

Year 11 Mathematics Curriculum Map 2019-20

	Autumn Term	Spring Term	Summer Term
Unit Length	<p>Foundation</p> <p>Unit 9 - Graphs</p> <p>Unit 10 – Transformations</p> <p>Unit 11 – Ratio and proportion</p> <p>Unit 12 – Pythagoras & Trigonometry</p> <p>Unit 13 – Probability</p> <p>Unit 14 – Multiplicative Reasoning</p> <p>Unit 15 – Plans and elevations</p> <p>Unit 16 – Quadratic equations</p> <p>Unit 17 – Circles and cylinders</p> <p>Higher</p> <p>Unit 9 – Equations and inequalities</p> <p>Unit 10 – Probability</p> <p>Unit 11 – Multiplicative reasoning</p> <p>Unit 12 – Similarity and congruence</p> <p>Unit 13 – Graphs of trigonometry</p> <p>Unit 14 – Collecting and representing data</p> <p>Unit 15 – Quadratic equations and graphs</p> <p>Unit 16 – Circle geometry and circle theorems.</p>	<p>Foundation</p> <p>Unit 18 – Fractions, Indices and standard form</p> <p>Unit 19 – Similarity, congruence and vectors</p> <p>Unit 20 – Equations and graphs</p> <p>Unit 15b – Constructions, loci and bearings</p> <p>Higher</p> <p>Unit 17 – Equations, formulae, algebraic fractions and surds</p> <p>Unit 18 – Vectors and geometric proof</p> <p>Unit 19 – Direct and inverse proportion</p>	<p>Foundation</p> <p>Revision topics based on areas of weakness from trial exam papers.</p> <p>Higher</p> <p>Revision topics based on areas of weakness from trial exam papers.</p>
Assessment Objectives	<p>AO1 Use and apply standard techniques (Foundation 50%, Higher 40%)</p> <p>AO2 Reason, interpret and communicate mathematically (Foundation 25%, Higher 30%)</p> <p>AO3 Solve problems within mathematics and in other contexts (Foundation 25%, Higher 30%)</p>		

<p>Description of the topic and key learning outcomes.</p>	<p>Foundation Unit 9 - Graphs Drawing graphs, real life graphs, distance-time graphs and $y=mx + c$. Unit 10 – Transformations Reflection, rotation, translation, enlargement and combining transformations. Unit 11 – Ratio and proportion Writing ratios, dividing amounts into ratios, comparing ratios, using proportion and proportion and graphs. Unit 12 – Pythagoras & Trigonometry Calculating missing lengths using Pythagoras, calculating missing lengths or angles using SOHCAHTOA. Unit 13 – Probability Calculating probability, two way tables, experimental probability, Venn diagrams and tree diagrams. Unit 14 – Multiplicative Reasoning Percentages, growth and decay, compound measures, distance, speed and time, direct and inverse proportion. Unit 15 – Plans and elevations 3D solids, plans and elevations, accurate drawings, scale drawings and maps. Unit 16 – Quadratic equations Expanding double brackets, plotting quadratic graphs, factorising quadratics, solving quadratic equations. Unit 17 – Circles and cylinders Circumference and area of a circle, semi-circles and sectors, cylinders, pyramids, spheres and cones.</p>	<p>Foundation Unit 18 – Fractions, Indices and standard form Multiplying and dividing fractions, laws of indices, standard form, calculating with standard form. Unit 19 – Similarity, congruence and vectors Similarity and enlargement, congruence of shapes, vectors Unit 20 – Equations and graphs Graphs of cubic and reciprocal functions, non-linear graphs, solving simultaneous equations, rearranging formulae and proof. Unit 15b – Constructions, loci and bearings Construction of shapes accurately, loci, regions and bearings.</p>	<p>Foundation Revision topics based on areas of weakness from trial exam papers.</p>
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	<p>Higher Unit 9 – Equations and inequalities Solving quadratic equations, completing the square, simultaneous equations, linear inequalities.</p> <p>Unit 10 – Probability Combined events, mutually exclusive events, experimental probability, independent events and tree diagrams, conditional probability and Venn diagrams and set notation.</p> <p>Unit 11 – Multiplicative reasoning Growth and decay, compound measures, ratio and proportion.</p> <p>Unit 12 – Similarity and congruence Congruence, geometric proof, similarity in 2D and 3D shapes.</p> <p>Unit 13 – Graphs of trigonometry Accuracy, graphs of each ratio, Sine rule and cosine rule, transforming graphs.</p> <p>Unit 14 – Collecting and representing data Sampling, box plots, cumulative frequency histograms, comparing and describing populations.</p> <p>Unit 15 – Quadratic equations and graphs Simultaneous equations, representing inequalities graphically, quadratic graphs and cubic graphs.</p> <p>Unit 16 – Circle geometry and circle theorems. Radii and chords, tangents and proof.</p>	<p>Higher Unit 17 – Equations, formulae, algebraic fractions and surds Rearranging formulae, algebraic fractions, surds, solving algebraic fraction equations and functions</p> <p>Unit 18 – Vectors and geometric proof Vector notation, vector arithmetic, parallel vectors and collinear points.</p> <p>Unit 19 – Direct and inverse proportion Direct proportion, Indirect proportion, exponential functions, non-linear graphs, translating graphs of functions and reflecting and stretching graphs of functions.</p>	<p>Higher Revision topics based on areas of weakness from trial exam papers.</p>
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Assessment objectives and skills being taught	AO1, AO2 & AO3	AO1, AO2 & AO3	AO1, AO2 & AO3
Milestone assessments	w/c 6 th November Year 11 Mock examinations	w/c 26 th February Year 11 Mock examinations	w/c 23 rd April Year 11 Maths Mock examination
Wider reading	<p>Foundation Students Research about Global Positioning System (GPS). Research on how robots and machines use translation to move components from place to place. How can we use ratio in a real life.</p> <p>Higher students Can a linear equation and a linear inequality be solved in the same way and what makes them different? What ways can simultaneous equations be used in everyday life? What is experimental and theoretical probability? How do you find the monthly interest rate?</p>	<p>Foundation Students who is Pythagoras and why is his work still relevant in geometry? Who came up with the theory of probability? Who is Sir Ronald Aylmer Fisher?</p> <p>Higher students Is congruent the same as similar? How do you prove triangles are similar? What is the caesium fountain atomic clock? How accurate is it? How is trigonometry useful to astronomers? Research Greek Mathematician Pythagoras of Samos. Investigate some careers where Pythagoras and trigonometry skills could be required. Why do we use stratified sampling?</p>	<p>Foundation Students Investigate how architects can use mathematical shapes and symmetry to make buildings more interesting? How can food manufacturers use nets of 3-D shapes to work out the most efficient way to cut food cardboard? Why is bearing useful? Why is quadratic function important to learn? How is the value of pi derived?</p> <p>Higher students Research the history of algebra. Where did the word algebra derive from? Which civilizations introduced algebra? Who were the early pioneers? How do you draw a graph from an equation? Describe a career or real life situation in which circle theorems are used. Why irrational numbers are called Surds? Why PI is not a SURD?</p>
Literacy programme	<p>All Students: Definition and spelling tests., glossary/keyword bank, breaking down problem solving questions and explaining answers in full sentences.</p>		
Independent Learning Tasks	Knowledge organiser. PiXL Maths App. Weekly homeworks		