

	<b>Year 7</b>					
<b>A Calculations</b>	Add and subtract proper fractions and mixed numbers with different denominators and be able to predict if the answer will be greater or less than a whole. Multiply and fractions and hence decimals by changing them to their fraction equivalence first. Calculate a percentage of a quantity and solve simple interest problems.					
<b>B Number System</b>	Order positive and negatives fractions and decimals. Convert between fractions, decimals and percentages. Round numbers to 2 decimal places and 1 significant figure.					
<b>C Indices</b>	Use index laws with numerical and algebraic expressions involving multiplication and division of integer powers. Express a number as a product of its prime factors. Derive a formula from words or function machine and in simple cases, change its subject.					
<b>D Equations and Formulae</b>	Manipulate algebraic expressions by expanding, simplifying and basic linear factorising. Solve two step linear equations and inequalities with integer coefficients with the unknown on one side and check by substitution. <b>Understand the difference between expressions, equations, formulae and identities.</b>					
<b>E Proportion</b>	Understand and use the unitary method and common multiples when solving problems involving direct proportion. Simplify a ratio and write in the form 1:n or n:1. Interpret scales and maps using ratio. Express a ratio as a fraction of a whole and use this to share in a given ratio.					
<b>F Mensuration</b>	Know and use formulae for area and perimeter of common triangles and quadrilaterals. Find volumes of shapes made from cuboids.					
<b>G Graphs and Sequences</b>	Use the nth term to generate a linear, quadratic sequence, including triangular numbers, geometric and cubic functions. Plot simple linear, quadratic and cubic functions. Use the x, or y, coordinates of a given graph to calculate the corresponding y or x coordinate, graphically or through substitution.					
<b>H Transformations</b>	Understand congruence in the context of reflections and rotations. Reflect a shape in a named line. Rotate a shape given the coordinate, angle and direction of rotation.					
<b>I Angles</b>	Calculate and use the sums of the interior and exterior angles of quadrilaterals, pentagons and hexagons. Identify and calculate missing angles using alternate, corresponding co-interior angles of parallel lines.					
<b>J Probability</b>	Understand and use frequency trees.					
<b>K Handling Data</b>	Calculate, use and interpret the statistical measures mode, median, mean and range for discrete data, including comparing distributions. Interpret graphs representing real data, including pie charts and recognise misleading diagrams.					
<b>L Constructions</b>	Construct triangles using a ruler and protractor only given information about their sides and angles; Construct nets of 3D shapes.					
	Know	Use	Apply	Problem Solve	Reason	

	<b>Year 8</b>				
A Calculations	Increase and decrease a number by a % using a decimal or fraction multiplier. Solve problems involving calculating with negative numbers. Identify the reciprocal of an integer, fraction or decimal. Divide fractions using the reciprocals. Divide decimals by converting to equivalent fractions and simplifying.				
B Number System	Use the equivalence of $\times 0.1$ and $\div 10$ , $\times 0.01$ and $\div 100$ etc. to multiply and divide by powers of 10. Use rounding and approximation to estimate the answer to decimal calculations. Use the answer to a given calculation to determine the answer to another.				
C Indices	Use prime factorisation to derive square and cube roots of larger numbers. Use and understand prime decomposition for LCM and HCF. Write functions from words and diagrams using algebraic notation and substitute in positive and negative integers, fractions and decimals. Rearrange formulae expressed in algebraic form where the subject appears only once.				
D Equations and Formulae	Expand the product of two linear expressions and simplify. Factorise quadratic expressions by identifying a single term common factor. Form and solve fractional equations and equations with unknowns on both sides using balancing correctly.				
E Proportion	Use equality of ratios to solve problems. Represent ratios as linear equations and draw their graphs. Understand and use fractions, decimals and percentages as multipliers when calculating the original amount after a % change. Link improper fractions to percentage change.				
F Mensuration	Derive, recall and use formulae for area and circumference of circles and parts of circles, using pi in exact calculations. Use compound measures such as speed and density. Use and apply knowledge to interpret distance time graphs.				
G Graphs and Sequences	Find the nth term for linear sequences and find terms in oscillating sequences. Understand $y = mx + c$ represents a straight line and the effects of changing m and c, including interpreting the gradient as a rate of change and the y intercept as the starting value in a real life graph. <b>Use the intersection of graphs to solve linear simultaneous equations.</b>				
H Transformations	Understand congruence in the context of translations. Translate shapes by a given column vector and describe translations using vector notation. Recognise, visualise and construct enlargements using positive and <b>fractional scale factors; identify the centre</b> and scale factor of enlargement.				
I Angles	Solve problems using properties of angles, of parallel and intersecting lines, and of triangles and other polygons, justifying inferences and explaining reasoning with diagrams and text; derive the sum of angles in a triangles. Use bearings to describe position and draw given bearings.				
J Probability	Solve probability problems involving theoretical models and relative frequency and calculate expected outcomes.				
K Handling Data	Draw and interpret graphs including scatter graphs. Know that correlation does not mean causation. Identify modal class and median class and estimate the mean of grouped data. Draw conclusions from data and consider outliers when drawing these conclusions.				
L Constructions	Draw the plan view and different elevations of 3D shapes. Draw a 3D shape on isometric dotted paper given different elevations				
	Know	Use	Apply	Problem Solve	Reason

	Year 9					
<b>A Calculations</b>	Use multipliers to solve problems involving repeated percentage change, compound interest and reverse percentages. Convert between fractions, decimals and percentages to find the most appropriate method to use in a calculation.					
<b>B Number System</b>	Solve problems involving numbers expressed in standard index form with and without a calculator. Error Intervals using inequality notation. Recognise that measurements given to the nearest whole unit may be inaccurate by up to half a unit in either direction.					
<b>C Indices</b>	Understand that even powers and roots are always positive but odd can be positive or negative. Substitute values into complex expressions and formulae involving powers and roots (including all formulae expected to be recalled for maths exam). Simplify algebraic expressions using multiplication and division of integer powers. <b>Index laws with integer powers.</b> Use algebraic manipulation skills to prove simple identities (using $2n$ and $2n+1$ to represent odd and even numbers) and multiples.					
<b>D Equations and Formulae</b>	Factorise quadratic expressions and solve quadratic equations where the coefficient of $x^2$ is 1 (including the difference of two squares). Solve pairs of linear simultaneous equations through elimination.					
<b>E Proportion</b>	Direct and inverse proportion write relationships and recognise graphs.					
<b>F Mensuration</b>	Know and use formulae for volume and surface area of all prisms, pyramids, spheres and cones, including frustums. Use Pythagoras' theorem to solve problems involving right angled triangles. Change freely between standard and compound units. Use compound measures such as speed and density.					
<b>G Graphs and Sequences</b>	Find equations of lines from two coordinates or a coordinate and a gradient and by rearranging. Find the midpoint and length of a line segment. Solve a quadratic by identifying its roots on a graph and link to its factorised form.					
<b>H Transformations</b>	Transform 2D shapes by a combination of reflection, rotation and translation including the use of vector notation. Describe the resultant image as a <b>single</b> transformation.					
<b>I Angles</b>	Explore the angle and side ratios of equilateral and isosceles right angles triangles. Use an understanding of similar shapes to find missing sides and angles within right angled triangles. Know exact values of $\sin \cos \tan$ 30 45 60 and 90.					
<b>J Probability</b>	Use Venn diagrams to solve problems with probability. Use tree diagrams to calculate probabilities of successive or combined events. Apply the AND/OR rule for combined or successive events.					
<b>K Handling Data</b>	Select, construct and modify, on paper and using ICT suitable graphical representation to progress an enquiry including trends in time series and lines of best fit on scatter graphs.					
<b>L Constructions</b>	Construct triangles and other 2-D shapes using a ruler and a protractor, given information about their sides and angles. Understand and use SSS, SAS, ASA and RHS condition to prove the congruence of triangles. Use congruence to show that translations, reflections and rotations preserve length and angle. Use standard constructions to create a scale drawing. <b>Use straight edge and compasses to produce standard constructions including the midpoint and perpendicular bisector of a line segment, the perpendicular from a point to a line, and the bisector of an angle.</b>					
	Know	Use	Apply	Problem Solve	Reason	