St. Andrew's
Church of England Primary School
ENRICHING LIVES

Mathematics
Curriculum Journey

1. **What is mathematics?**

At St. Andrew's, we believe that Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. Mathematics provides children with a foundation for understanding the world, the ability to reason mathematically, and a sense of enjoyment and curiosity about the subject.

2. **Through the eyes of our children, mathematics is important because:**

'It helps us to use skills and knowledge we have already developed, to think deeply and solve problems.'

3. **Curriculum Intent:**

At St. Andrew's Church of England Primary School, we strive for our children to be successful and proficient mathematicians who can solve problems, fluently recall facts rapidly and reason mathematically while justifying their reasoning. This will allow them to create solutions to problems in a range of settings. To be successful, children should display the following attributes: curiosity, resourcefulness, determination, flexibility and bravery.

- The national curriculum for mathematics aims to ensure that all pupils:
- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately;
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language;
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

4. **Implementation:**

The teaching and implementation of the mathematics curriculum at St. Andrew's C.E. Primary School is based on the Development Matters and National Curriculum; it is supported by expectations from White Rose through the use of Master the Curriculum in Nursery and Reception. From Year 1 to Year 6, expectations are planned using a tailored curriculum, following Jenny Cook Consultancy, which follows the National Curriculum. Individual targets for pupils are set using FFT, ensuring a well-structured approach.

At St. Andrew's, children are taught in an environment centred around the balanced mix of independent work, partner tasks and whole class tuition. Children are grouped in single year group and mixed year group classes, in mixed ability or ability groups, depending on the task.

Teachers work to support and guide their children through the following stages of development:

- talking mathematically
- using appropriate vocabulary and examples
- developing the use of concrete, pictorial and abstract means of recording
- using and applying flexible mental strategies to solve calculations
- explain and justify their use of strategies or resources to solve problems and calculations
- in Key Stage 2, using an expanded method which leads into a standard written method for each of the four main operations
- understanding when to apply either written or mental methods when completing calculations
- development in skills of reasoning and problem solving, embedding these skills through regular opportunities.

In Nursery and Reception, the White Rose scheme of learning is followed through the use of the resources Master the Curriculum. Key concepts underpin learning in each year group, and learning from each area is consolidated and developed three time over the year within a spiral curriculum within from Year 1 to Year 6. This enables pupils to reinforce and build upon prior learning, make connections and develop subject specific language. Learning objectives have been mapped out each week for every class, and closely matched learning objectives are taught to ensure consistency across the classes and to ensure the pupils gain the same mathematical 'diet'.

Mathematics is taught daily covering a broad and balanced curriculum. Alongside daily Mathematics sessions, in Years 1 to 6, an addition 15mins is spent three times each week developing recall and memory, in addition to a further 15mins being spent three times each week developing mental fluency. Mental calculation polices and calculation policies to show strategy progression are followed based on Jenny Cook Consultancy approaches. We focus not only on the mathematical methods and concepts, but also focus on mathematical vocabulary and reasoning to broaden and deepen mathematical understanding.

To ensure our children are confident in their ability and are able to use their knowledge to develop a greater depth of understanding, we use resources where they can solve varied fluency problems as well as problem solving and reasoning questions. We use a range of manipulatives, textbooks and online resources throughout the school to ensure a curriculum that is specific to each child's learning needs.

Schools in England are required to administer an online multiplication tables check (MTC) to year 4 pupils. The purpose of the MTC is to determine whether pupils can recall their times tables fluently, which is essential for future success in mathematics. To support the children with their multiplication practice we use Times Table Rock Stars as an online and fun learning platform.

5. Impact

By the end of each year group, children should have met, or exceeded, the expected outcomes in mathematics. Teachers assess learning within the lessons, providing verbal or written feedback, in addition to marking work after the lesson. In Year 2, children begin to self-mark some of their recorded work in mathematics to gain instant feedback and have immediate opportunities within the

lesson to correct errors or clarify misconceptions.

By the end of Terms 2, 4 and 6, teachers assess against key NC learning outcomes using FFT. NfER testing takes place during Term 2 and Term 5 assessing attainment against the NC requirements. The combination of the teacher assessment and more formal testing are combined to make informed judgements about the depth of learning and the progress children have made over time.

6. Programmes of Study

6.1 Programmes of Study - EYFS

Nursery	Reception
Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). Recite numbers past 5. Say one number for each item in order: 1,2,3,4,5. Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle'). Show 'finger numbers' up to 5. Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. Experiment with their own symbols and marks as well as numerals. Solve real world mathematical problems with numbers up to 5. Compare quantities using language: 'more than', 'fewer than'. Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'. Understand position through words alone – for example, "The bag is under the table," – with no pointing. Describe a familiar route. Discuss routes and locations, using words like 'in front of' and 'behind'. Make comparisons between objects relating to size, length, weight and capacity. Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc. Combine shapes to make new ones – an arch, a bigger triangle, etc.	Count objects, actions and sounds. Subitise Link the number symbol (numeral) with its cardinal number value. Count beyond ten. Compare numbers. Understand the 'one more than/one less than' relationship between consecutive numbers. Explore the composition of numbers to 10. Automatically recall number bonds for numbers 0–5 and some to 10. Select, rotate and manipulate shapes to develop spatial reasoning skills. Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can. Continue, copy and create repeating patterns. Compare length, weight and capacity.

6.2

Year 1
Number - number and place value Pupils will be taught to: 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 2s, 5s and 10s given a number, identify 1 more and 1 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 **Number - addition and subtraction** Pupils will be taught to: 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 0 Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? − 9 **Number - multiplication and division** Pupils will be taught to: Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher **Number - fractions** Pupils will be taught to: Recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity Recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity **Measurement** Pupils will be taught to: 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

Geometry - properties of shapes

Pupils will 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]

Geometry - position and direction

Pupils will be taught to:

Describe position, direction and movement, including whole, half, quarter and three-quarter turns

6.3

Year 2
Number - number and place value Pupils will be taught to: Count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward Recognise the place value of each digit in a two-digit number (10s, 1s) 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 Understand 0 as a place holder. **Number - addition and subtraction** Pupils will be taught to: Solve problems with addition and subtraction: Using concrete objects and pictorial representations, including those involving numbers, quantities and measures Applying their increasing knowledge of mental and written methods 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 1s a two-digit number and 10s 2 two-digit numbers adding 3 one-digit numbers Show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 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 **Number - multiplication and division** Pupils will be taught to: 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 (×), division (÷) and equals (=) signs Show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 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 **Number - fractions** Pupils should be taught to: Recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity

Write simple fractions, for example ½ of 6 = 3 and recognise the equivalence of ½ and 2/4

Measurement

Pupils will be taught to:

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

Geometry - properties of shapes

Pupils will be taught to:

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

Geometry - position and direction

Pupils will be taught to:

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)

Statistics

Pupils will be taught to:

Interpret and construct simple pictograms, tally charts, block diagrams and 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

6.4

Year 3
Number - number and place value Pupils will be taught to: 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 3-digit number (100s, 10s, 1s) Compare and order numbers up to 1,000 Identify, represent and estimate numbers using different representations Read and write numbers up to 1,000 in numerals and in words Solve number problems and practical problems involving these ideas **Number - addition and subtraction** Pupils will be taught to: Add and subtract numbers mentally, including: a three-digit number and 1s a three-digit number and 10s a three-digit number and 100s Add and subtract numbers with up to 3 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 **Number - multiplication and division** Pupils will be taught to: 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 **Number - fractions** Pupils will be taught to: Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 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 Recognise and show, using diagrams, equivalent fractions with small denominators add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7] Compare and order unit fractions, and fractions with the same denominators Solve problems that involve all of the above **Measurement** Pupils will be taught to: 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, am/pm, 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]

Geometry - properties of shapes
Pupils will be taught to:
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 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 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

Statistics
Pupils will be taught to:
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

6.5

Year 4
Number - number and place value Pupils will be taught to: Count in multiples of 6, 7, 9, 25 and 1,000 Find 1,000 more or less than a given number Count backwards through 0 to include negative numbers Recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s) Order and compare numbers beyond 1,000 Identify, represent and estimate numbers using different representations Round any number to the nearest 10, 100 or 1,000 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 0 and place value **Number - addition and subtraction** Pupils will be taught to: 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 **Number - multiplication and division** Pupils will be taught to: 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 3 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 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects **Number - fractions (including decimals)** Pupils will be taught to: 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 100 and dividing tenths by 10 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 hundreds Recognise and write decimal equivalents to 1/4, 1/2, 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 1 decimal place to the nearest whole number Compare numbers with the same number of decimal places up to 2 decimal places Solve simple measure and money problems involving fractions and decimals to 2 decimal places

Measurement
Pupils will be taught to:
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
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

Geometry - properties of shapes
Pupils will be taught to:
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 2 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

Geometry - position and direction
Pupils will be taught to:
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

Statistics
Pupils will be taught to:
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

6.6

Year 5
Number - number and place value Pupils will be taught to: Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit 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 0 Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 Solve number problems and practical problems that involve all of the above Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals **Number - addition and subtraction** Pupils will be taught to: 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 **Number - multiplication and division** Pupils will be taught to: Identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 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 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 1,000 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 **Number - fractions (including decimals and percentages)** Pupils will be taught to: 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, 2/5 + 4/5 = 6/5 = 1 1/5] 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 = 71/100]
Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
Round decimals with 2 decimal places to the nearest whole number and to 1 decimal place
Read, write, order and compare numbers with up to 3 decimal places
Solve problems involving number up to 3 decimal places
Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction
Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25

Measurement
Pupils will be taught to:
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), including using standard units, square centimetres (cm^2) and square metres (m^2), and estimate the area of irregular shapes
Estimate volume [for example, using 1 cm^3 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

Geometry - properties of shapes
Pupils will be taught to:
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 (°)
Identify:
- angles at a point and 1 whole turn (total 360°)
- angles at a point on a straight line and half 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

Geometry - position and direction
Pupils will be taught to:
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

Statistics
Pupils will be taught to:
Solve comparison, sum and difference problems using information presented in a line graph
Complete, read and interpret information in tables, including timetables

6.7

Year 6
Number - number and place value Pupils will be taught to: 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 0 Solve number and practical problems that involve all of the above **Number - addition, subtraction, multiplication and division** Pupils will be taught to: 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 Identify common factors, common multiples and prime numbers Use their knowledge of the order of operations to carry out calculations involving the 4 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 (including decimals and percentages)** Pupils will be taught to: 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 Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, 1/4 × ½ = 1/8] Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6] Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8] Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places Multiply one-digit numbers with up to 2 decimal places by whole numbers Use written division methods in cases where the answer has up to 2 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** Pupils will be taught to: Solve problems involving the relative sizes of 2 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
Pupils will be taught to:
Use simple formulae
Generate and describe linear number sequences
Express missing number problems algebraically
Find pairs of numbers that satisfy an equation with 2 unknowns
Enumerate possibilities of combinations of 2 variables

Measurement
Pupils will be taught to:
Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 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 3 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 (cm^3) and cubic metres (m^3), and extending to other units [for example, mm^3 and km^3]

Geometry - properties of shapes
Pupils will be taught to:
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

Statistics
Pupils will be taught to:
Interpret and construct pie charts and line graphs and use these to solve problems
Calculate and interpret the mean as an average

6.8 Programmes of Study - Next Steps

KS3
Working mathematically Through the mathematics content, pupils should be taught to: **Develop fluency** • consolidate their numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals, fractions, powers and roots • select and use appropriate calculation strategies to solve increasingly complex problems • use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships • substitute values in expressions, rearrange and simplify expressions, and solve equations • move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs] • develop algebraic and graphical fluency, including understanding linear and simple quadratic functions • use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics **Reason mathematically** • extend their understanding of the number system; make connections between number relationships, and their algebraic and graphical representations • extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically • identify variables and express relations between variables algebraically and graphically • make and test conjectures about patterns and relationships; look for proofs or counter-examples • begin to reason deductively in geometry, number and algebra, including using geometrical constructions • interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning • explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally • Solve problems • develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems • develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics • begin to model situations mathematically and express the results using a range of formal mathematical representations • select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems **Number** Pupils should be taught to: • Understand and use place value for decimals, measures and integers of any size • Order positive and negative integers, decimals and fractions; use the number line as a model for

Ordering of the real numbers; use the symbols =, ≠, <, >, ≤, ≥

- Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property
- Use the 4 operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative
- Use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals
- Recognise and use relationships between operations including inverse operations
- Use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations
- Interpret and compare numbers in standard form A x 10n 1≤A<10, where n is a positive or negative integer or 0
- Work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and 7/2or 0.375 and 3/8)
- Define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express 1 quantity as a percentage of another, compare 2 quantities using percentages, and work with percentages greater than 100%
- Interpret fractions and percentages as operators
- Use standard units of mass, length, time, money and other measures, including with decimal quantities
- Round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]
- Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation a<x≤b
- Use a calculator and other technologies to calculate results accurately and then interpret them appropriately
- Appreciate the infinite nature of the sets of integers, real and rational numbers

Probability

Pupils should be taught to:

- Record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale
- Understand that the probabilities of all possible outcomes sum to 1
- enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams
- Generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities

Statistics

Pupils should be taught to:

- Describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)
- Construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data

- Describe simple mathematical relationships between 2 variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs

Algebra

Pupils should be taught to:

- Use and interpret algebraic notation, including:
- ab in place of a × b
- 3y in place of y + y + y and 3 × y
- a^2 in place of a × a, a^3 in place of a × a × a; a^2b in place of a × a × b
- in place of a ÷ b
- Coefficients written as fractions rather than as decimals
- Brackets
- Substitute numerical values into formulae and expressions, including scientific formulae
- Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors
- Simplify and manipulate algebraic expressions to maintain equivalence by:
    - collecting like terms
    - multiplying a single term over a bracket
    - taking out common factors
    - expanding products of 2 or more binomials
- Understand and use standard mathematical formulae; rearrange formulae to change the subject
- model situations or procedures by translating them into algebraic expressions or formulae and by using graphs
- Use algebraic methods to solve linear equations in 1 variable (including all forms that require rearrangement)
- Work with coordinates in all 4 quadrants
- Recognise, sketch and produce graphs of linear and quadratic functions of 1 variable with appropriate scaling, using equations in x and y and the Cartesian plane
- Interpret mathematical relationships both algebraically and graphically
- Reduce a given linear equation in 2 variables to the standard form y = mx + c; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically
- Use linear and quadratic graphs to estimate values of y for given values of x and vice versa and to Find approximate solutions of simultaneous linear equations
- Find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal graphs
- Generate terms of a sequence from either a term-to-term or a position-to-term rule
- Recognise arithmetic sequences and find the nth term
- Recognise geometric sequences and appreciate other sequences that arise

Ratio, proportion and rates of change

Pupils should be taught to:

- Change freely between related standard units [for example time, length, area, volume/capacity, mass]
- Use scale factors, scale diagrams and maps
- Express 1 quantity as a fraction of another, where the fraction is less than 1 and greater than 1

- Use ratio notation, including reduction to simplest form
- Divide a given quantity into 2 parts in a given part:part or part:whole ratio; express the division of a quantity into 2 parts as a ratio
- Understand that a multiplicative relationship between 2 quantities can be expressed as a ratio or a fraction
- Relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions
- Solve problems involving percentage change, including: percentage increase, decrease and original Value problems and simple interest in financial mathematics
- Solve problems involving direct and inverse proportion, including graphical and algebraic representations
- Use compound units such as speed, unit pricing and density to solve problems

Geometry and measures

Pupils should be taught to:

- Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders)
- Calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes
- Draw and measure line segments and angles in geometric figures, including interpreting scale drawings
- Derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line
- Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric
- Use the standard conventions for labelling the sides and angles of triangle ABC, and know and use the criteria for congruence of triangles
- Derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies
- Identify properties of, and describe the results of, translations, rotations and reflections applied to given figures
- Identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grid
- Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles
- Understand and use the relationship between parallel lines and alternate and corresponding angles
- derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons
- Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs
- Use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles
- Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders,

pyramids, cones and spheres to solve problems in 3-D

- Interpret mathematical relationships both algebraically and geometrically

7. Progression

- through each strand

7.1 Progression in EYFS

	Development Matters & ELG
Nursery	• Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). • Recite numbers past 5. • Say one number for each item in order: 1,2,3,4,5. • Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle'). • Show 'finger numbers' up to 5. • Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. • Experiment with their own symbols and marks as well as numerals. • Solve real world mathematical problems with numbers up to 5. • Compare quantities using language: 'more than', 'fewer than'. • Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'. • Understand position through words alone – for example, "The bag is under the table," – with no pointing. • Describe a familiar route. • Discuss routes and locations, using words like 'in front of' and 'behind'. • Make comparisons between objects relating to size, length, weight and capacity. • Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc. • Combine shapes to make new ones – an arch, a bigger triangle, etc. • Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs', etc. • Extend and create ABAB patterns – stick, leaf, stick, leaf. • Notice and correct an error in a repeating pattern. • Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'
Reception	• Count objects, actions and sounds. • Subitise. • Link the number symbol (numeral) with its cardinal number value. • Count beyond ten. • Compare numbers. • Understand the 'one more than/one less than' relationship between consecutive numbers. • Explore the composition of numbers to 10 • Automatically recall number bonds for numbers 0–5 and some to 10. • Select, rotate and manipulate shapes to develop spatial reasoning skills. • Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can. • Continue, copy and create repeating patterns. • Compare length, weight and capacity. Number • Have a deep understanding of number to 10, including the composition of each number; • Subitise (recognise quantities without counting) up to 5;

	• Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. Numerical Patterns • Verbally count beyond 20, recognising 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; • • Explore and represent patterns within numbers up to 10, including evens and • odds, double facts and how quantities can be distributed equally.

7.2 Progression KS1 & KS2 – Number and Place Value

Y1	• 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.
Y2	• 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 greater than, less than and = signs. • Read and write numbers to at least 100 in numerals and in words. • Use place value and number facts to solve problems.
Y3	• 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. • [KEY] Solve number problems and practical problems involving working with and estimating numbers up to 1000 in a variety of units.
Y4	• 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 rounding, ordering and exploring negative numbers 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.
Y5	• Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit. • 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 numbers up to 1000000, negative numbers, rounding or jumping in steps. • Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.
Y6	• 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 large numbers, rounding and negative numbers.

7.3 Progression KS1 & KS2 – Addition and Subtraction

Y1	• 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 = ? - 9.
Y2	• Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures. • Solve problems with addition and subtraction applying their increasing knowledge of mental and written methods. • Solve problems with addition and subtraction 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. • Add and subtract numbers using concrete objects, pictorial representations, and mentally, including a two-digit number and tens. • Add and subtract numbers using concrete objects, pictorial representations, and mentally, including two two-digit numbers. • Add and subtract numbers using concrete objects, pictorial representations, and mentally, including 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.
Y3	• Add and subtract numbers mentally, including three-digit number and ones. • Add and subtract numbers mentally, including three-digit number and tens. • Add and subtract numbers mentally, including 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.
Y4	• 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.
Y5	• 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.
Y6	

7.4 Progression KS1 & KS2 – Multiplication and Division

Y1	• 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.
Y2	• 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 (×), division (÷) 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.
Y3	• 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.
Y4	• 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. • Use place value, known and derived facts to multiply and divide mentally, including: Dividing by 1. • Use place value, known and derived facts to multiply and divide mentally, including: 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.
Y5	• 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. • 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. • 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.
Y6	• 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. • 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.

7.5 Progression KS1 & KS2 – Fractions

Y1	• 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. •
Y2	• Recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity. • Write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2.
Y3	• 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 non-unit 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, 5/7 + 1/7 = 6/7]. • Compare and order unit fractions, and fractions with the same denominators. • Solve problems that involve my understanding of fractions.
Y4	• 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 1/4, 1/2, 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.
Y5	• 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 greater than 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]. • 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 = 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 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25.
Y6	• Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. • Compare and order fractions, including fractions greater than 1. • 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, 1/4 × 1/2 = 1/8]. • Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6]. • Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 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.

7.6 Progression KS1 & KS2 – Ratio

Y1	
Y2	
Y3	
Y4	
Y5	
Y6	• 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.

7.7 Progression KS1 & KS2 – Algebra

Y1	
Y2	
Y3	
Y4	
Y5	
Y6	• 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.

7.8 Progression KS1 & KS2 – Measurement

Y1	• Compare, describe and solve practical problems for lengths and heights [for example, long or short, longer or shorter, tall or short, double or half]. • Compare, describe and solve practical problems for mass or weight [for example, heavy or light, heavier than, lighter than]. • Compare, describe and solve practical problems for capacity and volume [for example, full or empty, more than, less than, half, half full, quarter]. • Compare, describe and solve practical problems for time [for example, quicker, slower, earlier, later]. • Measure and begin to record lengths and heights. • Measure and begin to record mass/weight. • Measure and begin to record capacity and volume. • Measure and begin to record 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.
Y2	• 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 symbols for greater than, less than 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.
Y3	• 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. • 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].
Y4	• 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. • 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.
Y5	• 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.
Y6	• 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].

7.9 Progression KS1 & KS2 – Shape

Y1	• Recognise and name common 2-D and 3-D shapes, including 2-D shapes [for example, rectangles (including squares), circles and triangles]. • Recognise and name common 2-D and 3-D shapes, including 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].
Y2	• 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.
Y3	• 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.
Y4	• 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.
Y5	• Identify 3-D shapes, including cubes and other cuboids, from 2-D representations. • ↳ GD objective: Identify and create 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. • ↳ GD objective: Accurately measure, classify, order 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 360°). • Identify angles at a point on a straight line and a turn (total 180°). • Identify 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.
Y6	• 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.

7.10 Progression KS1 & KS2 – Position

Y1	• Describe position, direction and movement, including whole, half, quarter and three-quarter turns.
Y2	• 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).
Y3	
Y4	• 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.
Y5	• 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.
Y6	• 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.

7.11 Progression KS1 & KS2 – Statistics

Y1	
Y2	• 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.
Y3	• 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.
Y4	• 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.
Y5	• Solve comparison, sum and difference problems using information presented in a line graph. • Complete, read and interpret information in tables, including timetables.
Y6	• Interpret and construct pie charts and line graphs and use these to solve problems. • Calculate and interpret the mean as an average.

8. Implementation

8.1

Mathematics teaching in Nursery and Reception, follows Master the Curriculum, combined with the White Rose progressive sequence and resources, where the children are taught each area of mathematics once, in depth, over the year. Each of the blocks of learning build on to the next, giving the children a solid and secure grasp of key concepts.

In Nursery, teaching and learning of mathematics follows the theme provided by the materials such as Colours!, Matching, Sorting etc.

In Reception, units include Getting to Know You, Just Like Me etc.

From Year 1 to Year 6 mathematics is taught using a spiral curriculum whereby maths skills are developed repeatedly over the year. Children will meet key learning objectives over the year during the additional 15mins sessions of mental fluency, and recall and memory. Teaching using this structure encourages reinforcement which leads to key skill retention for future learning opportunities. The children also recognise that many areas of mathematics overlap and are encouraged to make connections between the different strands of learning.

	Nursery		Reception		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Cycle A	Cycle B	Cycle A	Cycle B						
Term 1	Colours Match shapes Pattern Sorting	Colours Match shapes Pattern Sorting	Counting Sequencing day Positional language Matching Sorting Comparing size Patterns	Counting Sequencing day Positional language Matching Sorting Comparing size Patterns	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions
Term 2	Subitising Counting Numerals Number 1 Number 2 Pattern	Subitising Counting Numerals Number 1 Number 2 Pattern	Number 1,2,3 Subitising Sorting Shape Number 4,5 Shape	Number 1,2,3 Subitising Sorting Shape Number 4,5 Shape	Measurement Geometry – Shape Geometry – Position & Direction	Measurement Geometry – Shape Geometry – Position & Direction Statistics	Measurement Geometry – Shape Statistics	Measurement Geometry – Shape Geometry – Position & Direction Statistics	Measurement Geometry – Shape Geometry – Position & Direction Statistics	Measurement Geometry – Shape Geometry – Position & Direction Statistics Algebra
Term 3	Subitising Number 3 Number 4 Number 5	Subitising Number 3 Number 4 Number 5	Composition of numbers Subitising Weight Capacity Comparing height Length Time Number 6,7,8 Addition	Composition of numbers Subitising Weight Capacity Comparing height Length Time Number 6,7,8 Addition	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions
Term 4	Number 6 Height and Length Mass Capacity	Number 6 Height and Length Mass Capacity	Number 9 and 10 Comparing Calculations within 10 Pattern 3D shape	Number 9 and 10 Comparing Calculations within 10 Pattern 3D shape	Measurement Geometry – Shape Geometry – Position & Direction	Measurement Geometry – Shape Geometry – Position & Direction Statistics	Measurement Geometry – Shape Statistics	Measurement Geometry – Shape Geometry – Position & Direction Statistics	Measurement Geometry – Shape Geometry – Position & Direction Statistics	Measurement Geometry – Shape Geometry – Position & Direction Statistics Algebra
Term 5	More/fewer One more One less Shape	More/fewer One more One less Shape	Number pattern Estimating Missing numbers Numbers to 20 Shape Calculations Shape	Number pattern Estimating Missing numbers Numbers to 20 Shape Calculations Shape	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions	Number and Place Value Addition & Subtraction Multiplication & Division Fractions
Term 6	Counts objects from a larger group up to 10 Weight	Counts objects from a larger group up to 10 Weight	Doubles Sharing & grouping Even and Odd Calculations Composition of number Pattern Maps	Numbers to 20 Doubling/halving Odds and evens Measure	Measurement Geometry – Shape Geometry – Position & Direction	Measurement Geometry – Shape Geometry – Position & Direction Statistics	Measurement Geometry – Shape Statistics	Measurement Geometry – Shape Geometry – Position & Direction Statistics	Measurement Geometry – Shape Geometry – Position & Direction Statistics	Measurement Geometry – Shape Geometry – Position & Direction Statistics Algebra

9. Vocabulary

9.1. Progression in Vocabulary

The teaching and use of appropriate vocabulary form an important part of teaching learning. These age specific vocabulary lists identify the vocabulary that we expect teachers to be using. Staff use the school's Key Vocabulary Progression resource to share and discuss vocabulary in every maths lesson. In Key Stage One, the vocabulary is shared verbally with definitions given in context. In Key Stage Two the vocabulary is shared visually, definitions given in context, and copied into pupils' books.

Mathematics Key Vocabulary Progression
Reception - Year 6

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number and Place Value	Place Ordinal Compare Forwards Backwards Numbers up to twenty Number line Pictorial Answer Equals Read Digit Write	*Same as EYFS, plus:* Numerals Words Multiples Equal to Fewer Most Least Identify Represent Sort Calculate Odd Even Pattern Partitioning Ones Tens Greater than >
Less than <
Numbers up to one hundred	*Same as EYFS & Year 1, plus:* Count in steps Count in multiples Two- digit Estimate Place Value Solve Problems Nearest ten Number facts Partition Count in steps Zero Compare Determine Value Three-digit	*Same as EYFS & KS1, plus:* Hundreds Ten more One hundred more Ten less One hundred less Roman numeral Numbers up to one thousand Ascending Descending Equivalent	*Same as previous year groups, plus:* Thousands Four- digit Negative number Positive number Negative number One thousand more One thousand less Decimal Decimal place Rounding Place holder Nearest ten Nearest Hundred Nearest thousand One place Whole number Integer Tenths Hundredths Roman numerals	*Same as previous year groups, plus:* Ten thousands Hundred Thousands Millions Context Steps of powers Decimal equivalents Two decimal places Thousandths Numbers up to one million	*Same as previous year groups, plus:* Intervals across zero Three decimal places Hundredths Thousandths Ten thousandths Numbers up to ten million

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition and Subtraction	Add Subtract Take away Plus Altogether Total Addition Subtraction Adding Subtracting Number Number line Single digit Count on Count back Answer Doubling Halving Sharing Numbers to twenty Check Part Whole Digit	*Same as EYFS, plus:* One step problem Concrete object Pictorial representation Missing number Problem Read Write Interpret Equals = Signs One-digit Two-digit Ones Mental Mentally Minus Addition Subtraction Difference Fewer Less Sentence stem Remove Reduce Minuend *(amount at start of subtraction question)* Subtrahend *(amount being subtracted)* Difference *(the difference/amount left)* Represents Addition bonds Addend *(amount we add)* Sum *(total)*	*Same as EYFS & Year 1, plus:* Columnar addition Columnar Subtraction Tens Order Inverse Relationship Calculation Solve problems Missing number problems Quantities Measures Formal Written method Mental method Method Operation Apply Whole number Inverse Three-digit Not commutative *(for subtraction)* Exchange Number bonds Quantities Commutative *(for addition)* Part-whole Count on	*Same as EYFS & KS1, plus:* Three-digit number Hundreds Estimate Number facts Column addition Column subtraction Exchange Estimate Operations Quantities Formal column notation	*Same as previous year groups, plus:* Two step problems Context Four-digit Operations Methods Estimation Mixed operations Three digit number	*Same as previous year groups, plus:* Increasingly large numbers More than 4 digits Rounding Determine Context Multi-step problems Column notation Tenths Hundredths	*Same as previous year groups, plus:*

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication and Division	Sharing Doubling Halving Number pattern Twice as many Equal Unequal Share Groups Odd Even	*Same as EYFS, plus:*	*Same as EYFS & Year 1, plus:*	*Same as EYFS & KS1, plus:*	*Same as previous year groups, plus:*	*Same as previous year groups, plus:*	*Same as previous year groups, plus:*
		Multiples Twos Fives Tens Number Multiply Divide Multiplication Division One step problem Answer Concrete object Pictorial representation Arrays Count Equals Write Sharing Grouping Equally Pictorial representation Rows Columns Lots of Equal groups	Multiplication facts Division facts Multiplication tables Odd numbers Even numbers Share Equally Repeated division Repeated addition Calculate Place holder Number sentence Dividend Divisor Quotient Base 10 Scaling Repeated addition	Missing number problem Estimate Inverse Formal written method Mathematical statement Recall Integer Two- digit One- digit Tenths Efficient method Inefficient method Exchanging Commutative (in any order) Expanded short notation	Derived facts Factors Factor pairs Scaling problems Three-digit Remainders Formal short division Compact short multiplication Place holder	Decimals Four-digit Long multiplication Short division Context Common factors Common multiples Prime numbers Prime factors Composite numbers Square number Cube number Product Operations Notation Squares Cubes Context of question Fraction Formal written method	Multi-digit numbers Scale factor Long division Whole number remainders Fractions Rounding Mixed operations Prime common factors BIDMAS Order Formal column notation Compact notation

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Fractions, Decimals and Percentages	Half Whole	Fraction Half Equal parts One whole Object Shape Quantity Quarter	*Same as Year 1, plus:* Simple fractions Equivalent Equivalence Count Unit fractions Non unit fractions Numerator Denominator One whole Compare Thirds Fifths	*Same as KS1, plus:* Tenths Compare Order Add Subtract Solve problems	*Same as previous year groups, plus:* Hundredths Decimal Decimal place One decimal place Two decimal places Round decimals Whole number Common equivalent fractions Decimal equivalents Dividing Ones Tenths Hundredths Simple measure Money problems Improper fraction Proper fraction	*Same as previous year groups, plus:* Thousandths Multiples Three decimal places Factors Integer Per cent %Number of parts per hundred Percentages Decimal fraction Mixed numbers Convert Mathematical statements Multiply Percentage and decimal equivalents	*Same as previous year groups, plus:* Common factors Common multiples Decimal fraction equivalents Simplest form

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Ratio and Proportion							Ratio Proportion Size Quantity Missing value Integer Multiplication Division Multiply Divide Solve Problem Calculate Percentage Comparison Unequal sharing Grouping Fractions Multiples

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Algebra							*Same as previous year groups, plus:* Missing number problem Pairs Number sentence Variables Combination Possibility Enumerate Equation Formulae Generate Linear number sequence

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Measurement	Measure Measurement Size Height Weight Capacity Compare Solve Problems Object Time Wide(er) Narrow(er) Long(er) Short(er) Length Heavy/Light Heavier than Lighter than Big/Bigger/Biggest Full/Empty Tall/Taller/Tallest Half/Half full More than Less than Slower Days Weeks	*Same as EYFS, plus:* Double/Half Mass Volume Quarter Quicker Earlier/Later Compare Sequence events Chronological order Before After Next First Today Yesterday Tomorrow Morning Afternoon Evening Record Metres (m) Centimetre (cm) Kilograms (kg) Grams (g) Hours Minutes Hour Half past O clock Litres Millilitres Hands Clock face Seconds Coins Notes Dates Months Pounds (£) Pence (p) Change	*Same as EYFS & Year 1, plus:* Greater than > Less than < Equals = Intervals Standard units Estimate Direction Temperature Unit Scales Rulers Thermometers Measuring vessels Degrees Celsius Symbols Money Different combinations a.m. p.m. Five past Ten past Quarter past Twenty past Twenty-five past Half past Twenty-five to Twenty to Quarter to Ten to Five to Value Change Total	*Same as EYFS & KS1, plus:* Duration Time taken Nearest minute Record Seconds Noon Midnight Kilometre Add Subtract Millimetres (mm) Perimeter Simple 2-D shapes Analogue clock Digital Roman numerals 12-hour 24-hour Leap year	*Same as previous year groups, plus:* Estimate Rectilinear figure Area Rectilinear shapes Convert Kilometres (km)	*Same as previous year groups, plus:* Square centimetres (cm2) Square metres (m2) Irregular shapes Volume (cm3) Cubes Cuboids Square numbers Cube numbers Metric measure Metric units Imperial units Inches Pounds Pints Feet Scaling	*Same as previous year groups, plus:* Decimal notation Cubic centimetres (cm3) Cubic metres (m3) Cubic millimetre (mm3) Cubic kilometre (Km3) Decimal places Formulae Conversion Miles Gallons Stones Ounces Feet Perpendicular height

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Geometry (Properties of Shape)	Shape Square Rectangle Circle Triangle Sides Straight side Curved side 2-D Shapes 3-D Shapes Cube Sphere Cone Curved Straight Flat	*Same as EYFS, plus:* Two- Dimensional Three-Dimensional Cuboid Pyramid Cylinder Sides Corners Properties Pyramids Faces Edges Vertices Vertex Pentagon Hexagon	*Same as EYFS & Year 1, plus:* Compare Line symmetry Vertical line Horizontal Line Square-based pyramid Triangular pyramid Triangular prism Rectangular prism Tetrahedron Rectangular pyramid	*Same as EYFS & KS1, plus:* Angle Turn Right angles Quarter of a turn Half-turn Three quarters of a turn Complete turn Vertical lines Perpendicular lines Parallel lines Quadrilaterals Heptagon Octagon Polygon Orientations Acute angle Obtuse angle Perpendicular lines Parallel lines Heptagon Octagon Nonagon Decagon Pentagonal prism Hexagonal prism Octagonal prism Octahedron Dodecahedron Pentagonal pyramid Hexagonal pyramid Octagonal pyramid Kite Rhombus Polygon	*Same as previous year groups, plus:* Lines of symmetry Symmetric figure Classify Geometric shapes Isosceles Equilateral Scalene Trapezium Rhombus Parallelogram Kite	*Same as previous year groups, plus:* Angles Measure Degrees Missing lengths Missing angles Regular polygons Irregular polygons Degrees Estimate Compare Reflex angle Point Straight line Multiples One whole turn Vertically opposite Missing angles	*Same as previous year groups, plus:* Radius Diameter Circumference Nets Dimensions

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Geometry (Position and direction)	Position Distance Direction Move Movement Patterns Order Next to Behind Repeat On top of Over Under On Into	*Same as EYFS, plus:*	*Same as EYFS & Year 1, plus:*	*Same as EYFS & KS1, plus:*	*Same as previous year groups, plus:*	*Same as previous year groups, plus:*	*Same as previous year groups, plus:*
		Half turn Quarter turn Three-quarter turn Full turn Whole turn Left Right Backwards Forwards Clockwise Anti-clockwise	Rotation Right angle Order Arrange Sequence Straight line		Co-ordinates Quadrant Grid Translate Translation Axis X- axis Y-axis Spaces Unit Plot Point Polygon	Reflection	Four quadrants Coordinate plane

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Statistics			Interpret Construct Pictogram Tally chart Block diagrams Horizontal Vertical x- axis y-axis key title chart title Simple tables Category Sort Quantity Total Compare Data Vertical Horizontal Bar charts Tables	*Same as KS1, plus:* Graph Statistics Solve One- step questions Two- step questions	*Same as previous year groups, plus:* Time graphs Comparison problems Discrete data Continuous data Line graph Calculate	*Same as previous year groups, plus:* Timetables Two-way tables Total Sum	*Same as previous year groups, plus:* Pie chart Mean Average