Year 7	1	2	3	4	5	6
Pathway	Whole numbers and decimals	Measures, Perimeter and Area	Expressions and Formulae	Fractions, Decimals and Percentages	Angles and 2D shapes	Graphs
A	• Round numbers to a given number of significant figures. • Use rounding to make estimates. • Find the upper and lower bounds of a calculation or measurement. • Use prime factors to find the HCF and LCM of pairs of numbers.	• Convert between metric and imperial units. • Understand whether a formula represents a length, area or volume. • Calculate the perimeter and area of 2D shapes. • Understand and use compound measures.	• Know and use the index laws. • Multiply brackets in two linear expressions. • Factorise expressions by taking common factors. • Derive simple identities, including expansion of two linear brackets. • Derive formulae and substitute values in formulae. • Change the subject of a formula.	• Add, subtract, multiply and divide fractions. • Convert decimals to fractions and fractions to decimals. • Find reciprocals. • Find percentage increases and decreases. • Solve percentage problems using a decimal multiplier. • Calculate a repeated percentage increase and decrease.	• Know and use angle facts for triangles and parallel lines. • Know and use properties of quadrilaterals and regular polygons. • Calculate interior and exterior angles • of polygons. • Use congruence.	• Plot graphs of linear functions and find gradients. • Find the equation of straight-line graphs. • Recognise and plot graphs of simple quadratic functions. • Recognise and plot graphs of cubic functions. • Plot and interpret distance-time graphs. • Plot and interpret real-life and time series graphs. • Read and interpret exponential and reciprocal graphs.
B	• Multiply and divide numbers by powers of 10. • Use index notation for integer powers. • Round numbers to decimal places and significant figures. • Use prime factors to find the HCF and LCM of pairs of numbers. • Use rounding to make estimates.	• Convert between metric units. • Convert between metric and imperial units. • Calculate the area of a 2D shape. • Calculate the circumference and area of a circle. • Recognise and use compound measures.	• Factorise expressions using brackets. • Simplify algebraic expressions. • Substitute values in formulae to find unknown variables. • Change the subject of a formula. • Derive and graph formulae.	• Add and subtract fractions. • Multiply and divide fractions. • Convert between decimals and fractions. • Calculate percentage changes. • Solve problems involving percentages.	• Know and use angle facts for triangles and parallel lines. • Know and use properties of quadrilaterals and regular polygons. • Calculate interior and exterior angles • of polygons. • Use congruence.	• Use a table of values to draw a straight-line graph. • Recognise the equations of simple straight-line graphs. • Relate gradient and y-intercept to the general equation y = mx + c. • Draw and interpret real-life graphs.
C	• Order and compare decimals. • Add, subtract, multiply and divide integers. • Recognise and use multiples and factors. • Use divisibility tests. • Find the prime factor decomposition of a number. • Find the lowest	• Use appropriate units to measure length, mass and capacity and convert between metric units. • Know rough metric equivalents to imperial units. • Read and interpret scales. • Calculate the	• Simplify algebraic expressions. • Substitute into simple algebraic expressions. • Use indices to simplify expressions and simplify by collecting like terms. • Expand brackets. • Substitute into formulae.	• Understand, compare and order decimals. • Convert between decimals, fractions and percentages. • Order fractions. • Add and subtract fractions. • Find a fraction of a quantity. • Express one number as	• Work with angles at a point and on a line. • Work with angles in a triangle. • Work with angles on parallel and intersecting lines. • Recognise quadrilaterals and know their properties.	• Draw a straight-line graph of a function. • Recognise the equations of sloping lines and lines parallel to the axes. • Interpret and draw real life graphs. • Construct and interpret simple line graphs for time series.

	common multiple and highest common factor of two numbers. • Recognise and use cube and square numbers, cube and square roots.	perimeter and area of a rectangle. • Calculate the area of a triangle. • Calculate the area of a parallelogram and a trapezium.	• Construct a formula for different situations.	a fraction of another. • Calculate percentages of amounts. • Express one number as a percentage of another.	• Know and use some properties of polygons. • Recognise congruent shapes.	
T	• Write numbers in words and figures. • Arrange decimal numbers in order. • Multiply and divide by 10, 100 and 1000. • Add and subtract using mental, written and calculator methods. • Compare and order whole numbers • Use place value and decimal notation in different contexts, including money • Add decimals using mental and written methods • Understand and order negative numbers in the context of temperature • Round a number to the nearest 10, 100 or 1000 • Use an estimate to check a result • Use the order of operations	• Read a scale on a measuring instrument • Convert between metric units • Calculate perimeters • Calculate areas of rectangles and shapes made from rectangles. • Calculate areas of triangles. • Calculate areas of parallelograms. • Measure lengths in centimetres and millimetres • Read and interpret scales in different contexts, including time • Classify 2D shapes by their properties • Calculate the perimeter of simple shapes • Calculate or estimate the area of a shape by counting squares • Select and use standard metric units of measure	• Use letters to stand for unknown values. • Simplify an expression. • Use a formula. • Write a formula. • Use letter symbols to represent unknown numbers • Simplify algebraic expressions by collecting like terms • Substitute whole numbers into expressions and formulae • Derive a simple formula	• Use fraction to describe parts of a whole. • Simplify fractions and find equivalent fractions. • Add and subtract fractions. • Find a fraction of a quantity. • Change between percentages, fractions and decimals. • Find a percentage of a quantity. • Use fractions to describe parts of a whole, including improper fractions • Identify equivalent fractions • Find fractions of a quantity • Calculate simple percentages, including in the context of money • Express a proportion as a fraction, a decimal or a percentage	• Recognise and name the different types of angle. • Measure and draw angles to the nearest degree and lines to the nearest mm. • Use angle facts to work out unknown angles. • Recognise and name the different types of triangle. • Recognise and name the different types of quadrilateral. • Draw shapes accurately using a ruler and protractor. • Estimate angles and use a protractor to measure them • Distinguish between acute, obtuse and reflex angles • Know the sum of angles at a point, on a straight line and in a triangle • Classify triangles by their properties • Understand and use the points of a compass	• Read and plot coordinates in four quadrants. • Use a formula to complete a table of values. • Plot points from a table of values. • Draw a graph and use it to estimate an unknown value. • Identify and plot coordinates in all four quadrants • Construct and interpret line graphs in context

Year 8	7	8	9	10	11	12
Pathway	Calculations	Statistics	Transformations	Equations	Number	Constructions
A	• Add and subtract decimals. • Multiply and divide decimals. • Use a calculator for complex calculations.	• Draw a frequency polygon. • Find trends using moving averages. • Estimate the mean from a grouped frequency table. • Interpret a scatter diagram. • Draw and use a cumulative frequency graph. • Compare distributions. • Use box plots to make comparisons between data sets.	• Reflect, rotate and translate 2D shapes. • Enlarge 2D shapes using positive and negative scale factors. • Use and interpret maps and scale drawings. • Calculate unknown lengths in similar shapes.	• Solve linear equations with brackets and algebraic fractions. • Solve simultaneous equations by elimination. • Solve simultaneous equations by drawing graphs. • Solve linear inequalities with one variable. • Find approximate solutions to equations using trial-and-improvement.	• Write numbers in standard form. • Calculate with standard form. • Know and use the index laws. • Know and use rules for surds. • Use index notation for square and cube roots.	• Understand and use Pythagoras' theorem. • Use Pythagoras' theorem in real-life contexts. • Construct a triangle with ruler and compasses. • Draw the locus of a point from a given rule.
B	• Consolidate mental and written strategies for addition and subtraction of decimals. • Consolidate mental and written strategies for multiplication and division of decimals. • Know and use the correct order of operations. • Use the function keys on a calculator and interpret the calculator display.	• Organise data into frequency tables. • Interpret statistical diagrams. • Plot and analyse time-series graphs. • Estimate averages from grouped tables. • Make comparisons between sets of data.	• Reflect, rotate and translate 2D shapes. • Enlarge a 2D shape using a given centre of enlargement. • Use maps and scale drawings. • Use bearings to specify direction. •	• Solve equations, including with brackets and fractions. • Create your own equations and solve them. • Use trial and improvement to solve equations.	• Find square roots. • Find cube roots. • Use the rules of indices. • Simplify surds. • Convert to and from standard index form.	• Know how to construct ASA, SAS, SSS and RHS triangles, bisectors and perpendiculars. • Find and describe loci. • Use Pythagoras' theorem to solve problems involving right-angled triangles.
C	• Round numbers. • Use a range of mental strategies for addition and subtraction. • Multiply and divide by 10, 100 and 1000, and 0.1 and 0.01. • Use a range of mental strategies for multiplication and division.	• Identify and collect data. • Construct pie charts. • Construct bar charts and frequency diagrams. • Calculate statistics for sets of discrete and continuous data. • Construct scatter diagrams and	• Reflect, rotate and translate 2D shapes. • Transform 2D shapes using combinations of transformations. • Recognise reflection and rotation symmetry. • Enlarge a 2D shape.	• Solve simple, one-step equations. • Solve multi-step equations including with the unknown on both sides. • Solve equations including with brackets. • Solve real life equations.	• Use standard written methods for addition, subtraction, multiplication and division. • Use the order of operations. • Solve problems using standard methods for addition, subtraction, multiplication and	• Construct triangles and quadrilaterals accurately. • Construct angle bisectors, perpendicular bisectors and perpendicular lines. • Describe the locus of a point and draw it accurately.

						division.	• Use scale drawings to represent real life objects. • Use bearings to specify direction.
T	• Round numbers to the nearest 1000, 100, 10, integer or tenth (1 dp). • Evaluate expressions using the correct order of operations. • Do multiplication and division calculations using mental methods. • Do multiplication using a standard written method. • Do short and long division using a standard written method. • Use a calculator to work out more complex expressions. • Strengthen and extend mental methods of addition and subtraction • Use efficient written methods to add and subtract whole numbers	• Understand and draw different types of bar chart. • Understand pie charts. • Understand and draw line graphs. • Calculate averages and the range. • Criticise questionnaires. • Use tally charts to draw frequency tables. • Compare sets of data. • Plan how to collect and organise small sets of data from surveys and experiments • Solve problems by interpreting data in lists and tables • Construct and interpret statistical diagrams, including pictograms and bar charts • Calculate statistics for small sets of data, including the mode, median and range	• Reflect shapes in a mirror line. • Rotate shapes, about a point. • Recognise and describe reflection symmetry and rotation symmetry. • Recognise and describe translations. • Tessellate shapes. • Identify line symmetry in a 2D shape • Transform a shape by reflection in a mirror line • Transform a shape by translation • Transform a shape by rotation about a point	• Multiply and divide numbers and letters in algebra. • Solve an equation by adding or subtracting on both sides. • Solve an equation by multiplying or dividing on both sides. • Solve two-step equations. • Represent operations in a flow chart • Understand and use the rules of arithmetic and inverse operations • Use letter symbols to represent unknown numbers • Construct and solve simple equations	• Find factors and multiples of a number. • Find squares and square roots. • Recognise prime numbers. • Find the LCM and HCF of a pair of numbers. • Recognise and use multiples and factors • Use simple tests of divisibility • Recognise the squares of numbers to 10 × 10	• Draw triangles and quadrilaterals accurately using a ruler and protractor. • Use and construct scale drawings. • Name various 3D shapes and describe them by their vertices, faces and edges. • Use isometric paper to draw a 3D shape. • Find the surface area and volume of a 3D shape made from centimetre cubes. • Recognise and name common 3D shapes • Use 2D representations to visualise 3D shapes • Construct simple nets of 3D shapes • Use a protractor to measure and draw angles • Use a ruler and protractor to construct a triangle • Know the parts of a circle

Year 9	13	14	15	16	GCSE	CGSE
Pathway	Sequences	3D solids	Ratio and Proportion	Probability		
A	• Find a position-to-term (nth) rule for a linear sequence. • Find a position-to-term (nth) rule for a quadratic sequence. • Explore triangular and square numbers. • Explore the long-term behaviour of a sequence defined recursively.	• Classify 3D shapes by their properties and draw 2D representations. • Calculate the surface area and volume of a prism. • Use Pythagoras' theorem in three dimensions. • Use sine, cosine and tangent to find lengths and angles in right-angled triangles. • Use trigonometry in calculations with bearings.	• Describe proportion using fraction notation. • Calculate fractional change. • Solve problems involving ratio. • Solve problems using direct proportion and scale factors. • Interpret maps and scale drawings. • Solve problems involving proportional reasoning, including financial problems.	• Evaluate uncertainty and risk in real situations. • Calculate probabilities for independent events. • Calculate probabilities using a tree diagram. • Calculate probabilities for mutually exclusive events. • Calculate probabilities from experimental data. • Use random numbers to model a situation. • Calculate probabilities using a Venn diagram.	•	•
B	• Find the term-to-term rule for a sequence. • Find the position-to-term rule for a sequence, and write it as the nth term. • Use sequences to solve problems in practical situations. • Generate sequences using a recursive formula.	• Recognise 3D shapes. • Draw the plan and elevation of a 3D solid. • Identify planes of symmetry. • Calculate the surface area of a prism, and draw its net. • Calculate the volume of a prism.	• Solve problems involving direct proportion. • Use percentages to compare proportions. • Calculate with ratios, including dividing quantities in a given ratio. • Solve problems involving ratio. • Calculate a percentage increase or decrease.	• Generate sample spaces for events and use these to calculate probabilities. • Understand that the probabilities of all possible outcomes sum to 1. • Analyse the frequency of outcomes of simple probability experiments. • Enumerate sets using Venn diagrams.	•	•
C	• Find and use the term-to-term rule in a sequence. • Find and use the position-to-term rule in a sequence. • Use sequences in context and in real life. • Recognise and describe geometric sequences.	• Recognise and name 3D solids and recognise their nets. • Use isometric paper and draw plans and elevations of 3D shapes. • Calculate the surface area and volume of cuboids. • Calculate the volume	• Simplify and use ratios including dividing a quantity in a given ratio. • Solve problems involving direct proportion. • Understand and use the relationship between ratio and proportion.	• Use diagrams and tables to record mutually exclusive outcomes. • Find probabilities based on equally likely outcomes. • Calculate the probability that an event does not occur from the probability	•	•

		• of a prism.	• Calculate a percentage of an amount. • Calculate a percentage increase or decrease. • Use fractions, decimals and percentages to compare simple proportions and solve problems.	that it does occur. • Estimate probabilities by collecting data from an experiment. • Compare experimental probabilities with theoretical probabilities. • Use the language of sets and use sets to calculate probabilities.		
T	• Continue a sequence of numbers. • Use a rule to find the numbers of a sequence. • Find a rule to describe a sequence of numbers. • Generate sequences from patterns of shapes. • Generate terms of a sequence given a rule • Describe a sequence using a rule to find the next term	• Use mental methods to multiply and divide decimal numbers. • Use a standard method to multiply a decimal number. • Use a standard written method to divide a decimal number. • Use a calculator for calculations. • Interpret the answer given on a calculator. • Consolidate multiplication facts to 10 × 10 • Multiply by 10 and 100 • Multiply and divide whole numbers using mental methods • Multiply and divide whole numbers using efficient written methods • Use a calculator and interpret the display in different contexts, including money	• Write a proportion as a fraction or percentage. • Increase or decrease two quantities using direct proportion. • Use ratio to compare two quantities. • Use ratio and proportion to solve problems. • Use ratio notation • Solve simple problems involving ratio and proportion, including in the context of money • Construct and interpret scale drawings, using ratio notation	• Use the scale 0 to 1 for placing probabilities. • Use words to describe different probabilities. • Know the meaning of the words trial, outcome and event. • Use equally likely outcomes to find a theoretical probability. • Use an experiment to estimate an experimental probability. • Identify a set and use a Venn diagram. • Use the vocabulary and ideas of probability, drawing on experience • Understand and use the probability scale from 0 to 1 • Sort objects using a Venn diagram	•	•