

YEAR 10 COURSE GUIDE

	Selected Success Criteria, from this year's course	
POWERS	<ul style="list-style-type: none"> Understand, simplify and use index laws for multiplication, division, power of powers, negative powers and for power 0. Evaluate fractional powers of numerical bases and understand any equivalents 	
RATIO & SCALE	<ul style="list-style-type: none"> Divide a quantity into a 2 or 3-part ratio, given one part or the difference. Solve problems with combining ratios, fractions, decimals, and percentages. Draw & interpret accurate scale diagrams & plot bearings on such diagrams. 	
BRACKETS	<ul style="list-style-type: none"> Create arguments to show that 2 expressions are equivalent. Simplify an algebraic fraction that involves factorising into a single bracket. Expand and simplify the product of three brackets. Factorise quadratic expressions where a is equal to or less than 1 on a graph. Factorise the difference of 2 squares. 	
AREA & PERIMETER	<ul style="list-style-type: none"> Find the area of a Trapezium. Solve area & perimeter problems involving more than one shape. Use equations and brackets to solve equations in context to area & perimeter. Identify different parts of the circle (tangent, chord, sector, segment, arc) Calculate area, arc length or perimeter of a sector, and form and solve equations using this in relation to angles. Use the area of a sector to calculate the perimeter. 	
EQUATIONS	<ul style="list-style-type: none"> Solve quadratic expressions by factorising to $a = 1$ and show on a graph Solve quadratic equations using the quadratic formula. Solve linear simultaneous equations (graph, elimination, and rearrangement). Solve problems by forming and solving simultaneous equations. 	
VOLUME	<ul style="list-style-type: none"> Calculate the volume of prisms, cylinders, spheres, cones, and pyramids. Solve context problems involving volume by solving equations. 	
FRACTIONS	<ul style="list-style-type: none"> Convert between fractions and recurring decimals. Compare and order fractions, decimals, and percentages. Add subtract, multiply, and divide with algebraic expressions. Increase or decrease a quantity by a fraction. Find the result of a repeated fractional change. 	
ANGLES	<ul style="list-style-type: none"> Solve problems involving angles in parallel line and in polygons. Form and solve linear equations in the context of angles. 	
LINEAR GRAPHS	<ul style="list-style-type: none"> Plot line graphs that are and aren't of $y = mx + c$ from a table of values Determine whether points lie on a line. Find approx. solutions to linear equations using graphs. Find equations of lines when given points, gradients, or parallel lines. 	
INEQUALITIES	<ul style="list-style-type: none"> Identify and draw inequalities on number lines. Solve inequalities with a negative unknown on one or both sides. Solve 3-part inequalities, identifying integer solutions. Represent and identify single inequalities through shaded regions on graphs and identify inequalities when only given the shaded region. 	
STATISTICS 1	<ul style="list-style-type: none"> Criticise data collection methods. Find data values that can obtain a combination of statistics. Use grouped frequency tables to find mean, total, modal class, and range. Use un-grouped frequency tables to find mean, total, range, and mode. Plot and interpret scatter graphs and use a line of best fit. Understand predictions involving scatter graphs. 	

FORMULAE AND FUNCTIONS	<ul style="list-style-type: none"> Substitute positive, negative values into formulae. Substitute decimals and fractions into formulae and be able to use them. Find numerical and algebraic outputs using function notation. Create a formula out of a given situation, and change the subject involving powers, roots and where the subject appears twice. 	
BASIC TRIGONOMETRY	<ul style="list-style-type: none"> Use Pythagoras theorem to find missing sides in context, including in 3D. Use Trigonometry to work out missing angles & sides and solve problems in right-angled triangles. 	
NUMBER	<ul style="list-style-type: none"> Use a calculator to solve complex calculations. Use prime factor form to find the LCM & HCF and solve contextual problems with them. Able to divide decimals by transforming into an integer and estimate solutions. Estimate powers and roots in context, judge if they are over or under-estimating. Identify upper & lower bounds and error intervals for rounded numbers. Solve problems with bounds of 2 numbers. Truncate decimals to a given number of decimal places. 	
NON-LINEAR GRAPHS	<ul style="list-style-type: none"> Plot & understand graphs of quadratics. Find Approximate solutions of quadratics using graphs. Interpret the graph of non-standard functions. 	
COMPOUND UNITS	<ul style="list-style-type: none"> Solve problems of speed, distance, and time, where unit changing is required. Complete & interpret distance/time graphs. Solve problems of Density, mass, and volume, where unit changing is required. 	
PROPORTION	<ul style="list-style-type: none"> Solve problems with rates of pay, direct proportion, density, and other rates. Identify directly proportional graphs and tables. Construct formulae using direct and inverse proportion. Know the features of an inverse proportion graph and relationship. 	
PERCENTAGE	<ul style="list-style-type: none"> Compare 2 quantities using percentages. Identify percentage change, profit, or loss. Find the result of repeated percentage change using a multiplier. Solve problems with simple and compound interest. 	
ADVANCED TRIGONOMETRY	<ul style="list-style-type: none"> Use the sine rule to find missing angles and lengths in any triangle. Use the cosine rule to find missing angles and lengths in any triangle. Solve a variety of problems in non-right-angled triangles. 	
STATISTICS 2	<ul style="list-style-type: none"> Use a sample to infer properties of a population. Identify misleading diagrams. Construct and interpret stem and leaf diagrams. Construct and interpret frequency polygons. 	
SEQUENCES AND PROOF	<ul style="list-style-type: none"> Use algebra in proof with both odd and even numbers. Use algebra in sequences and Fibonacci sequences, including surds. Find the nth term of increasing, decreasing and quadratic sequences. Determine the type of sequence a given sequence is. 	
VECTORS	<ul style="list-style-type: none"> Understand scalar and vector quantities, represent column vectors on grids. Add, subtract, and multiply column vectors. Understanding that adding vectors is a resultant of 2 vectors. Identify vectors on a diagram. 	
PROBABILITY	<ul style="list-style-type: none"> Use a theoretical probability to identify a total. Find missing probabilities. Complete and use probability tree diagrams. Use theoretical probability to make predictions and comment on them. 	