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	Reasoning with number	Comparing and ordering negatives, decimals, fraction, recurring decimals, range, median, positive and negative powers of 10, significant figures, fractions, decimals, percentages, sequences, addition in standard form, calculations with negative numbers, inequality number lines,	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Fluency with decimals and negative numbers. Rounding, estimation. Place value, ordering integers and decimals. Four operations with directed number.	Working with decimals and percentages, powers, standard form, significant figures, directed numbers RS- use of tables and percentages
Half Term 2	Number sense	Order of operations, area, perimeter, money, frequency tables, Highest Common Factor, Lowest Common Multiple, fractions, percentages of amounts prime factorisation probability venn diagrams, , add, subtract algebraic fractions	Problem solving. Applying knowledge,. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Prime numbers and proof. Developing number sense. Fraction, decimal and percentage equivalence. Sets and Probability. Addition and subtraction with fractions.	Food tech-Calculating with fractions English- venn diagrams
Half Term 3	Reasoning with algebra	Simplifying algebraic expressions, Generating general rules for sequences, expressions, equations, substitution, sequences, algebraic notation, different representations, equivalence, equations, straight line graphs	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Understanding and using algebraic notation. Equality and equivalence.	Using algebraic notation Sequences- music
Half Term 4	Geometrical reasoning	notation for lines and angles, parallel and perpendicular, types of polygons, Properties of shapes. Properties of angles and deduction of angle rules. 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. Angle and shape properties and how to use them.	
Half Term 5	Data Handling	Using various formats to represent data- two way tables, pie charts, frequency trees Interpretation of data- mean, median, mode, range. Use of these measures to analyse simple data	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Understand how to construct and interpret statistical diagrams and measures	Reading tables/ charts, basic numeracy History- medicine, mortality rates
Half Term 6	Shape	Accurate constructions- constructing triangles using ruler, compasses and protractor. Reflective and rotational symmetry Drawing and describing reflections	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Constructions. Symmetry and shape transformations.	Tech- Accurate drawing, eco-architecture

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 & Reasoning with data	Understanding and comparing ratio, using ratio notation, solve ratio problems, scale factors, maps, direct proportion, multiplying and dividing fractions Data handling cycle, interpret statistical diagrams, pie charts, averages, comparing distributions, 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.	Ratio and scale. Multiplicative change. Multiplying and dividing fractions. The data handling cycle. Measures of location	Geography, Science, DT, RS, Food tech, History - using scales and proportions and using statistics, time division MFL- interpreting data
Half Term 2	Manipulation of number and algebra	Standard form, Percentage increase, decrease, Reverse percentages, repeated percentage change, practical money, wages, taxes, interest, best buys. 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.	Number work. Using percentages. Maths and money. Brackets, equations and inequalities. Sequences.	Geography, Science, DT, Food tech - using tables and graphs
Half Term 3	Co-ordinate geometry and shape	Plotting straight line and quadratic graphs, equations parallel to axes, modelling situations with expressions, formulae and graphs, geometry problem solving, Pythagoras' theorem. Indices	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. Use of Pythagoras' theorem. Indices.	Science - manipulating algebraic expressions
Half Term 4	Developing geometry and probability	Angles in parallel lines, standard constructions, bearings, proof, angles in polygons Probability, relative frequency, sample space, frequency trees	Problem solving. Applying knowledge,. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Angles in parallel lines. Angles in polygons. Calculate probability using appropriate diagrams	Geography, Science, DT - constructions, accurate drawing, symmetry, calculating area, design, bearings Art- geometry and perspective
Half Term 5	Constructions and measures	Accurate constructions, loci Use of units, finding area of trapezia and circles and compound shapes, use of exact answers	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Constructions using compasses and protractor. Area of trapezia and circles	
Half Term 6	Transformations and Maths & Money	Rotations and translations- drawing and describing. Working with money-rounding, percentages of simple and compound interest, best buys (unit buying)	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Rotate and translate shapes. Calculate bills, best buys	

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	3D shape Reasoning with algebra	2d and 3d shapes, faces, edges and vertices, volume and surface area of prisms, nets and scale drawing, converting volume units, loci 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.	Volume and surface area of 3D shapes. Forming and solving equations. Testing conjectures	Equations DT - accurate drawing
Half Term 2	Co-ordinate geometry and developing algebra	Equation of a straight line, gradients Use of index laws, solving linear inequalities	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Solving inequalities. Straight line graphs. Fluency using indices.	science - working with graphs and
Half Term 3	Data handling and simultaneous equations	Use and interpretation of statistical diagrams. Calculation and interpretation of averages including from grouped frequency tables. Data charts and graphs inc. bivariate data, frequency trees, misleading graphs standard form, probability Solve simultaneous equations with two unknowns	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Finding averages from data sets or tables. Simultaneous equations	Science, Geography - use of statistics RS- interpreting graphs History- change and continuity
Half Term 4	Developing shape	Deduction, revisit angle rules and proof and constructions. Pythagoras theorem including 3D, bearings	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Pythagoras' theorem.	Science, Geography - using geometrical diagrams DT- accurate constructions
Half Term 5	Quadratics and similarity	Developing the solving of quadratic equations- algebraically by factorisation and graphically. Enlarging shapes on a co-ordinate grid- positive and negative scale factors. Calculate lengths in similar shapes	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Enlargement and similarity. Solving quadratic equations.	Science, Geography, DT, Food Tech - use of ratio
Half Term 6	Proportional reasoning	Ratio and proportion problem solving. Representations on graphs. Conversion of units of area and volume. Compound measures- speed, density, acceleration and pressure	Problem solving. Applying knowledge. Fluency. Mathematical thinking. Using different representations and structures. Collaborative working. Oracy and presentation skills.	Convert units of area and volume. Recognise proportional graph shapes Calculate speed, density, pressure, acceleration	Science – use of all the formulae