MATHEMATICS **YEAR 7**

	Topic	Knowledge What will students know by the end of this unit?	Skills What skills will students have developed by the end of this unit?	Big Idea What are the essential ideas which students could not leave school without?	Cross Curricular What links to other subjects / enrichment might be made?
Half Term 1	Applications of Number	Addition, subtraction, multiplication, division, order of operations, area, perimeter, money, frequency tables, Highest Common Factor, Lowest Common Multiple, fractions, percentages of amounts	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Solving problems with addition and subtraction. Solving problems with multiplication and addition	Reading tables/ charts, basic numeracy
Half Term 2	Place value and Proportion	Comparing, ordering negatives, decimals, fraction, recurring decimals, range, median, positive and negative powers of 10, significant figures, fractions, decimals, percentages, sequences, addition in standard form	Problem solving. Applying knowledge,. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Place value, ordering integers and decimals. Fraction, decimal and percentage equivalence.	Working with fractions, decimals and percentages, powers, standard form, significant figures,
Half Term 3	Reasoning with number	number sense including algebraic expressions, venn diagrams, probability, prime factorisation, surds, counterexamples, standard form	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Developing number sense. Sets and Probability. Prime numbers and proof.	Standard form
Half Term 4	Directed Number and Fractional Thinking	calculations with negative numbers, inequality number lines, sequences, equations, substitution, add, subtract algebraic fractions	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Four operations with directed number. Addition and subtraction with fractions.	Calculating with fractions and directed numbers
Half Term 5	Lines and Angles	notation for lines and angles, parallel and perpendicular, types of polygons, construct SSS, SAS, ASA triangles, pie charts, geometric reasoning, missing angles, proof	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Constructing, measuring and using geometric notation	Accurate drawing
Half Term 6	Algebraic Thinking	sequences, algebraic notation, different representations, equivalence, equations	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Sequences. Understanding and using algebraic notation. Equality and equivalence.	Using algebraic notation

MATHEMATICS **YEAR 8**

	Topic	Knowledge What will students know by the end of this unit?	Skills What skills will students have developed by the end of this unit?	Big Idea What are the essential ideas which students could not leave school without?	Cross Curricular What links to other subjects / enrichment might be made?
Half Term 1	Proportional Reasoning	Understanding and comparing ratio, using ratio notation, solve ratio problems, scale factors, maps, direct proportion, multiplying and dividing fractions including sector and arc length	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Ratio and scale. Multiplicative change. Multiplying and dividing fractions.	Geography, Science, DT, Food tech - using scales and proportions
Half Term 2	Representations	Plotting straight line and quadratic graphs, equations parallel to axes, modelling situations with expressions, formulae and graphs, geometry problem solving, surds introduction, scatter diagrams and correlation, 2 way tables, listing outcomes, sample space diagrams	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Working in the Cartesian plane. Collecting and representing data. Using tables.	Geography, Science, DT, Food tech - using tables and graphs
Half Term 3	Algebraic techniques	Multiplying single and double brackets, forming expressions, formulae and identities, solving equations and inequalities, sequences, powers of indices	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Brackets, equations and inequalities. Sequences. Indices.	Science - manipulating algebraic expressions
Half Term 4	Reasoning with number	Standard form, Percentage increase, decrease, Reverse percentages, repeated percentage change, practical money, wages, taxes, interest, best buys	Problem solving. Applying knowledge,. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Number work. Using percentages. Maths and money.	
Half Term 5	Developing geometry	Angles in parallel lines, standard constructions, bearings, area of trapezia and circles, line symmetry and reflection, proof	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Angles in parallel lines. Area of trapezia and circles. Line symmetry and reflection.	Geography, Science, DT - constructions, accurate drawing, symmetry, calculating area
Half Term 6	Reasoning with data	Data handling cycle, interpret statistical diagrams, pie charts, averages, comparing distributions	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	The data handling cycle. Measures of location	Geography, Science, DT, Food tech - using statistics

MATHEMATICS **YEAR 9**

	Topic	Knowledge What will students know by the end of this unit?	Skills What skills will students have developed by the end of this unit?	Big Idea What are the essential ideas which students could not leave school without?	Cross Curricular What links to other subjects / enrichment might be made?
Half Term 1	Reasoning with algebra	Equation of a straight line, linear sequences, finding nth term, forming and solving equations in context, testing conjectures, changing subject of the formula, solving graphical simultaneous equations	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Straight line graphs. Forming and solving equations. Testing conjectures	Science - working with graphs and equations
Half Term 2	Constructing in 2 and 3 dimensions	2d and 3d shapes, faces, edges and vertices, volume and surface area of prisms, nets and scale drawing, converting volume units, loci	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Three dimensional shapes. Constructions and congruency.	DT - accurate drawing
Half Term 3	Representations	Problem solving using graphs, tables and algebra - data charts and graphs inc. bivariate data, frequency trees, misleading graphs standard form, probability	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Solving problems using graphs, tables and algebra.	Science, Geography - use of statistics
Half Term 4	Reasoning with geometry	Deduction, revisit angle rules and proofs, rotations and translations, Pythagoras theorem including 3D, bearings	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Deduction. Rotation and translation. Pythagoras' theorem.	Science, Geography - using geometrical diagrams
Half Term 5	Reasoning with proportion	Enlargement and similarity, positive and negative scale factor, direct and inverse proportion problems and graphs, conversion graphs, compound measures, similar triangles	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Enlargement and similarity. Solving ratio and proportion problems. Rates.	Science, Geography, DT, Food Tech - use of ratio
Half Term 6	Developing algebra	Forming and solving equations and inequalities, Forming and solving simultaneous equations graphically and algebraically, one linear and quadratic, set notation for solutions, solving quadratics by factorisation	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Equations and inequalities. Representing solutions. Simultaneous equations.	Science - working with equations