifying, debating and articulating, so our classrooms reflect this, with our lessons packed full of opportunities for mathematical thinking and discussion. We want to help pupils to understand that Maths is a powerful tool for communication.

With carefully planned support and challenge, we support pupils to become active, confident mathematicians, providing opportunities for pupils to demonstrate and use their Maths in everyday situations. We encourage pupils to take responsibility for their own learning, take pride in their own mathematics, and take the initiative to get themselves 'unstuck' when things get tricky!

Curriculum Drivers

	In all subjects…	In Maths, this looks like…
Curiosity	We aspire for pupils to embrace challenge with a growth mind set and show curiosity, independence and resilience in all that they do.	Mathematical working requires and develops creativity and curiosity, which transfer to other aspects of life. Frequently, in mathematical problem-solving, a child does not immediately know how to approach a problem; it takes creativity and courage to explore different approaches before deciding how to proceed. Planning and modelling tasks within mathematics develops children's ability to turn ideas into action. Our staff think creatively about the mathematical experiences that they offer children and this can open up opportunities for our children to be creative.
Admiration	We aspire for pupils to become wise, respectful learners	Children learn in a nurturing environment where children, whatever their age, can work individually, in pairs and cooperate in small groups within a classroom that contains age-appropriate equipment to support them in lessons. We encourage resilience and acceptance that struggle is often a necessary step in learning. At Neville's Cross Primary, we aim to equip our children with the mathematics skills that they will need throughout their lives.
Communication	We aspire for pupils to become emotionally mature with a depth of language that enables them to share ideas effectively.	Children learning, understanding and using mathematic vocabulary. Communicating accurately and effectively in written maths. Developing skills of debate to challenge their own and others thinking.
Worldly	We aspire for pupils to become emotionally literate, tolerant and appreciative of an ever-changing global environment.	We provide opportunity to develop maths skills in the real-world context. Our aim is to develop links with the local community, as well as developing an understanding of how maths impacts upon communities both locally, nationally and world-wide.

Learning knowledge is not an end point in itself, it is a springboard to learning more knowledge. Each unit in our overview is underpinned by rich, substantive knowledge and ambitious vocabulary, whilst also ensuring children are developing their disciplinary knowledge. Each unit of work is planned carefully to ensure concepts are taught in optimal order to support children's understanding. As well as developing a breadth of subject knowledge, we want our children to develop subject specific skills. In addition to substantive and disciplinary knowledge, children will develop their experiential knowledge through carefully planned enrichment activities.

	Autumn term	Spring term	Summer term
EYFS	Number of the week NCETM / White Rose	NCETM / White Rose	NCETM / White Rose
Year 1	Place Value Addition and Subtraction Shape	Place Value Addition and Subtraction Length and Height Mass and volume	Multiplication and division Fractions Positional and direction Place Value Money Time
Year 2	Place Value Addition and Subtraction Shape	Money Multiplication and Division Length and Height Mass, Capacity and Temperature	Statistics Fractions Positional and Direction Time
Year 3	Place Value Addition and Subtraction Multiplication and Division	Multiplication and Division Length, perimeter and area Fractions Mass and capacity	Decimals Time Statistics Properties of shape
Year 4	Place Value Addition and Subtraction Multiplication and Division	Multiplication and division Length, perimeter and area Fractions Decimals	Decimals Time Statistics Position and direction
Year 5	Place value Addition and Subtraction Multiplication and division Multiplication and division Fractions (A)	Multiplication and division Fractions (B) Decimals and percentages Perimeter and area Statistics	Shape Position and direction Decimals Negative numbers Converting units Volume
Year 6	Place Value Four operations Fractions (A) Fractions (B Converting units	Ratio Algebra Decimals Fractions, decimals and percentages Perimeter and area Statistics	Shape Position and direction Consolidation and investigation work

Substantive Concepts – these are the concepts that give a subject substance or content.

Our curriculum is refined yearly, but it maintains a consistent knowledge base to ensure conceptual progression. We have identified a set of key substantive concepts that children will repeatedly revisit throughout their time at St Mary's. Our substantive concepts are:

Number	The first mathematical skills is basic number sense. Number sense is the order and value of numbers. A number is a mathematical object used to count.	Pattern	A pattern is a repeated design or recurring sequence. This could be an ordered set of numbers, shapes or mathematical objects arranged according to a rule.
Shape and Space	Shape and space refers to the properties of objects and the consequences of how these objects are positioned. Space is a set with added structure. Shape is the form of an object and how it is laid out in space.	Measure	Measure is a number that shows the size or amount of something. Usually, the number is in reference to some standard measurement.
Geometry	Geometry is a branch of mathematics concerned with questions of shape, size, relative position of figures and the properties of space.	Statistics	Statistics is the study of collection, analysis, interpretation, presentation and organisation of data.
Algebra	Algebra is a branch of mathematics dealing with symbols and the rules for manipulating those symbols.	Reasoning	Mathematical reasoning is the skill that enables a learner to make use of all other mathematical skills. With mathematical reasoning, mathematics makes sense and can be understood.

Second order concepts – Shape the enquiry

Place Value In maths, every digit in a number has a place value. Place value can be defined as the value represented by a digit in a number on the basis of its position in the number. For example, the place value of 7 in 3,743 is 7 hundreds or 700. However, the place value of 7 in 7,432 is 7 thousands or 7,000. Here, we can see that even though the digits are same in both the numbers, its place value changes with the change in its position.	**Addition & Subtraction** Addition is a way of combining things and counting them together as one large group. The addition symbol used to indicate adding numbers is "+" (also called the plus symbol). For example, we read 5 + 3 as "5 plus 3". Subtraction is taking one number away from another. If we have 5 apples and then subtract 2 we are left with 3. The symbol of subtraction is −	**Multiplication & Division** **In multiplication, the numbers being multiplied are called factors; the result of the multiplication is called the product.** In division, the number being divided is the dividend, the number that divides it is the divisor, and the result of the division is the quotient.
Fraction / Decimals / Percentages Decimals, Fractions and Percentages are just different ways of showing the same value. Percentage - this means 'out of 100' Fraction - a number less than 1 Decimal - a number whose 'whole' part and 'fractional' part is separated by a decimal point	**2D & 3D Shape** 2D shapes are shapes with two dimensions, such as width and height. An example of a 2D shape is a rectangle or a circle. 2D shapes are flat and cannot be physically held, because they have no depth; a 2D shape is completely flat. 3D (three-dimensional) shapes are solid shapes that have three dimensions including length, depth and width. These are shapes that occupy space. This means that we can touch and feel them. The main difference between 2D shapes and 3D shapes are their dimensions. A 2D shape (two-dimensional) only has length and height as the dimensions. 2D shapes are flat, while 3D shapes take up more space in three dimensions.	**Weight & Volume** Volume is a measure of the amount of space something takes up. Things like cups of flour, gallons of milk, cubic feet of helium… these are all volume measurements. Weight is a measurement of an object's heaviness. Grams of salt, pounds of sugar, kilograms of apples… these are measurements of weight
Position & Direction The placement of an object is its position. It is the ability to describe how one object relates to another. A direction is an information that tells how or in what order to do something. It is the act of guiding or choosing a way to proceed.	**Money** Money can be defined as **the medium of exchange such as notes, coins, and demand deposits, used to pay for commodities and services**. The value or price of item or service is paid for using money.	**Time** Time can be defined as **an ongoing and continuous sequence of events that occur in succession, from past through present, and to the future**. Time is used to quantify, measure or compare the duration of events or the intervals between them, and even, sequence events.

Length & Height Difference between length and height is very precise, as **length denotes how long the shape is, and height denotes how tall it is**. Length is the horizontal measurement in a plane, whereas height is the vertical measurement. In Geometry, the important parameters used to describe shapes are length, breadth and height.	**Perimeter & Area** Perimeter for a 2-dimensional shape is the total distance around the respective shape. For the figures with straight sides such as triangle, rectangle, square or a polygon; the perimeter is the sum of lengths for all the sides. The area for a 2-dimensional shape is the space enclosed within the perimeter of the given shape. To calculate the area for different shapes, use different formulas based on the number of sides and other characteristics such as angles between the sides.

Progression of Substantive Concepts

Substantive Concept	EYFS	KS1	LKS2	UKS2
Number – Place Value				
Counting	• **Recites numbers verbally beyond 20** • **Counts objects, actions and sounds** • **Recognise and orders numerals** • **Cardinality** • **Subitising**	• **Count to and across 100, forwards and backwards beginning with 0 or 1, or from any given number.** • **Count in numbers to 100 in numerals; count in multiplies of twos, fives and tens.** • **Count in steps of 2,3 and 5 from 0 and in tens from any given number, forward and backward**	• **Count from 0 in multiples of 4,8,5 And 100; find 10 or 100 more or less than a given number.** • **Count in multiples of 6,7,9,25 and 1000** • **Count backwards through zero to include negative numbers.**	• **Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000** • **Count forwards and backwards with positive and negative whole numbers including through zero.**
Represent	• **Identify and represent numbers using objects and pictorial representations**	• **Identify and represent numbers using objects and pictorial representations** • **Read and write numbers to 100 in numerals** • **Read and write numbers from 1 – 20 in numerals and words** • **Read and write numbers to at least 100 in numerals and in words** • **Identify, represent and estimate numbers using different representations, including the number line.**	• **Identify, represent and estimate numbers using different representations** • **Read and write numbers up to 1000 in numerals and in words.** • **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, write, (order and compare) numbers to at least 1,000,000 and determine the value of each digit** • **Reda 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**
Use place value and compare	• **Deep understanding of numbers to 10** • **Subitise** • **Automatic recall of bonds to 5 (some to 10)** • **Doubling facts** • **Odd and even**	• **When given a number, identify one more and one less.** • **Recognise the place value of each digit in a two-digit number (tens and ones)** • **Compare and order numbers from 0 up to 100; use <,> and = signs**	• **Recognise the place value of each digit in a three-digit number (hundreds, tens and ones)** • **Compare and order numbers up to 1000** • **Find 1000 more or less than a given number** • **Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones)** • **Order and compare numbers beyond 1000**	• **(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 to at least 10,000,000 and determine the value of each digit**
Problems and rounding	• **Compares quantalities to 10** • **Explore and represent pattern**	• **Use place value and number facts to solve problems**	• **Solve number problems and practical problems involving these ideas.** • **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**	• **Interpret negative numbers in context** • **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.** • **Round any whole number to a required degree of accuracy** • **Use negative numbers in context, and calculate intervals across zero**
Vocabulary	Count, subitise, order, compare, forwards, backwards, numbers, numerals, digit, one more, one less, equal to, more than, less than	Sort, represent, multiples, partitioning, ones, tens, count in steps, count in multiples, place value, estimate, compare	Ascending, descending, 10 or 100 more, 10 or 100 less, hundreds, negative numbers, roman numerals, 1000 more, 1000 less, thousands, round	Ten thousands, one hundred thousands, powers of, integers, millions, ten millions

Number - Addition and subtraction				
Recall, represent, use		• **Read, write and interpret mathematical statements involving addition(+), subtraction (-) and equals (=) signs** • **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** • **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.**	• **Estimate the answer to a calculation and use inverse operations to check answers**	• **Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.**
Calculations	• **Know some simple addition and subtraction facts**	• **Add and subtract one-digit and two-digit numbers to 20, including zero** • **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**	• **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** • **Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate**	• **Add and subtract whole numbers with more than 4-digits, including using formal written methods (columnar addition and subtraction)** • **Add and subtract numbers mentally with increasingly large numbers** • **Perform mental calculations, including with mixed operations and large numbers** • **Use their knowledge of the order of operations to carry out calculations involving the four operations**
Solve problems		• **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 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 problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign**
Vocabulary	Add, plus, altogether, total, take away, minus, number bonds, part, whole, digit	Addition, add, subtraction, difference, equals, facts, problems, missing number problems, 2-digit number, inverse, sum, 3-digit number	Column addition, column subtraction, exchange, estimate, 4-dit number, operations, method	

Number / Pattern - Multiplication and division				
Recall, represent, use		• Recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers • Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	• Recall and use multiplication and division facts for the 3,4 and 8 multiplication tables • Recall multiplication and division facts for multiplication tables up to 12 x 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	• 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 estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
Calculations		• Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x) division (÷) and equals (=) signs	• Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers using mental and progressing to formal written methods • Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	• Multiply numbers up to 4 digits by a one or two-digit number using a formal written method, including long multiplication for two-digit numbers • 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 • 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, 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**
Solve problems		• **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 arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts**	• **Solve problems, including missing number 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 multiplication 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 multiplication and division, including scaling by simple fractions and problems involving simple rates** • **Solve problems involving addition, subtraction, multiplication and division**
Mixed operations				• **Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.** • **Use their knowledge of the order of operations to carry out calculations involving the four operations**
Vocabulary	Double, half, twice as many, equal, unequal, share, group, odd, even	Multiplication, division, arrays, multiplication tables, repeated addition	Exchange, mathematical statements, missing number problems, integer, derived facts, factor pairs, distributive law, remainders	Multiples, factors, prime numbers, square numbers, short division, product, dividend, divisor, quotient, operations, multi-digit numbers, long division
Number / Pattern - Fractions				
Recognise and write		• **Recognise, find and name a half as one of two equal parts of an object, shape or quantity** • **Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity** • **Recognise, find, name and write fractions 1/3, ¼, 2/4 and ¾ of a length, shape, set of objects or quantity**	• **Count up and down in tenths; recognise that tenths arise from dividing an object into ten 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 non-unit fractions with small denominators** • **Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators** • **Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten**	• **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 as a mixed number**
Compare		• **Recognise the equivalence of 2/4 and ½**	• **Recognise and show using diagrams, equivalent fractions with small 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** • **Use common factors to simplify fractions using common multiples to express fractions in the same denomination**

			• Recognise and show, using diagrams, families of common equivalent fractions	• Compare and order fractions, including fractions >1
Calculations		• Write simple fractions for example, ½ of 6 = 3	• Add and subtract fractions with the same denominator within one whole (for example, 5/7 = 1/7 = 6/7) • Add and subtract fractions with the same denominator	• 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 • Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions • Multiply simple pairs of proper fractions, writing the answer in its simplest form (for example ¼ x ½ = 1/8) • Divide proper fractions by whole numbers (for example 1/3 ÷ 2 = 1/6)
Solve problems			• 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	
Number / Pattern - Decimals				
Recognise and write			• Recognise and write decimal equivalents of any number of tenths or hundredths • Recognise and write decimal equivalents to ¼ ½ and ¾	• Read and write decimal numbers as fractions (for example, 0.71 = 71/100) • Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • Identify the value of each digit in numbers given to three decimal places
compare			• 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	• Round decimals with two decimal places to the nearest whole number and to one decimal place • Read, write, order and compare number with up to three decimal places
Calculations and problems			• 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	• Solve problems involving numbers up to three decimal places • Multiply and divide number 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**
Fractions, decimals and percentages			• **Solve simple measure and money problems involving fractions and decimals up to two decimal places**	• **Recognise the percent symbol (%) and understand that percent relates to number of parts per hundred, and write percentages as a fraction with a denominator 100 and as a decimal** • **Solve problems which require, knowing percentage and decimal equivalents of ½ ¼ 1/5 2/5 4/5 and those fractions with a denominator of a multiple of 10 or 25** • **Associate fraction with division and calculate decimal fraction equivalents (for example, 0.375) for a simple fraction (for example 3/8)** • **Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts**
Vocabulary		Whole, half, quarter, equal parts, three quarters, third, equivalent fractions, numerator, denominator	Tenths, decimal equivalence, hundredths, convert, proper fractions, improper fractions, decimal point	Fifth, thousandths, mixed numbers, per cent %, factors, integer, complements
Pattern - 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 a scale factor is known or can be found** • **Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples**
Vocabulary				Relative size, missing values, integer multiplication, percentages, scale factor, unequal sharing & grouping

Algebra				
		•	•	• **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**
Vocabulary				Formulae, linear number sequences, algebraically, equation, unknowns, combinations, variables
Measurement				
Using measures	• **Compare length, weight and capacity**	• **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 full / quarter full)** - **Time (for example, quicker / slower, earlier / later)** • **Measure and begin to record the following;** - **Lengths and heights** - **Mass and weight** - **Capacity and volume** - **Time – hours, minutes and seconds** • **Choose and use appropriate standard units to estimate and measure length / height in any direction (m / cm); mass (kg / g); temperature (oC); 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 =**	• **Measure, compare, add and subtract lengths (m /cm /mm); mass (kg/g); volume / capacity (l/ml)** • **Convert between different units of measure (for example, kilometre to metre, hour to minute)** • **Estimate, compare and calculate different measures**	• **Convert between different units o measure (for example, kilometre and metre; centimetre and metre; gram and kilogram; litre and millilitre)** • **Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.** • **Use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation, including scaling** • **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 up to three decimal places** • **Convert between miles and kilometres**
Vocabulary	Measure, wide, narrow, compare, long, short, length, weight, capacity, heavy, light, heavier than, lighter than, big, bigger, biggest, full empty, more than, less than	Compare, standard units, estimate, order, record, centimetre, metre, mass, volume, kilogram, gram, litres, millilitres, temperature, Celsius	Millimetre, perimeter, kilometres, rectilinear figure, area	Decimal notation, scaling, metric units, imperial units, inches, compound shape, irregular shape, conversion, miles, formulae, parallelograms, triangles, feet, pounds, pints, gallons, stones, ounces

Money		• **Recognise and know the value of different denominations of coins and notes** • **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**	• **Add and subtract amount of money to give change, using both £ and p in practical contexts** • **Estimate, compare and calculate different measure, including money in pounds and pence**	• **Use all four operations to solve problems involving measure (for example money)**
Vocabulary		Money, coins, notes, pounds, pence, value, change		
Time		• **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** • **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**	• **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** • **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)** • **Read, write ad 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**	• **Solve problems involving converting between unit of time** • **Use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit and vice versa**
Vocabulary	Time, quicker, slower, earlier, later, before, after, first, next, today, yesterday, tomorrow, morning, afternoon, evening, day, week, hour, minutes	Days of the week, months of the year, month, year, o'clock, half past, second, intervals of time, quarter past, quarter to, duration	Analogue clock, roman numerals, 12-hour clock, 24-hour clock a.m., p.m., noon, midnight, leap year, digital, convert	
Perimeter , Area and Volume			• **Measure the perimeter of simple 2-D shapes** • **Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres** • **Find the area of rectilinear shapes by counting squares**	• **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 1cm3 locks to build cuboids (including cubes)) and capacity (for example, using water)** • **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 if 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)**
Vocabulary				square centimetres, square metres, conversion, cubic metre, cubic millimetre,
Geometry				
2-D shapes	• **Select, rotate and manipulate shapes to develop spatial reasoning skills** • **Talk about and explore 2d shapes**	• **Recognise and name common 2-D shapes (for example, rectangles (including squares), circles and triangles)** • **Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line** • **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 shapes and everyday objects**	• **Draw 2-D shapes** • **Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes** • **Identify lines of symmetry in 2-D shapes presented in different orientations**	• **Distinguish between regular and irregular polygons based on reasoning about equal sides and angles** • **Use the properties of rectangles of rectangles to deduce related facts and find missing lengths and angles** • **Draw 2-D shapes using given dimensions and angles** • **Compare and classify geometric shapes based on their properties and sizes** • **Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius**
3-D shapes	• **Compose and decompose shapes so that children recognise that shape can have other shapes within it** • **Talk about and explore 3d shapes**	• **Recognise and name common 3-D shapes (for example, cuboids (including cubes), pyramids and spheres** • **Recognise and name common 3-D shapes (for example, cuboids (including cubes), pyramids and spheres** • **Compare and sort common 3-D shapes and everyday objects**	• **Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them**	• **Identify 3-D shapes, including cubes and other cuboids, from 2-D representations** • **Recognise, describe and build simple 3-D shapes, including making nets**
Angles and lines			• **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** • **Draw given angles and measure them in degrees** • **Identify:** - **Angles at a point and one whole turn (total 360o)** - **Angles at a point on a straight line and ½ a turn (total 180o)** - **Other multiples of 90o** • **Find unknown angles in any triangles, quadrilaterals and regular polygons**

			• **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**	• **Recognise angles where they meet at a point, are on ta straight line or are vertically opposite, and find missing angles**
Vocabulary	2d shape, rectangle, square, circle, triangle, 3d shapes, cuboids, cubes, cone, spheres, curved, straight, flat	Sides, corners, properties, pyramids, faces, pentagon, hexagon, line of symmetry, properties, cylinder, edges, vertices, vertex	Right-angle triangle, heptagon, octagon, polygon, properties, prism, isosceles, equilateral, scalene, trapezium, rhombus, parallelogram, kite, geometric shapes, quadrilaterals, orientations, angles, acute angle, obtuse angle, right angle, horizontal, vertical, perpendicular, parallel	Regular polygon, irregular polygon, radius, diameter, circumference, dimensions, reflex, degrees, angles on a straight line, angles on a point, vertically opposite
Position and direction	- Positional language (and locations) through words alone - Describe a familiar route	• **Describe position, direction and movement, including whole, quarter and three- quarter turns** • **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 anti-clockwise)**	• **Describe positions on a 2-D grid as coordinates in the first quadrant** • **Describe movements between positions as translations of a given unit to the left / right and up / down** • **Plot specified points and draw sides to complete a given polygon**	• **Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed** • **Describe positions on the full coordinate grid (all four quadrants)** • **Draw and translate simple shapes on the coordinated plane and reflect them in the axes**
Vocabulary	Over, under, between, around, through, on, into, next, behind, beneath, order, repeat, patterns, on top of	Position, direction, movement, whole turn, quarter turn, half turn, three-quarter turn, clockwise, anti-clockwise, straight line, rotation, arrange, sequences	Co-ordinates, first quadrant, grid, translation, plot, polygon, axis	Reflection, four quadrants, co-ordinate plane
Statistics				
Present and interpret		• **Interpret and construct simple pictograms, tally charts, block diagrams and simple tables**	• **Interpret and present data using bar charts, pictograms and tables** • **Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs**	• **Complete, read and interpret information in tables, including timetables** • **Interpret and construct pie charts and line graphs and use these to solve problems**
Solve problems		• **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**	• **Solve one-step and two-step questions (for example, 'how any 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**
Vocabulary		Pictograms, tally chart, block diagram, category, sorting, totalling, comparing, horizontal, vertical	Table, bar chart, one-step problem, two-step problem, time graph, discrete data, continuous data, line graph, comparison problem, sum problem, difference problem, calculate, interpret	Timetable, two-way tables, pie chart, mean