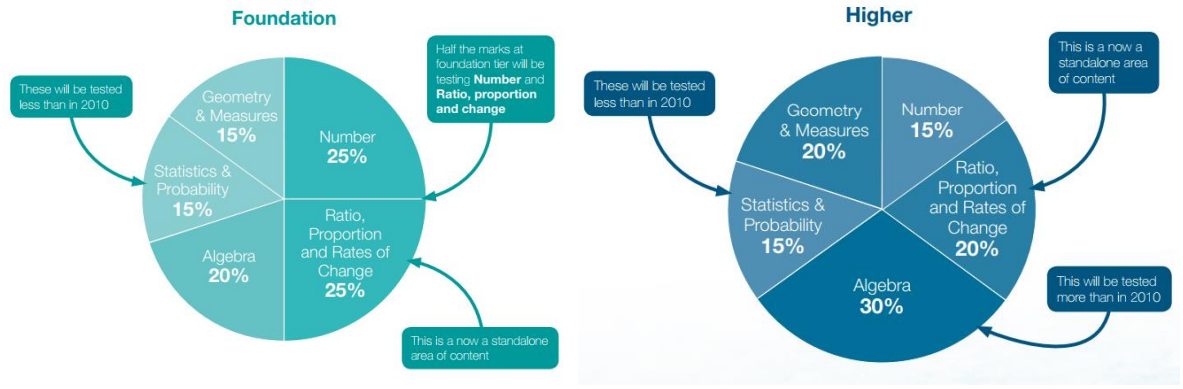
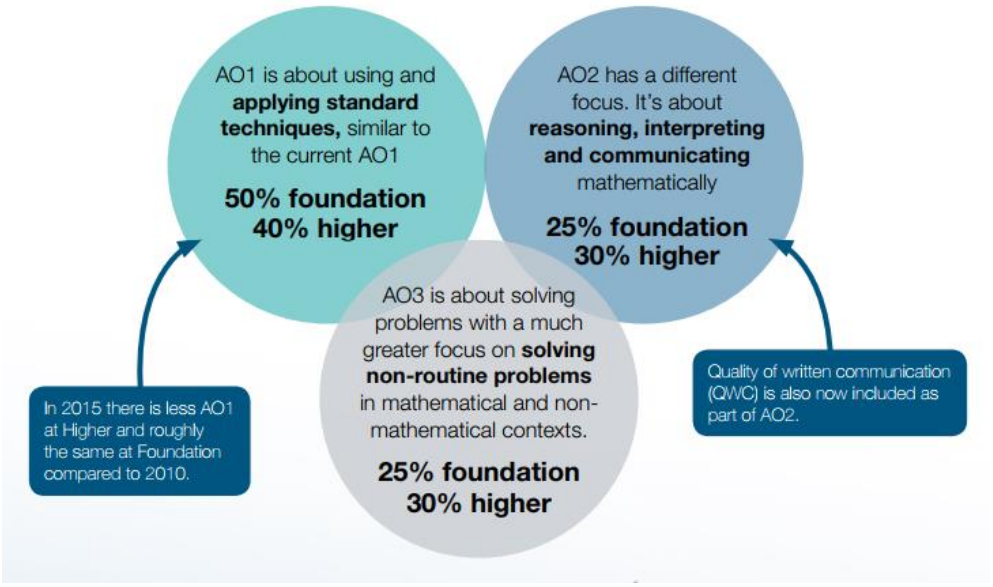
Cranbrook Education Campus

Curriculum Map - Mathematics

MATHEMATICS	
Degrees	Russell Group Universities' *Informed Choices* document describes how much Universities value mathematics skills for many different degree courses and many have GCSE or equivalent requirements. Mathematical and statistical problem solving, data analysis and interpretation skills can be useful for a wide variety of undergraduate degrees, and a Core Maths qualification may help you to improve and maintain these skills, especially if you are not taking AS or A-level Maths/Further Maths.
Jobs	Accountancy, Architect, Analyst, Bookkeeper, Economist, Engineer, Graphics Designer, Medicine and Forensics, Planner, Scientist, Software Developer, Stockbroker, Statistician, Teaching (Primary and Secondary)
Research	
Post 16 destinations	A-Level, IB Diploma, Apprenticeships

Part 1 - Edexcel Summary of the Mathematics GCSE





Part 2 – Mathematics Curriculum Map

The EdExcel Maths GCSE (Grades 9 – 1) consist of three 90-minute papers, each worth 80 marks. Each paper contains a random mix of all five examinable topics in the syllabus in the approximate proportions outlined in Part 1.

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Curriculum Map - Mathematics

As a result, it is not possible to specifically map any one part of the Scheme of Work below to any one exam, and therefore the only **red bold** items of text that are mentioned below are in Year 11 when pupils are preparing for their GCSE exams.

Year 11	Cycle 15
	Exams **Paper 1, Paper 2, Paper 3** Revision schedule continues as in Cycle 14 up to the final exams.
	Cycle 14 ca 12 weeks
	Revision **Paper 1, Paper 2, Paper 3** **AO: 1, 2, 3** Classes will be covering the GCSE content studied during KS4. Past papers once a week from half term and revision schedule as determined by class teacher. Topics to be covered and what depth will be determined on a class-by-class basis for both Higher and Foundation.
	Cycle 13 ca 15 weeks
	Higher **AO: 1, 2, 3** **Number/ RPRoC** – Applied reasoning questions involving profit/loss and compound interest , scaling ratios, direct and inverse proportion and complex measurements **Algebra / Geometry & Measure** – Graphs of trigonometric functions, further trigonometry including sine and cosine rule. Reciprocal and exponential graphs. Gradient and area under curves Foundation **AO: 1, 2, 3** **Number** – Fractions, decimals and percentages including applied reasoning questions such as profit/loss and compound interest **RPRoC** – Applied reasoning questions involving scaling ratios, direct and inverse proportion and complex measurements. **Algebra** – expanding, factorising and solving linear and quadratic expressions and equations **Geometry & Measure** – Applied reasoning questions involving compound areas, 2D and 3D shapes and constructions
	Cycle 12 ca 12 weeks
	Higher **AO: 1, 2, 3** **Number/ RPRoC** – Solving quadratic inequalities **Algebra** – equations relating to direct/inverse proportion. Solving quadratics by factorization and using the quadratic formula. Solving simultaneous equations. Graphs of circles, cubes and quadratics **Geometry & Measure** – Circle geometry, equations of tangents and normals. Vectors and geometric proofs Foundation **AO: 1, 2, 3** **Number** – fractions and reciprocals, indices and standard form **Geometry & Measure** – Constructions, Loci, bearings, similarity and congruence, vectors

Year 10	**Algebra** – quadratic expressions and algebraic graphs, rearranging equations, simultaneous equations
	Cycle 11 ca 12 weeks
	Higher **AO: 2, 3** **Number/ RPRoC** – Multiplicative reasoning including direct and inverse proportion, kinematic formula, density and pressure **Algebra** – Graphs of quadratic, cubic, reciprocal functions. **Geometry & Measure** – Enlargements including negative scale factors and combinations of the four basic transformations. Problems involving area and volume of circles, cylinders, cones and spheres. Circle Theorems. **Statistics & Probability** – conditional probabilities, Venn Diagrams Foundation **AO: 1, 2, 3** **Number/ RPRoC** – Multiplicative reasoning including percentages, compound measurements, currency conversions, profit and loss **Algebra** – Straight line graphs **Geometry & Measure** – Pythagoras Theorem, S. Area and volume of circles, cylinders, cones, and spheres, plans, elevations, nets **Statistics & Probability** – Tree Diagrams, relative frequency
	Cycle 10 ca 15 weeks
	Higher **AO: 1, 2, 3** **Algebra** – Rearranging formula including algebraic fractions and inverse of functions **Geometry & Measure** – Polygons and parallel lines, interior and exterior angles, coordinate geometry, real life graphs, Trigonometry, similarity and congruence in 3D **RPRoC** – Scale factors of enlargement involving both area and volume Foundation **AO: 1, 2, 3** **Algebra** – Solving one and two step equations, moving towards applied questions. **Geometry & Measure** – Polygons and parallel lines, interior and exterior angles, 3D shapes and volume, real life graphs **RPRoC** – Proportion, scaling up ratios, reflections and enlargements
Year 9	Cycle 9 ca 12 weeks
	Higher **AO: 1, 2, 3** **RPRoC** - Simplifying ratios, recipes, scaling up, currency conversions **Algebra** – forming and solving equations, rearranging formula **Geometry & Measure** – Constructions and bearings, **Statistics & Probability** – Averages of grouped data in frequency tables, stem and leaf diagrams, cumulative frequency, Foundation **AO: 1, 2,**

	RPRoC – Writing and simplifying ratios **Algebra** – Substitution into formula, expanding and factorizing single brackets **Number** – Percentages of amounts **Geometry & Measure** – Rotations and translations **Statistics & Probability** – Calculating the averages, questionnaires
	Cycle 8 ca 12 weeks
	Higher **AO: 1, 2, 3** **Number** – operations with Mixed numbers, recurring decimals to fractions, inequalities, bounds and error intervals, simplifying surds, percentage profit and loss, reverse percentages **Statistics & Probability** - Sampling and questionnaires, histograms, frequency polygons, scatter graphs **Geometry & Measure –** Compound area and perimeters, volume and surface area of prisms, Foundation **AO: 1, 2** **Number** – Inequalities, FDP conversions **RPRoC** - Telling the time, time differences **Statistics & Probability** - Two way tables, Pie Charts, Stem and Leaf, probabilities from frequency tables **Geometry & Measure** - Angle facts, parallel and perpendicular, Perimeter and area,
	Cycle 7 ca 15 weeks
	Higher **AO: 1, 2, 3** **Number –** Operations involving decimals, rounding and estimation. Indices, roots and reciprocals, factors, multiples and primes **Algebra -** Simplifying and factorising both linear and quadratic expressions, n^{th} term of linear and quadratic sequences including some geometric sequences. Foundation **AO: 1, 2** **Number -** Integers and place value, decimals, indices, powers roots, factors, multiples and primes, fractions **Algebra -** Writing and simplifying expressions, n^{th} term of sequences
Year 8	Cycle 6 ca 12 weeks
	Higher **AO: 1, 2** **Algebra** – Pythagoras' Theorem **RPRoC** – Simplifying ratios, converting between ratio and FDP. Solving problems with proportional reasoning. Real life graphs including distance time and conversions **Geometry & Measure** – Circles and cylinders, basic transformations and identifying congruency. Calculating scale factors. Plans and elevations and introduction to constructions. Foundation **AO: 1, 2** **Number** – Fractions and percentages of amounts **RPRoC** – Introduction to ratio and proportion. Real life graphs including distance time and conversions **Geometry & Measure** – Area and perimeter of basic and compound polygons. Basic transformations. Calculating scale factors. Plans, elevations and bearings. Introduction to 3D shapes including nets and surface area.

	Cycle 5 ca 12 weeks
	Higher **AO: 1,2** **Number** – Inequalities, solving up to three step **Algebra** – Solving equations up to simultaneous equations. Rearranging formula introduction. **RPRoC** - **Statistics & Probability** - **Geometry & Measure** – Angle facts including parallel lines and in polygons. Construction of triangles and bisectors recap, plus introduction of basic loci. Foundation **AO: 1, 2** **Number** – Simplifying, ordering and operations with fractions. Converting FDP. **Algebra** – Substitution, solving up to two step equations, expanding brackets and simplifying expressions **Statistics & Probability** – Expressing probabilities as FDP, sample space diagrams, experimental probability. Plotting and interpreting graphs **Geometry & Measure** – Angle facts including line, point and triangle. Constructing angles and triangles.
	Cycle 4 ca 15 weeks
	Higher **AO: 1, 2** **Number** – Indices and standard form, prime factor decomposition, rounding and estimating. Operations with decimals and negative numbers. Generating linear sequences including from diagrams **Algebra** – Finding the nth term formula of linear sequences, expanding expressions up to quadratic, solving up to three step including fractions **RPRoC** - **Statistics & Probability** – Questionnaires and averages from frequency tables. Scatter diagrams **Geometry & Measure** – Constructing prisms. Introduction to Pythagoras. Metric unit conversions. Foundation **AO: 1, 2** **Number** – Basic practice with four operations and with negative numbers, rounding, order of operations. Factors, multiples and primes. Extending and describing sequences. Using term-to-term rules. **Algebra** – Function machines. Solving up to two step equations, substitution into expressions. Basic nth term formula of sequences **Statistics & Probability** - Questionnaires and averages from raw data. Bar Charts and Pie Charts **Geometry & Measure** – Area and perimeter of basic and compound shapes. Metric measurement and unit conversions.
Year 7	Cycle 3 ca 12 weeks
	Higher **AO: 1, 2** **Number** – ordering FDP, fractions and percentages of amounts. Intro to recurring decimals. Introduction to sequences, extending number sequences and with diagrams.

	Algebra – Finding the nth term of linear sequences **RPRoC** – Writing and simplifying ratios, basic introduction to proportion including solving simple problems **Statistics & Probability** – Calculating probabilities including using sample space and venn diagrams. Interpreting diagrams, questionnaires and collecting data. Drawing Pie Charts **Geometry & Measure** – Combinations of angle facts, angles in polygons and facts involving parallel lines. Four basic transformations. Constructing triangles and bisectors. Foundation **AO: 1** **Number** – FDP conversions, basic percentages of amounts. Introduction to sequences, extending number sequences and with diagrams. **Algebra** – Finding the nth term of linear sequences **RPRoC** – Writing and simplifying ratios, introduction to proportion problems **Statistics & Probability** – Writing probabilities as FDP, introduction to sample space diagrams and experimental probability. Interpreting diagrams, questionnaires and collecting data. Drawing Bar Charts **Geometry & Measure** – Basic angle facts including straight line, in a triangle and about a point. Basic transformations including translation, reflection, enlargement and rotation
	Cycle 2 ca 12 weeks
	Higher **AO: 1,2** **Number** – Operations with decimals and order of operations, Factors and multiples including HCF and LCM, prime factor decomposition, fractions **Algebra** – Expanding single and double brackets, factorising single brackets. Simplifying algebraic fractions, substitution and solving up to three step equations. Equation of straight line graphs. **Statistics & Probability** – Calculating the averages and spread. Drawing Bar charts, line graphs and pie charts. **Geometry & Measure** – Angle facts and combining facts to solve problem. Plotting straight line graphs, finding the gradient. Area and perimeter of complex shapes, introduction to circles, nets, surface area and volume. Foundation **AO: 1** **Number** – Order of operations, including with decimal answers. Simplifying, equivalent and adding fractions, mixed numbers to improper fractions. Operations with negative numbers **Algebra** – Substitution, solving up to two step equations, expanding linear expressions **Statistics & Probability** – Calculating the mean, median, mode and range. Drawing bar charts and line graphs. **Geometry & Measure** – Drawing and naming angles, introduction to angle facts. Constructing triangles. Plotting straight line graphs, identifying the gradient and y-intercept. Area and perimeter of both basic and compound shapes
	Cycle 1 ca 15 weeks
	Higher **AO: 1**

	Number – Place value and basic methods of calculation, including with decimal answers. Rounding. Equivalent and simplifying fractions, adding with the same and different denominators. Converting between FDP. Understanding mixed numbers and ordering. Ordering and operations with negative numbers. **Algebra** – Introduction to algebra, expanding and simplifying brackets. Collecting like terms. Substitution. Solving up to two step equations. **RPRoC** – Time differences and understanding timetables **Statistics & Probability** – Terminology and basic introduction to probability, probability as fractions. Sample space diagrams and experimental probability. **Geometry & Measure** – Area and perimeter of basic and compound shapes. Units of measurement, metric conversions. Foundation **AO: 1** **Number** – Place value and basic methods of calculation. Simplifying fractions and ordering both fractions and decimals. Rounding. Ordering and operations with negative numbers. Ordering fractions and decimals and converting between. **Algebra** – Introduction to algebra including function machines, writing expressions, collecting like terms, substitution and solving up to one step equations **RPRoC** – Telling the time and elapsed time. Understanding simple timetables. **Statistics & Probability** – Introduction to probability including terminology and writing as fractions. Basic experimental probability. **Geometry & Measure** – Units of measurement, metric conversion.
Year 6	**Place value**- read, write, order and compare up to 10,000,000, round any whole number, use negative numbers in context. Solve place value problems. **Four operations-** multiply numbers up to 4 digits by a 2 digit whole number using long multiplication. Divide numbers up to 4 digits by a 2 digit number using long division and interpret remainders, use short division where appropriate. Perform mental calculations with mixed operations and large numbers. Identify common multiples and prime numbers, use knowledge of the order of operations to carry out calculations involving 4 operations. Solve addition, subtraction, multiplication and division multi-step problems. **Fractions, decimals and percentages**- use common factors to simplify fractions, compare and order fractions, add and subtract fractions with different denominators and mixed numbers using concept of equivalent fractions. Multiple simple pairs of proper fractions. Divide proper fractions by whole numbers. Recall and use equivalences between simple fractions, decimals and percentages, solve problems involving the calculation of percentages and use percentages for comparison. Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. **Algebra-** 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. **Converting units-** use read, write and covert between standard units, length, mass, volume and time from a smaller unit of measure to a larger and vice versa. Convert between miles and kilometres. **Perimeter, area and volume**- 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. **Shape-** Draw 2D shapes using given dimensions and angles, recognise, describe and build simple 3D shapes. Compare and classify geometric shapes base on their properties and find unknown angles. Illustrate and name parts of circles, recognise

	angles where they meet at a point, on a straight line or vertically opposite and find missing angles. **Position**- describe positions on full coordinate grid, draw and translate simple shapes.
Year 5	**Place value-** read, write order and compare numbers to at least 1,000,000 and determine value of each digit, count forwards and back in steps of powers of 10 for any given number, interpret negative numbers in context, count forwards and back with positive and negative whole numbers. Round any number up to 1,000,000 to nearest 10,100, 1000,10,000 and 100,000. Read Roman numerals to 1,000 and recognise years. **Addition and subtraction-** add and subtract whole numbers with more than 4 digits using formal written (columnar addition and subtraction.) add and subtract numbers mentally, use rounding to check answers. Solve addition and subtraction multi-step problems. **Multiplication and division-** identify multiples and factors, know and use knowledge of prime numbers, prime factors and composite numbers, establish whether a number up to 100 is prime and recall prime numbers to 19. Multiply numbers up to 4 digits by a one or two digit number using a formal method including long multiplication. Multiply and divide mentally, divide up to 4 digit numbers by 1 number using formal method of short division and interpret remainders appropriately. Multiply and divide whole numbers and those involving decimals by 10,100 and 1,000. Recognise and use square and cube numbers and the notation. **Fractions, decimals and percentages-** Compare and order fractions whose denominators are 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 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, read and write decimals as fractions, round decimals with 2 decimal places to nearest whole number and 1 decimal place. Read, write, order and compare numbers with up to 3 decimal places. Recognise the percent symbols and write percentages as a fraction and as a decimal fraction. **Converting units and measures-** convert between different units of metric measure, understand and use approximate equivalences between metric and imperial units. **Perimeter, area and volume-** Measure and calculate perimeter of shapes in cm and m. calculate and compare the area of rectangles using standard units, estimate volume and capacity, solve problems involving converting between units of time, use all four operations to solve problems involving measure. **Shape-** identify 3D shapes from 2D representations. Know angles are measured in degrees, estimate and compare acute, obtuse and reflex, draw angles and measure in degrees, identify angles at a point and 1 whole turn, at a point on a straight line and half turn, other multiples of 90. Identify, describe and represent position of a shape following reflection or translation, solve comparison, sum and difference problems in a line graph.
YEAR 4	**Place value**- count in multiples of 6,7,9,25 and 100. Find 1000 more or less than a given number, count backwards through 0. Recognise the place value of each digit in a 4 digit number, order and compare numbers beyond 1,000. Identify, represent and estimate numbers using different representations, round any number to nearest 10,100 or 1000. Read Roman numerals to 100.

	Addition and subtraction- add and subtract numbers with up to 4 digits using formal written of columnar addition and subtraction where appropriate. Estimate and use inverse operations to check. Solve addition and subtraction 2 step problems in contexts. **Multiplication and division**- recall multiplication and division facts for multiplication tables up to 12x12. Use place value, know facts to multiply and divide mentally. Recognise and use factor pairs and commutativity in mental calculations. Multiply 2 and 3 digit numbers by a 1 digit number using formal written layout. **Decimals, fractions and percentages**- recognise and show using diagrams families of common equivalent fractions, count up and down in hundredths. Solve problems involving harder fractions to calculate quantities and fractions to divide quantities. 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 ¼,1/2,3/4. Round decimals with 1 decimal place to nearest whole number, Compare numbers with the same number of decimal places up to 2 decimal places, Solve simple measures or money problems involving fractions and decimals. **Converting units and measures-** convert between different units of measure e.g. km to m hour to min.) Estimate, compare and calculate different measures including money. Read, write and convert time between analogue and digital, solve problems converting hours to minutes, min to seconds, years to months, months to days. **Perimeter, area and volume-** measure and calculate the perimeter of a rectilinear figure in cm and m, find the area by counting squares. **Shape and data handling-** compare and classify geometric shapes based on properties and size, identify acute and obtuse angles and compare and order angles up to 2 right angles by size. Identify lines of symmetry in 2d shapes presented in different orientations, complete a simple symmetric figure, describe positions on a grid as coordinates, describe movements between positions as translations of a given unit to left/right, up/down. Plot specified points and draw sides to complete a polygon. Interpret and present discrete and continuous data including bar charts and time graphs, solve comparison, sum and difference problems using information presented in charts and graphs.
YEAR 3	**Place Value** 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 **Addition and subtraction** 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 **Multiplication and Division** 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. **Decimals, fractions and percentages** 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, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$] Compare and order unit fractions, and fractions with the same denominators **Converting units and measures:** 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] **Shape and Data handling :** 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. interpret and present data using bar charts, pictograms and tables. Solve one-step and two-step questions [for example 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables
Year 2	**Place Value** 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. Read and write numbers to at least 100 in numerals and in words. Use place value and number facts to solve problems. **Addition and Subtraction:** 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. **Multiplication and Division:** 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.

	Fractions: Recognise, find, name and write fractions half, quarters, third of a length, shape, set of objects or quantity. Write simple fractions and recognise the equivalence of 2 quarters and 1 half. **Measures**: 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 **Shape** 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. Order and arrange combinations of mathematical objects in patterns and sequences **Position and data handling:** use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise). 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.
Year 1	**Place Value:** 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. **Addition and subtraction**: 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. **Multiplication and Division**: Pupils should 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. **Fractions and measures:** 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. 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, 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. **Shape:** recognise and name common 2-D and 3-D shapes, describe position, direction and movement, including whole, half, quarter and three quarter turns.
Reception 40-60months ELG	<u>Mathematics : Numbers</u> • Recognise some numerals of personal significance. • Recognises numerals 1 to 5. • Counts up to three or four objects by saying one number name for each item. • Counts actions or objects which cannot be moved. • Counts objects to 10, and beginning to count beyond 10. • Counts out up to six objects from a larger group. • Selects the correct numeral to represent 1 to 5, then 1 to 10 objects. • Counts an irregular arrangement of up to ten objects. • Estimates how many objects they can see and checks by counting them. • Uses the language of 'more' and 'fewer' to compare two sets of objects. • Finds the total number of items in two groups by counting all of them. • Says the number that is one more than a given number. • 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. ELG—Children count reliably with numbers from one 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. <u>Mathematics : Shape,SpaceandMeasures</u> • Beginning to use mathematical names for 'solid' 3D shapes and 'flat' 2D shapes, and mathematical terms to describe shapes. • Selects a particular named shape. • Can describe their relative position such as 'behind' or 'next to'. • Orders two or three items by length or height. • Orders two items by weight or capacity. • Uses familiar objects and common shapes to create and recreate patterns and build models. • Uses everyday language related to time. • Beginning to use everyday language related to money. • Orders and sequences familiar events. • Measures short periods of time in simple ways. ELG—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.