Curriculum Map: Year: 9 Subject: Maths

Topic	Key Knowledge *What will all students KNOW by the end of the topic?*	Key Skills *What key skills will be learnt/developed by the end of the topic? What will all students be able to DO by the end of the topic?*	Assessment Opportunities *What are the key pieces of assessment? How will students be assessed?*
Half Term 1	All students will develop their fluency, reasoning and problem solving in: • Calculating • Constructions	All students will be able to: • Calculate with positive indices • Calculate with roots • Understand the order of operations • Use a calculator to evaluate numerical expressions involving powers and roots • Convert numbers from standard to normal form and vice versa • Order numbers in standard form • Add, subtract multiply and divide numbers written in standard form • Use standard form on a scientific calculator including interpreting the standard form display of a scientific calculator • Round a number to a given number of significant figures or decimal places • Understand the difference between truncating and rounding • Identify the minimum and maximum values of an amount that has been rounded (to nearest x, x d.p., x s.f.) • Use inequalities to describe the range of values for a rounded value • Solve problems involving the maximum and minimum values of an amount that has been rounded • Use a ruler and protractor to draw and measure angles and line • Use a ruler and protractor to construct 2D shapes (including triangles) • Use ruler and compasses to construct the perpendicular bisector of a line segment • Use ruler and compasses to bisect an angle • Use a ruler and compasses to construct a perpendicular to a line from a point and at a point • Know how to construct the locus of points a fixed distance from a point and from a line • Solve simple problems involving loci	All students will: Complete an end of term assessment on the topics completed within the half term.

Curriculum Map: Year: 9 Subject: Maths

		• Combine techniques to solve more complex loci problems • Combine techniques to construct 2D shapes; e.g. rhombus • Construct a shape from its plans and elevations • Construct the plan and elevations of a given shape	
Half Term 2	All students will develop their fluency, reasoning and problem solving in: • Manipulating Algebra • Proportional Reasoning	All students will be able to: • Collect like terms including powers of a variable • Expand a single bracket • Expand and simplify the result of 2 single brackets • Factorise a single bracket with a numerical factor • Factorise a single bracket with both a numerical and algebraic factor • Multiply two linear expressions of the form (x + a)(x + b) • Multiply two linear expressions of the form (ax + b)(cx + d) • Expand the expression (x + a)2 • Factorise a quadratic expression of the form $x^2 + bx$ • Factorise a quadratic expression of the form $x^2 + bx + c$ • Use a word formula to work to work out values • Create an expression or a formula to describe a situation • Solve problems involving division in a ratio with two or more parts • Solve simple ratio problems involving mixing or concentrations • Apply understanding of proportion to problems involving recipes • Solve problems involving unit pricing • Know the features of graphs that represent a direct or inverse proportion situation • Distinguish between situations involving direct and inverse proportion • Solve simple problems involving direct and inverse proportion (worded) • Form and use direct and inverse proportion formula (no powers or roots) • Solve simple problems involving density • Solve simple problems involving pressure • Calculate using speed • Solve problems involving speed	All students will: Complete an end of term assessment on the topics completed within the half term.
Half Term 3	All students will develop their fluency, reasoning and problem solving in: • Pattern Sniffing	All students will be able to: • Find the nth term of an ascending or descending sequence • Find the nth term of a sequence with decimal or fractional first differences • Use the nth term of a sequence to determine if a number is in the sequence	All students will: Complete an end of term assessment on the topics

Curriculum Map: Year: 9 Subject: Maths

	• Solving Equations and Inequalities • Calculating Space	• Solve geometric problems by forming a number sequence • Generate Fibonacci type sequences • Solve problems involving Fibonacci type sequences • Generate terms of a quadratic sequence from a written rule • Find the next terms of a quadratic sequence using first and second differences • Generate terms of a quadratic sequence from its nth term • Use inequality symbols to make mathematic statements • Find the set of integers that are solutions to an inequality • Know how to show a range of values that solve an inequality on a number line • Solve a linear equation with unknowns on one side • Solve a linear inequality with unknowns on both sides, brackets and negative terms • Solve a linear inequality with unknowns on one side • Solve a linear inequality with unknowns on both sides, brackets and negative terms • Solve problems by constructing and solving linear inequalities in one variable • Find the area of 2D shapes • Find the area of composite 2D shapes • Know circle definitions and properties, including: tangent, arc, sector and segment • Calculate the circumference of a circle when radius or diameter is given • Calculate the area of a circle when radius or diameter is given • Calculate the area and perimeter of composite shapes that include sections of a circle • Calculate the volume of a cube or cuboid • Calculate the volume of any prism • Calculate the volume of a cylinder • Calculate the arc length of a sector, including calculating exactly with multiples of π • Calculate the area of a sector, including calculating exactly with multiples of π • Calculate the angle of a sector when the arc length and radius are known • Calculate the surface area of a right prism • Calculate the surface area of a cylinder, including calculating exactly with multiples of π • Calculate the missing side of a right-angled triangle using Pythagoras' theorem • Solve problems using Pythagoras' theorem in two dimensional figures	completed within the half term.
Half Term 4	All students will develop their fluency, reasoning and problem solving in:	All students will be able to: • Recall angle facts for straight lines, around a point, triangles and quadrilateral	All students will: Complete an end of term assessment on

Curriculum Map: Year: 9 Subject: Maths

	• Angles and Similarity • Graphs	• Use knowledge of alternate and corresponding angles to calculate missing angles in geometrical diagrams • Establish the size of an interior angle in a regular polygon • Establish the size of an exterior angle in a regular polygon • Solve missing angle problems in polygons • Identify similar and congruent shapes • Use similarity in 2D shapes to find a missing length • Solve complex geometric problems involving similarity • Plot coordinates in 4 quadrants • Plot graphs of functions of the form $y = mx \pm c$ • Plot graphs of functions of the form $ax \pm by = c$ • Find the gradient of a straight line on a unit grid • Find the y-intercept of a straight line • Use the form $y = mx + c$ to identify parallel lines • Interpret the gradient of a straight line graph as a rate of change • Plot graphs of quadratic functions • Plot graphs of cubic functions • Plot graphs of reciprocal functions	the topics completed within the half term.
Half Term 5	All students will develop their fluency, reasoning and problem solving in: • Solving Equations and Inequalities 2 • Understanding Risk	All students will be able to: • Find approximate solutions to simultaneous equations using a graph • Solve two linear simultaneous equations in two variables (addition or subtraction but no multiplication required) • Solve two linear simultaneous equations in two variables in simple cases (multiplication of one equation only required) • Solve two linear simultaneous equations in two variables in simple cases (multiplication of one equation only required) • Derive and solve two simultaneous equations • Find approximate solutions to simultaneous equations using a graph • List outcomes of combined events using a tree diagram • Use a tree diagram to solve simple problems involving independent combined events • Use a tree diagram to solve complex problems involving independent combined events • Use a tree diagram to solve simple problems involving dependent combined events • Use a tree diagram to solve complex problems involving dependent combined events	All students will: Complete an end of term assessment on the topics completed within the half term.

Curriculum Map: Year: 9 Subject: Maths

		• Understand that relative frequency tends towards theoretical probability as sample size increases	
Half Term 6	All students will develop their fluency, reasoning and problem solving in: • Presentation of Data	All students will be able to: • Construct graphs of time series • Interpret graphs of time series • Construct and interpret compound bar charts • Construct and interpret frequency polygons • Construct and interpret stem and leaf diagrams • Interpret a scatter diagram using understanding of correlation • Construct a line of best fit on a scatter diagram and use the line of best fit to estimate values • Understand that correlation does not indicate causation	All students will: Complete an end of year assessment on the topics completed within the year.