Curriculum Content Map

Subject: Mathematics

Year group: 11H

	TERM 1		TERM 2		TERM 3	
Unit title & description	Quadratics Algebraic fractions Surds Simultaneous equations	Inequalities Equation of a circle Proportionality Compound measures	Trigonometry Trigonometric graphs Volume and Surface area	Functions Iterations Vectors		
Sequencing - Why is this taught and now?	The higher graded topics are taught in yr11. Focusing on working with algebra and algebraic manipulation which are built on in future topics.	After completing the algebra based topics including inequalities and equations of circles, the topics taught are on proportionality and compound measures.	Focusing on working with the higher graded shape topics, incorporating prior knowledge learnt. Volume and surface area question often involve algebra and trigonometry.	Vectors is taught last due to requiring students to form proofs and therefore bringing in prior knowledge learnt.		
Knowledge 	- To be able to solve quadratic equations using the formula. - To be able to solve quadratic equations by completing the square. - To be able to simplify fractional expressions including using factorising. - To be able to simplify fractional expressions involving multiplication. - To be able to simplify fractional expressions involving division. - To be able to simplify fractional expressions involving addition and subtraction. - To be able to solve fractional equations. - To be able to simplify surds. - To be able to expand brackets with surds. - To be able to rationalise denominators with a single term in the denominator. - To be able to rationalise denominators with an expression in the denominator.	- To be able to solve quadratic inequalities. - To be able to represent inequalities on graphs and shade regions. - To be able to use the equation of a circle with the centre at the origin. - To be able to find the equation of the tangent to a circle. - To be able to solve recipe problems. - To be able to recognise and use proportional graphs. - To be able to solve problems involving exchange rates. - To be able to solve direct portion problems. - To be able to solve inverse proportion problems. - To be able to work out speed, distance and time. - To be able to problem solve with speed distance and time. - To be able to work out mass, density and volume. - To be able to problem solve with mass, density and volume.	- To be able to use to the cosine rule to find missing sides. - To be able to use to the cosine rule to find missing angles. - To be able to use to the sine rule to find missing sides. - To be able to use to the sine rule to find missing angles. - To be able to problem solve with 3d shapes and trigonometry. - To be able to recognise the properties of trigonometric graphs. - To be able to apply transformations to trigonometric graphs. - To be able to work out the volume of cuboids, triangular prisms and cylinders. - To be able to work out the volume of pyramids, cones and spheres. - To be able to work out the surface area of cuboids, triangular prisms and cylinders. - To be able to work out the surface area of pyramids, cones and spheres.	- To be able to substitute to find outputs for composite functions. - To be able to form composite functions. - To be able to substitute to find outputs for inverse functions. - To be able to find the inverse of functions. - To be able to approximate solutions to equations using iteration. - To be able to show a solution lies between two points. - To be able to rearrange equations to a particular form. - To be able to write vectors from diagrams. - To be able to multiply a vector by a scalar. - To be able to add and subtract column vectors. - To be able to use vectors to make arguments and complete proofs.		

	- To be able to calculate with surds. - To be able to solve simultaneous equations with one linear and one quadratic equation. - To be able to find solutions from a simultaneous graph.	- To be able to work out force, area and pressure. - To be able to problem solve with force, area and pressure.	- To be able to solve problems involving frustrums. - To be able to find the volume and surface are of composite solids.			
Skills 	Use of numerical and conceptual knowledge. Applying and combining knowledge from different areas of mathematics. Use of mathematical equipment. Problem solving and reasoning; and interpreting questions.					
Retrieval practice Prior knowledge and skills that are revisited	Do nows are structured with questions, from last lesson, last week and last month.		A retrieval lesson is taught on each topic taking into account any gaps identified by topic tests, 1 or 2 weeks after completing teaching of the topic.			
Literacy including extended writing 	Key words highlighted in lessons. Interpret information from worded problems and be able to apply relevant techniques based on key words. Guided reading task set for homework once a fortnight highlighting an interesting area of mathematics.					
Numeracy 	All lessons are mathematics based and therefore require numeracy.					
Enrichment learning 	Students will be given opportunities in lesson to develop soft skills such as teamwork, independence, initiative and responsibility. .	Higher attainers to complete the parallel challenges.	UKMT maths challenge to be completed			
British values 	British values are not taught in specific topics but in all lessons teacher expectations of students is that they show mutual respect, respect personal liberty, follow academy rules and therefore respect the rule of law and show respect towards each other and value each other's contributions.					
Character 	Students challenged to justify their answers and explain their reasoning. Students supported in developing the communication skills required. Students to be encouraged to learn from their mistakes through follow-up tasks. Students encouraged to take pride in their work.					
Careers 	Explicit reference will be made throughout the course to careers related to the combination of topics studied. Examples include: • Medicine, • Social sciences • Pharmacy • Engineering • Logistics					

	• Finance		
Assessment opportunities 	AFL strategies embedded into each and every lesson via use of multiple choice questions and/or mini whiteboard work.	Unit tests to be completed at the end of teaching each individual topic highlighting depth of understanding and areas requiring further work.	Cumulative AP assessments completed and levelled for students to assess their progress.
Personalised challenge for all: SEND, HPA	Tasks suitable for students of different levels or prior attainment including challenge for higher attainers		