

Hobart High School Key Stage 4 Curriculum Map – Year 10 Higher

Department / Syllabus Link: AQA GCSE Mathematics

	GCSE Unit, Topic or Summary of work covered	Knowledge & Skills Developed	Assessment	Personal Development
Autumn 1	<p>Factors and multiples (N4, N5)</p> <p>Basic fractions (N1, N2, N8)</p> <p>Equations and linear graphs (A2, A8, A9, A10, A17, G11)</p> <p>Geometry and measures (G7, G8, G11, G13, G14 G17, G18, R1, R11)</p> <p>Surds (N8, A12)</p>	<p>Use the concept of the unique factorisation theorem with HCF, LCM and prime factorisation.</p> <p>Calculate exactly with fractions, using the four operations, including with mixed numbers and with both positive and negative values.</p> <p>Solve linear equations in one unknown including those with the unknown on both sides of the equation.</p> <p>Calculate the equation of a line through two coordinates, placed within any quadrant</p> <p>Calculate the perimeter and area of composite shapes, including those involving circles or sectors. Calculate surface area of a 3D shape, including cylinders, pyramids, spheres and cones</p> <p>Calculate exactly using surds as well as simplify expressions involving surds and rationalise denominators</p>	<p>Pupils will be assessed regularly through classwork, homework, end of topic tests and termly assessments.</p>	
Autumn 2	<p>Simultaneous equations (A19, A21)</p> <p>Congruence and similarity (G5, G6, G19)</p> <p>Indices and standard form (N2, N6, N7, N9)</p>	<p>Derive and solve two simultaneous equations in two variables.</p> <p>Apply and use the concepts of congruence and similarity, including the relationships between lengths, areas and volumes in similar figures</p> <p>Calculate with positive, negative and fractional indices Calculate with and interpret values in standard form.</p>	<p>Pupils will be assessed regularly through classwork, homework, end of topic tests and termly assessments.</p>	

<p>Spring 1</p>	<p>Pythagoras' theorem and trigonometry (G6, G20, G21, R12)</p> <p>Quadratics and rearranging formulae (A4, A5)</p> <p>Graphical equations (A17, A18, A21)</p> <p>Properties of polygons (G3, G4)</p>	<p>Know and apply the formula for Pythagoras' theorem</p> <p>Know and apply the trigonometric ratios in two and three-dimensional figures.</p> <p>Compare lengths using ratio notation and make links to the trigonometric ratios.</p> <p>Rearrange formulae to change the subject</p> <p>Simplify and manipulate algebraic expressions by: expanding products of two binomials factorising quadratic expressions of the form $x^2 + bx + c$</p> <p>Solve linear and quadratic equations using graphs for an approximate solution. Use factorising to solve quadratic equations</p> <p>Derive and apply the properties and definitions of common polygons, including use of interior and exterior angles.</p>	<p>Pupils will be assessed regularly through classwork, homework, end of topic tests and termly assessments.</p>	
<p>Spring 2</p>	<p>Ratio and proportion (R3, R4, R5, R6, R7, R8, N11)</p> <p>Volume (G16, G17, R12, N8)</p> <p>Inequalities (A22)</p>	<p>Apply ratio to real contexts and problems (such as those involving conversion, comparison, scaling, mixing and concentrations)</p> <p>Relate ratios to fractions and to linear functions</p> <p>Compare lengths, areas and volumes using ratio notation and scale factors</p> <p>Calculate the volume of spheres, pyramids, cones and composite solids</p> <p>Solve linear inequalities in one or two variables and quadratic inequalities in one variable</p>	<p>Pupils will be assessed regularly through classwork, homework, end of topic tests and termly assessments.</p>	
<p>Summer 1</p>	<p>Circle theorems (G10)</p>	<p>Apply and prove the standard circle theorems concerning angles, radii, tangents and chords and use them to prove related results</p>	<p>Pupils will be assessed regularly through classwork, homework, end of topic tests and termly assessments.</p>	

	<p>Growth and decay (R16)</p> <p>Further equations and graphs (A11, A12, A17, A18, A21)</p>	<p>Set up, solve and interpret the answers in growth and decay problems, including compound interest and work with general iterative processes</p> <p>Solve quadratic equations (including those that require rearrangement) algebraically by factorising, by completing the square and by using the quadratic formula. Identify and interpret roots, intercepts and turning points of quadratic functions graphically; deduce roots algebraically and turning points by completing the square</p>		
<p>Summer 2</p>	<p>Statistical measures (S1, S4, S5)</p> <p>Collecting and representing data (S2, S3, S4)</p> <p>Transformations (G7, G8, G24)</p> <p>Constructions and loci (G2)</p>	<p>Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate measures of central tendency and spread. Infer size of a population using sampling. Use statistics to describe a population.</p> <p>Interpret and construct tables, charts and diagrams including frequency tables, bar charts, pie charts, pictograms, and histograms for ungrouped discrete numerical data tables and line graphs for time series data as well as know their appropriate use.</p> <p>Identify, describe and construct congruent and similar shapes, on co-ordinate axes, by considering rotation, reflection, translation and enlargement. Describe the changes and invariance achieved by combinations of rotations, reflections and translations</p> <p>Carry out the standard ruler and compass constructions.</p>	<p>Pupils will be assessed regularly through classwork, homework, end of topic tests and termly assessments.</p>	

Hobart High School Key Stage 4 Curriculum Map – Year 11 Higher

Department / Syllabus link: AQA GCSE Mathematics

	GCSE Unit, Topic or Summary of work covered	Knowledge & Skills Developed	Assessment	Personal Development
Autumn 1	Probability (P2, P3, P5, P6, P8, P9)	Calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions Enumerate sets and combinations of sets systematically using tables, grids, Venn diagrams and tree diagrams	Pupils will be assessed regularly through classwork, homework, end of topic tests and termly assessments.	
	Sequences (A23, A24, A25)	Recognise and use: sequences of triangular, square and cube numbers, simple arithmetic progression, Fibonacci type sequences, quadratic sequences and simple geometric progressions. Deduce expressions to calculate the n th term of linear and quadratic sequences		
	Trigonometry extension (G6, G20, G21, R12)	Know and use the exact trigonometric values for $\sin \theta$ $\cos \theta$ and $\tan \theta$ for 0, 30, 45, 60 and 90 degrees		
	Equation of a circle (A16)	Recognise and use the equation of a circle with centre at the origin. Find the equation of a tangent to a circle at a given point.		
Autumn 2	Further quadratics, functions and identities (A4, A5, A6, A7)	Know the difference between an equation and an identity Argue mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments and proofs. Interpret the reverse process as the 'inverse function' Interpret the succession of two functions as a 'composite function'	Pupils will be assessed regularly through classwork, homework, end of topic tests and termly assessments.	

	Sine and cosine rules (G22, G23)	Know and apply the sine and cosine rules to calculate missing angles and lengths. Use the formulae for area of any triangle.		
Spring 1	Direct and inverse proportion (R10, R13, R14) Further sketching graphs (A12) Numerical methods (A20) Gradients and rates of change (R14, R15)	Solve problems involving direct and inverse proportion, including graphical and algebraic representations Recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions and the reciprocal Find approximate solutions to equations numerically using iteration Interpret the gradient at a point on a curve as the instantaneous rate of change Apply the concepts of average and instantaneous rates of change (gradients of chords and tangents) in numerical, algebraic and graphical contexts	Pupils will be assessed regularly through classwork, homework, end of topic tests and termly assessments.	
Spring 2	Pre-calculus and area under a curve (A15) Algebraic fractions (A4) Vectors (G25)	Calculate or estimate gradients of graphs and areas under graphs (including quadratic and other non-linear graphs). Interpret the results in cases such as distance-time graphs, velocity-time graphs and graphs in financial contexts Simplify and manipulate algebraic expressions involving algebraic fractions Apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representation of vectors Use vectors to construct geometric arguments and proofs	Pupils will be assessed regularly through classwork, homework, end of topic tests and termly assessments.	
Summer 1	Transforming functions (A23)	Sketch translations and reflections of a given function		
Summer 2				