Mathematics

Mathematics is a creative and highly interconnected subject that has been developed over centuries, providing the solution to some of history's most intriguing problems. There are three main aims in the National Curriculum which underpin the teaching of the subject:-

- *Fluency*
- *Reason mathematically*
- *Solve problems*

Number and Place Value

	Reception	**Year 1**	**Year 2**
EYFS (Reception)/National Curriculum Objectives (Years 1 and 2)	• Selects the correct numeral to represent 1 to 20 objects. • Counts an irregular arrangement of up to ten objects. • Estimates how many objects they can see and checks by counting them. • Finds the total number of items in two groups by counting all of them. • Finds one more or one less from a group of up to five objects, then ten objects. • In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting. • Records, using marks that they can interpret, and explain. • Begins to identify own mathematical problems based on own interests and fascinations. **Early Learning Goal** Children count reliably with numbers from 1 to 20, place them in order and	• 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 and least. • Read and write numbers from 1 to 20 in numerals and words.	• Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward. • Recognise the place value of each digit in a two-digit number (tens, ones). • Identify, represent and estimate numbers using different representations, including the number line. • Compare and order numbers from 0 up to 100; use <, > and = signs. • Read and write numbers to at least 100 in numerals and in words. • Use place value and number facts to solve problems.

	say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.		
Cecil Gowing's curriculum coverage	• To match, group, sort and classify. • Order numbers to 20. • Begin to recognise a number has one or two digits.	• Estimate a number of objects that can be checked by counting. • Say a number that is 10 more or less for multiples of 10. • Recognise the place value in a two digit number. • Partition a two digit number into a multiple of 10s and ones.	• Count in hundreds, forwards and backwards. • Recognise odd and even numbers. • Use vocabulary to compare and order numbers including ordinal numbers. • Use the vocabulary of estimation and approximation. • Give a sensible estimate of at least 50 objects. • Round numbers to the nearest 10. • Read and write two and three digit numbers and words. • Extend number sequences.
Fluency	• Count forwards and backwards. • Number comparison. • Begin to understand + - = symbols • Representing numbers in different ways (concrete, pictorial and abstract). • Records, using marks that they can interpret, and explains. • Shows curiosity about numbers offering comments or asking questions. • Shows an interest in representing numbers.	• Demonstrate an understanding of one-to-one correspondence when counting objects, conservation of number (e.g. that when rearranged the number of objects stays the same) and cardinality of number. • Can count backwards and forwards in ones from any given number. • Count forwards and backwards in multiples of two, five and ten. • Compare and order numbers. • Partition numbers in different ways. • Know the next and previous number in a sequence. • Represent number in concrete and pictorial ways including the same number in different ways; demonstrate understanding of place value through these representations (e.g. grouping of tens and ones differently). • Recognise positional place value	• Represent numbers conceptually and pictorially. • Partition 2 digit numbers in different ways including multiples of ten and one. • Order number up to 100 from smallest to largest, largest to smallest. • Recognise the additive place value of each digit so that when the individual values of the digits are added together they total the whole number (e.g. 100+40+8=148). • Understand zero as a place holder.

		• (e.g. the digit 2 in 21 has a value of 20). • Subitise (recognising a number without counting) small quantities and compare them. • Link counting to ordering 1st, 2nd, 3rd	
Reasoning	• Use some mathematical language. • Find missing numbers/patterns. • Use different resources and to explain thinking.	• Describe simple patterns and relationships involving numbers shapes and decide whether examples satisfy particular rules (eg is this an odd or even number? How do you know?). • Use concrete and pictorial representations to reason about numbers, including tens and ones. • Use language of equal to, more than, less than (fewer), most and least to reason about numbers. • Use knowledge of positional place value to explain why a number is written a certain way around (21 or 12?	• Use the symbols <, > and = to convince me (e.g. convince me whether 5>7) • Reason which number comes next in the sequence 55, 60, 65, 70…. • Use question prompts to promote reasoning such as: convince me, describe/explain/justify/prove, show me…., How do you know? What is the same/different? What do you notice?
Problem Solving	• Use connections. • Recognise more than one solution using different resources. • Discuss most efficient/less efficient. • What if…? Questions. • Show an interest in number problems.	• Choose and use pictorial or concrete representations to understand a problem. • Choose and use concrete or pictorial representations to organise thinking and solve a problem. • Use different ways to represent a number.	• Recognise and talk about patterns in a counting sequence. • Spot a missing number in a sequence and explain why. • Recognise mathematical connections between numbers and patterns. • Identify, organise and interpret information correctly. • Work systematically. • Invent different ways of recording to show the place value of numbers.

Calculations

	Reception	Year 1	Year 2
EYFS (Reception)/National Curriculum Objectives (Years 1 and 2)	**Early Learning Goal** Children count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.	• 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. • Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	• Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures. • Applying their increasing knowledge of mental and written methods. • Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. • Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: -A two-digit number and ones -A two-digit number and tens -Two two-digit numbers -Adding three one-digit numbers • Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. • 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.
Cecil Gowing's curriculum coverage	• Understand addition to 10 (then 20). • Understand subtraction to 10 (then 20). • Understand 1 more than a given number. • Understand 1 less than a given number. • In practical activities and discussion, begin to use vocabulary involved in adding and subtracting. • To double and half. • To relate addition to counting on. • To relate subtraction to taking away and counting how many are left.	• Use the equal sign (=). • Use knowledge of counting in 2s, 5s and 10s to derive their multiples to the 10th multiple. • Recall the doubles of all numbers to at least 10. • Relate addition to counting on. • Recognise that addition and multiplication can be done in any order (commutative law) and that subtraction and division cannot. • Add a multiple of 10 to a one or two digit number; subtract a multiple of 10 from a two digit number. • Recognise subtraction as 'take away' and 'find a difference' (counting up). • Recognise symbols for multiply (x) and divide (÷).	• Know that more than two numbers can be added together. • Identifying doubles and near doubles. • Know halving is the inverse of doubling. • To understand the vocabulary for:- Addition - increase, more, make, double, sum, total, plus, add, together Subtraction - take away, how many have you got left, the difference between, how many have gone, minus, less, reduce, decrease, take from, fewer, subtract. Multiplication - multiply, product, times, groups of, lots of, multiplied by. Division - divided by, group, share equally, equal groups of, • Understand division as grouping and as repeated subtraction and sharing. • Know and use halving as the inverse of doubling. • Solve division problems including calculations with remainders. • Use practical and informal written methods. • Recall quickly doubles of all numbers to at least 20. • Recall quickly double multiples of 5 to 50 (e.g. 20x2 or 35x2). • Recall quickly halves of multiples of 10 to 100 (e.g. half of 70). • Subtract mentally a two digit number

			from another two digit number when no regrouping is required. • Use multiplication facts to make deductions outside known multiplication facts. • Understand that multiplication is commutative and division is not.
Fluency	• Count forwards and backwards. • Begin to understand that subtraction is the inverse of addition. • Represent numbers in different ways (concrete, pictorial and abstract).	• Understand that subtraction is the inverse of addition.	• Adding and subtract 9 or 11 (add/subtract 10 and adjust by 1). • Add/subtract 19/21 (add/subtract 20 and adjust by 1). • Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. • Use the inverse to check calculations. • Understand multiplication as repeated addition and as an array and vice versa. • Count forwards and backwards. • Reorder numbers. • Bridge through multiplies of 10. • Use doubles and near doubles. • Look for and recognise patterns in multiplication tables and connections between them.
Reasoning	• Use mathematical language. • Use different resources to explain thinking.	• Describe a puzzle or problem using numbers, practical materials and diagrams. • Describe ways of solving puzzle and problems, explaining choices and decisions orally or using pictures.	• Use estimation to check that their answers to a calculation are reasonable. • Explain how calculation can be more easily worked out by changing the order of the numbers. • Use question starters to promote reasoning such as: convince me, describe/explain/justify/prove, show me…., How do you know? What is the same/different? What do you notice? • Explain how taking away and finding the difference are both subtraction

			calculation strategies.
Problem Solving	• Recognise more than one solution using different resources. • Discuss most efficient/less efficient resource to use for addition and subtraction. • What if…? Questions. • Show an interest in number problems.	• Solve problems involving counting, adding, subtracting, doubling, halving in the context of numbers, measures or money, e.g. to pay and give change. • Use numbers, practical materials and diagrams to solve a puzzle or problem and set the solution in the original context. • Answer a question by selecting and using suitable equipment.	• Solve word problems that involve more than one step. • Use different strategies to solve problems e.g. number line, partitioning numbers, counting forwards and backwards. • Use knowledge of numbers to solve problems. • Use the inverse to solve number problems. • Choose and use appropriate operations and strategies. • Reason about addition and subtraction. • Work systematically and logically to solve a problem. • Be able to derive all 8 facts in the family. • Solve problems which involve finding all the possibilities so that generalisations can be reached.

Algebra

	Reception	Year 1	Year 2
EYFS (Reception)/National Curriculum Objectives (Years 1 and 2)	**Early Learning Goal** Children count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.		
Cecil Gowing's curriculum coverage	• Explore a number a week in different ways. • Count forwards and backwards. • Understand the + - and = signs. • Begin to solve missing number problems.	• Use the equals sign (=). • Solve missing number problems including using inverse operation. • Recognise a symbol that represents a missing number.	• Recognise the use of a symbol such as a square or triangle to stand for an unknown number. • Solve missing number problems using a range of methods (e.g. bar model).
Fluency	• Count forwards and backwards. • Begin to follow simple number and shape patterns. • Show curiosity about numbers and shapes. • Offer comments or asks questions.	• Understand equals (=) as a balance. • Recognise and continue patterns involving numbers or shape. • Follow simple number and shape patterns.	• Understand and use the equals sign correctly as a balance of an equation. • Be able to spot continue and generate patterns in numbers, shape and data. • Be able to recognise, verbalise and record patterns. • Use mathematical representations to help pupils notice patterns (e.g. arrays and numicon).
Reasoning	• Use mathematical language. • Begin to understand and answer questions to promote reasoning such as: convince me, describe/explain/justify/prove, show me… How do you know? What is the same/different? What do you notice? • Find missing numbers/patterns.	• Describe and explain patterns. • Begin to predict the next number in the sequence. • Spot mistakes in patterns and explain why. • Begin to use question prompts to promote reasoning such as: convince me, describe/explain/justify/prove, show	• Describe and explain patterns • Predict the next number in the sequence • Offer generalisations using specific examples • Spot mistakes in patterns and explain why • Use question prompts to promote reasoning such as: convince me,

	• Use different resources to explain thinking.	me…., How do you know? What is the same/different? What do you notice?	describe/explain/justify/prove, show me…., How do you know? What is the same/different? What do you notice?
Problem Solving	• Show an interest in number problems.	• Begin to solve problems involving equivalence. • Solve problems involving pattern.	• Solve problems involving equivalence. • Solve problems involving pattern. • Solve problems which involve finding all the possibilities, so that generalisations can be reached.

Proportionality (fractions, decimals, percent, ratio, proportion)

	Reception	Year 1	Year 2
EYFS (Reception)/National Curriculum Objectives (Years 1 and 2)	**Early Learning Goal** Children count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.	• Recognise, find and name a half as one of two equal parts of an object, shape or quantity. • Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	• Recognise, find, name and write fractions 1/3, 1/4, 2/4, 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.
Cecil Gowing's curriculum coverage	• To double, half and share objects.	• Find 1/2 of a length, shape, set of objects or quantity.	• Find 1/2 of a length, shape, set of objects or quantity. • Recognise that 4/4 make a whole. • Find and compare fractions of amounts.
Fluency	• Use different resources to demonstrate doubling, halving and sharing.	• Use concrete and pictorial representations of fractions. • Understand that fractions involve a relationship between a whole and parts of a whole.	• Count in steps of 1/2 and 1/4 up to 10. • Use concrete and pictorial representations of fractions. • Recognise fractions as numbers. Understand that fractions involve a relationship between a whole and parts of a whole.
Reasoning	• Explain thinking using resource when doubling, sharing and halving.	• When looking at concrete or pictorial representations begin to explain why two fractions do not always equal a whole (e.g. 1/2 + 1/4 does not equal 1 whole). • Use question prompts to promote reasoning such as: convince me, describe/explain/justify/prove, show me…., how do you know?, same/different, what do you notice?	• Explain how fractions fit into the number system. • Explain why two fractions do not always equal a whole (e.g. 1/2 + 1/4 does not equal 1 whole). • What is the same and what is different between two fractions? (e.g. 1/2 and 1/4 or 1/2 and 1/3) • Use fractions vocabulary of numerator, denominator, part-whole,

			whole.
			• Use question prompts to promote reasoning such as: convince me, describe/explain/justify/prove, show me…., how do you know?, same/different, what do you notice?
Problem Solving	• Begin to solve problems using different resources.	• Solve problems involving fractions of shapes, objects and quantities in practical situations. • Begin to use knowledge of fractions to support telling the time (half way round the clock for ½ past, all the way round for O'clock).	• Solve problems involving fractions of shapes, objects and quantities. • Use knowledge of fractions to support telling the time. • Show in different ways (shading fractions of shape). • Program a robot using the language of fractions.

Measurement

	Reception	Year 1	Year 2
EYFS (Reception)/National Curriculum Objectives (Years 1 and 2)	**Early Learning Goal** Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.	• Compare, describe and solve practical problems for: - lengths and heights (e.g. long/short, longer/shorter, tall/short, double/half) - mass/weight (e.g. heavy/light, heavier than, lighter than) - capacity and volume (eg: full/empty, more than, less than, half, half full, quarter) - time (e.g. 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 correct 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.	• 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.

Cecil Gowing's curriculum coverage	• Compare the lengths of two of the same type of objects stating which is longest, which is the shortest. • Estimate and order familiar objects by length. • Understand what the terms 'light' and 'heavy' and 'weighs the same as' mean. • Use a balance to compare two objects by their weight. • Order more than two objects by their weight. • To understand full, empty and half full. • To name the days of the week in order. • To name the months of the year in order. • Order and discuss the order of events during a school day. • Estimate and measure how many times I can ……………………..in 10 seconds or a minute.	• Make estimations about objects and measurements. • Chose and use suitable, uniform non-standard and standard units and measuring instruments. • Order the day of the weeks, months of the year and seasons of the year. • Order familiar events in time. • Begin to extend comparing to more than 2 objects. • Begin to estimate in different situations. • Use language such as wide, narrow, deep, shallow, width and depth.	• Use the vocabulary related to time. • Order months of the year/days of the week. • Read the time to the hour, half hour or quarter hour on an analogue clock. • Know the sequence of time seconds, minutes, hours, days. • Understand the relationship between pounds and pence e.g. know that 100p is the same as £1. • Read scales in a practical situation where all numbers on the scale are given in divisions of ones, twos, fives and tens. • Read scales in a practical situation where not all numbers on the scale are given in divisions of ones, twos, fives and tens.
Fluency	• Compare weights of a range of items and identify which is heavier/lighter. • Discuss capacity e.g. full, empty, half empty, about the same. • To recognise and use coins in their play.	• Be able to represent an amount in a range of different ways (20p – 10p and 10p or 5p, 5p and 10p). • Find the missing number in a money number problem (▊ - 3p = 7p). • Compare weights of a range of items and identify which is heavier/lighter. • Use the words more or less to complete sentences (full cup has less than ½ cup). • Discuss how to find which container holds the most water. • Follow a recipe and identify how to reduce or increase amount of food.	• Recognise and explain why we need standard units of measurement. • Use exchange to find the same amount of money (5p x 2 = 10p x 1). • Use multiplication facts to read scales. • Read the time to the hour, half hour or quarter hour on an analogue clock. • Tell the time to 5 minutes.
Reasoning	• Use mathematical language. • Use different resources to explain thinking.	• Answer questions including 'how long ago?', 'how long will it be to?', how long will it take to?', how often?'	• Compare measures including simple multiples such as half as high, twice as wide.

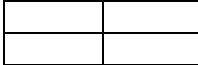|			
		• Use true or false questions (e.g. all coins are round). • Find the odd one out (e.g. 20p, 2p, 5p, 30p). • Use always, sometimes and never (e.g. money in notes is always worth more than money in coins?). • Use words such as convince me, prove it (e.g. convince me that two 5p coins are the same as five 2p coins or a bigger object is always heavier than a smaller object). • Use language such as do you agree to solve problems involving priced items.	• Reason which unit of measurement is most applicable in different situations. • Explain who telling the time to 5 minutes uses the 5 times table. • Use question prompts to promote reasoning such as: convince me, describe/explain/justify/prove, show me…., how do you know?, same/different, what do you notice?
Problem Solving	• Begin to solve simple problems using concrete apparatus. • Use different resources to solve a problem. • What if…? Questions • Show an interest in number problems.	• Solve simple problems in a context using concrete apparatus. • Begin to solve more complex problems.	• Solve simple problems in a context. • Use a variety of information to reach a conclusion. • Decide on which apparatus to use to solve a problem. • Find different combinations of coins that equal the same amount of money.

Geometry (properties of shape)

	Reception	Year 1	Year 2

EYFS (Reception)/National Curriculum Objectives (Years 1 and 2)	**Early Learning Goal**
	Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them
		• Recognise and name common 2D and 3D shapes, including:
		  - 2D shapes - rectangles (including squares), circles and triangles, pentagon, hexagon
		  - 3D shapes - cuboids (including cubes), pyramids, cones, cylinders and spheres.
			• Identify and describe the properties of 2D shapes, including the number of sides, corners and lines of symmetry.
			• Identify and describe the properties of 3D shapes, including the number of edges, vertices and faces.
			• Identify 2D shapes on the surface of 3D shapes, for example, a circle on a cylinder and a triangle on a pyramid.
			• Compare and sort common 2D and 3D shapes and everyday objects.

Cecil Gowing's Curriculum Coverage	• Recognise, extend and create a 2/3 step pattern. • Recognise rectangles (including squares), circles, and triangles. • Explore the characteristics of 2D shapes including corners and sides. • To sort and classify 2D and 3D shapes. • Recognise cubes, pyramids, spheres and cones. • Explore the characteristics of 3D shapes including face, edge and vertices. • Select a particular named shape. • Describe their position such as 'behind' or 'next to'. • Use familiar objects and common shapes to create and recreate patterns and build models.	• Visualise and describe common 2D shapes and 3D solids. • Use 2D shapes and 3D solids to make patterns, pictures and models. • Fold shapes in half, then make into symmetrical patterns. • Use vocabulary for 2D shapes such as corners and sides. • Use vocabulary for 3D shapes such as vertices (1 = vertex), edges and faces.	• Visualise common 2D shapes and 3D solids. • To recognise the net of a 3D shape. • Order and arrange nominations of mathematical objects in patterns and sequences. • Know the difference between regular and irregular shapes.
Fluency	• Use a feely bag to identify, name and describe properties of shapes. • Sort a range of objects in to groups and say how they have sorted them. • Identify 2D shapes found on 3D	• Use a feely bag to identify, name and describe properties of shape. • Sort a range of objects in to groups and say how they have sorted them.	• Identify 2D shapes on the surface of a 3D shape. • Compare and sort 2D and 3D shapes in everyday objects. • Order and arrange combinations of

	shapes.	• Identify 2D shapes found on 3D shapes.	mathematical shapes in patterns and sequences. • Pupils identify what are shapes and what are not shapes.
Reasoning	• Using mathematical language. • Begin to describe simple patterns and relations. • Begin to talk about the properties of 2D and 3D shapes.	• Describe simple patterns and relationships involving shapes and decide whether examples satisfy particular rules (e.g. is this shape a triangle? How do you know?) • Use questions such as 'What is the same/different?' • Find the odd one out and explain why (display 3 shapes).	• What do you notice about 2D and 3D shapes? What is the same? What is different? • Which shape is the odd one out and why? • Relate solid shapes to pictures of them. • Describe similarities and differences of shape properties.. • Use question prompts to promote reasoning such as: convince me, describe/explain/justify/prove, show me…., how do you know?, same/different, what do you notice?
Problem Solving	• Identify different shapes in the environment.	• Identify shapes in a picture.	• Solve problems involving shape (e.g. continuing a sequence). • Visualise 3D shapes from 2D shapes and visa versa. • Sort shapes in a logical way.

Geometry (position and direction)

	Reception	Year 1	Year 2
EYFS (Reception)/National Curriculum Objectives (Years 1 and 2)	**Early Learning Goal** Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them	• Describe position, direction and movement, including whole, half, quarter and three-quarter turns.	• Order and arrange combinations of mathematical objects in patterns and sequences . • Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti- clockwise).
Cecil Gowing's Curriculum Coverage	• Talk about things which can turn. • Use vocabulary such as under, over, above, below, inside, outside, around, opposite, apart, between, centre, next to, through, along and beside. • Use programmable toys to develop direction language.	• Visualise and use everyday language to describe the position of objects and direction and distance when moving them (e.g. when placing or moving objects on a game board). • Recognise movements in a straight line and in rotations, combine them in simple ways (e.g. give instructions to get to the Head teacher's office or for rotating a programmable toy. • Talk about things which can turn. • Use vocabulary such as under, over, above, below, inside, outside, around, opposite, apart, between, centre, next to, through, along and beside.	• Recognise right angles in squares and rectangles. • Recognise and use whole turns. • Give instructions for moving along a route along straight lines and right angled corners.
Fluency	• Describe position of objects.	• Identify shapes with in a grid and recognise the position of each item (e.g. top, middle or bottom? Above or below?).	• Check that a right angle is a right angle using equipment.

		• Answer question about the position of the shape.	
Reasoning	• Explore and explain positional language within a play context e.g. the doll is behind the castle.	• Provide images of shape in a grid context: • *Sarah chooses a shape from the grid. You can ask her 4 questions to work out which shape she is thinking of. She can only answer 'Yes' or 'No'. Which 4 questions would you ask? Can you explain why? Could you ask a different set of questions?* • Decide whether the statements are true or false and explain your answers.	• Use the concept of angles to describe 'turn' by applying rotations. • Use question prompts to promote reasoning such as: convince me, describe/explain/justify/prove, show me…., how do you know?, same/different, what do you notice?
Problem Solving	• Use bee bots to solve problems e.g. what is the fewest steps to get the bee bot from the cave to the pond? • Explain thinking.	• Solve problems such as – Bill built a tower using 4 different coloured cubes. The red cube was below the green cube. The blue cube was above the yellow cube. Which was above the green cube? Which cube is on top? • Use these clues to colour the 4 squares. Blue is above green. Red is below yellow. Yellow is to the left of blue.	• Use a floor robot to solve problems including position and direction.

Statistics

	Reception	Year 1	Year 2
EYFS (Reception)/National Curriculum Objectives (Years 1 and 2)	**Early Learning Goal** Children count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.		• 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 totaling and comparing categorical data.
Cecil Gowing's Curriculum Coverage	• To match, group, sort and classify. • To begin to make marks to represent number. • Explore tally charts and block charts in an everyday context.	• Answer a question by recording information in lists and tables. • Present outcomes using practical resources, pictures, block graphs or pictograms. • Use diagrams to sort objects into groups according to a given criterion. • Suggest a different criterion for grouping the same objects.	• Be able to classify and organise information in simple ways. • Use lists, tables and diagrams to sort objects, explain choices using appropriate language, including not (Carroll diagram example, fruit/not fruit).
Fluency	• With support, interpret and construct simple tally charts, block diagrams and simple tables. • Use concrete and pictorial representations to display data.	• With support, interpret and construct simple pictograms, tally charts, block diagrams and simple tables. • Use concrete and pictorial representations to display data.	• Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. • Use concrete and pictorial representations to display data.
Reasoning	• Use mathematical vocabulary when explaining about charts and graphs. • Use question prompts to promote reasoning such as: convince me.	• Use mathematical vocabulary when explaining about charts and graphs. • Use question prompts to promote reasoning such as: convince me.	• Use mathematical vocabulary when explaining about charts and graphs. • Use question prompts to promote reasoning such as: convince me, describe/explain/justify/prove, show me…., how do you know?, same/different, what do you notice? • Recognise and reason why we need to collect data.

Problem Solving	• Answer a question related to class graphs. • Interpret data from lunchtime daily chart.	• Answer a question by sorting information, shapes or objects and displaying results using tables and pictures.	• Solve problems involving data.

Outdoor Learning Opportunities	*Activities such as…* Emergency services bike role play, climbing wall, habitats/maps, woodwork, treasure hunt, camp fire/cooking, gardening/maintenance, archery, woodland crowns, games in the woods, weather, art using natural materials, bug hunting and identification, mud kitchen potion making, bird feeders/watching, litter picking, pond dipping and den building.