

Maths Curriculum Overview - Year 9 Higher

	Unit	Details
Autumn One	Number: Indices and Surds Algebra: Expressions, equations and sequences	Pupils will start this year by consolidating key number concepts such as estimation, place value and factors and primes. They will develop this into prime factorisation and using standard form, indices and surds. Pupils will then be able to generalise and manipulate algebraic expressions using index laws, expanding brackets and quadratic factorisation. This will give pupils the skills to use when solving equations with brackets and numerical fractions. They will then move on to exploring patterns and finding the n th term of both linear and quadratic sequences.
Autumn Two	Interpreting and representing data	Pupils will develop their understanding of data and construct and use back-to-back stem and leaf diagrams, construct and use frequency polygons and pie charts and plot and interpret time series graphs. They will look at bivariate data, plot scatter graphs, draw lines of best fit and make predictions. They will then summarise data by finding averages and range from grouped frequency tables.
Spring One	Fractions, ratio and percentages	Pupils will first consolidate their Year 8 work on fractions before they compare, find quantities and solve problems with ratio. This will be linked to direct proportion and they will convert between currencies and measures. The concepts will then be developed into working out percentage increases and decreases and solving real-life problems involving percentages.
Spring Two	Angles and trigonometry	This half term we develop geometry from Year 8, with pupils first looking at angles in triangles and quadrilaterals. This will be extended to calculate interior and exterior angles and solving problems in polygons. We then look at right angled triangles and Pythagoras' theorem with time spent on real life applications. This leads to investigating the ratio of the sides of a right-angled triangle and the formal methods of trigonometry. Pupils will learn how to utilise trigonometry in solving problems and know the exact values of the sine, cosine and tangent of special angles.
Summer One	Graphs	Firstly we revisit algebra, this time using graphs to express relationships. Pupils will find gradients and intercepts and learn to rearrange an equation into the form $y = mx + c$. They will then be able to sketch graphs and find the equation of a line given its gradient and one point on the line, or through two points. They will find midpoints and problem solve with parallel and perpendicular lines. This will then be applied in the context of distance–time graphs and velocity–time graphs, and lines of best fit on scatter graphs. Pupils will then draw quadratic graphs and solve quadratic equations using graphs. This will extend to recognising cubic and reciprocal graphs, and circles centred about the origin.
Summer Two	Area and volume	At the start of this unit we ensure pupils can convert between units of measurement. They have learned in Year 8 to calculate the area of 2D shapes, so this is now developed to look at finding the perimeter and area of compound shapes and calculating volumes and surface areas of prisms. The area of a circle leads to finding arc length, area and perimeter of sectors. We then move on to looking at 3D shapes and find the volume and surface area of pyramids and cones.