

## Year 10 Maths

	<u>Topic</u>	<u>Key concept – what do I want the students to learn from this unit?</u>	<u>What knowledge will they acquire?</u>
<b>YEAR 10 OVERVIEW</b>			
<b>Y10 - half term 1</b>	Number Handling data Algebra Geometry	Factors, powers and roots. Analysing and presenting data. Algebraic manipulation. Pythagoras' theorem.	Understand and use negative and fractional indices. Use and calculate in standard form. Use and manipulate surds. Averages and range from a table. Drawing and analysing scatter graphs. Drawing and analysing a cumulative frequency graph. Drawing and analysing a boxplot. Calculating quartiles and the interquartile range. Drawing and analysing histograms. Factorising an expressions using a common factor. Expanding a pair of binomials. Factorising a quadratic when $a = 1$ and when $a$ is greater than 1. Calculating a missing side in a right-angled triangle using Pythagoras' theorem. Calculating a missing side or angle in a right angled triangle using trigonometry.
<b>Y10 – half term 2</b>	Geometry Number Algebra Probability	Pythagoras' theorem and trigonometry. Perimeter, area and volume. Surface area and volume of cuboids. Rounding and limits Using and understanding probability. Solving quadratic equations.	Calculating a missing side in a right-angled triangle using Pythagoras' theorem. Calculating a missing side or angle in a right angled triangle using trigonometry. Using the Sine and Cosine rules for non-right-angled triangles. Volume of cuboids and prisms (including cylinders). Area and perimeter of sectors. Volume and surface area of pyramids, cones and spheres.

	<u>Topic</u>	<u>Key concept – what do I want the students to learn from this unit?</u>	<u>What knowledge will they acquire?</u>
			<p>Area of a segment. Area of a triangle using the Sine ratio.</p> <p>Round to a given number of significant figures. Find the limits of accuracy of a rounded number. Calculate and solve problems using bounds.</p> <p>Build on student knowledge of solving linear equations. Solving quadratic equations where <math>a=1</math> or is greater than 1. Use the quadratic formula to solve quadratic equations.</p> <p>Using product rule for outcomes.</p> <p>Drawing and interpreting frequency trees.</p> <p>Understanding and calculating relative frequency. Using and calculating probabilities from a Venn diagram. Using tree diagrams and calculating probabilities.</p>
<b>Y10 – half term 3</b>	Geometry Algebra Number <b>L2 Further Maths</b>	Properties of angles. Solving linear equations. Understanding and using percentages. <b>Trig identities.</b>	Understanding and using the properties of angles in polygons. Understand and use bearings. Use circle theorems to find missing angles. Solving linear equations with one or two steps, which can also include brackets. Solving equations with unknowns on both sides. Solving inequalities. Solving equations with fractions. Describe and identify regions described using inequalities. Calculating simple and compound interest. Calculate the original amount after a given percentage increase or decrease. <b>Understanding and using Trig identities.</b> <b>Solving trig equations and listing all solutions in a given region.</b>

	<u>Topic</u>	<u>Key concept – what do I want the students to learn from this unit?</u>	<u>What knowledge will they acquire?</u>
<b>Y10 – half term 4</b>	Algebra Geometry L2 Further Maths	Using and manipulating formulae. Shapes and constructions. Linear functions. Trig identities.	Substituting into formulae. Deriving formulae. Rearranging formulae. Modelling using formulae. Setting up and using formulae based on proportion. Drawing constructions accurately. Drawing the loci of points from a given set of constraints. Drawing and interpreting real life graphs. Plotting lines of the form $ax + by = c$ . Understand the properties of parallel lines. Understand the links between lines that are perpendicular. Understanding and using Trig identities. Solving trig equations and listing all solutions in a given region.
<b>Y10 – half term 5</b>	Geometry Algebra L2 Further Maths	Transformations and vectors. Measures. Simultaneous equations. Matrices.	Perform and recognise translations on a coordinate axes. Perform and recognise enlargements with and without a centre of enlargement. Perform enlargements with fractional and negative scale factors. Understand and recognise invariance. Understand the links between the measures in 2D and 3D shapes. Understand and use the properties of congruent triangles. Convert between different metric units. Convert between metric units of area and volume. Understand and use compound units including density and pressure. Add, subtract and multiply $2 \times 2$ and $2 \times 1$ matrices. Perform transformations using matrices.

	<u>Topic</u>	<u>Key concept – what do I want the students to learn from this unit?</u>	<u>What knowledge will they acquire?</u>
<b>Y10 – half term 6</b>	Algebra. L2 Further Maths	Simultaneous equations. Non-linear functions. Sequences. Simultaneous equations. Functions.	Solve a pair of simultaneous equations graphically. Solve a pair of simultaneous equations algebraically. Solve a pair of simultaneous equations where one is quadratic or a circle. Plot and understand the properties of cubic graphs. Plot and understand the properties of reciprocal graphs. Plot and understand the properties of exponential graphs. Plot and understand the properties of trigonometric graphs. Plot and understand the properties of velocity time graphs. Position to term rules and term to term rules, linear sequences. Continuing and representing geometric sequences. Recognising and representing quadratic sequences. Use trial and improvement to solve equations. Solve a set of 3 equations with three unknowns. Understand functions, including domain and range. Plotting functions.