

Year 10 Higher Maths Curriculum Map

Sequencing of topics	What knowledge will students develop? (Including key terminology)	What skills will students develop? (Including literacy & numeracy)	Assessment opportunities	Homework/Assessment opportunities	Personal development (Ursuline Values, Catholic Social Teaching, Cultural Capital, Cross-curricular, Careers)	Curriculum Links
<b>Autumn Term</b>						
Similarity	<ul style="list-style-type: none"> <li>Similar triangles</li> <li>Areas and volumes of similar shapes</li> </ul>	<ul style="list-style-type: none"> <li>Show two triangles are similar.</li> <li>Work out the scale factor between similar triangles.</li> <li>Solve problems involving the area and volume of similar shapes.</li> </ul>	<p>End of topic assessment</p> <p>End of term assessment</p>	<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizzz</p> <p>These include:</p> <ol style="list-style-type: none"> <li>Videos</li> <li>Practice questions</li> <li>Past exam questions</li> <li>Differentiated activities.</li> <li>Opportunities for flipped learning</li> </ol> <p>Research opportunities:</p> <ol style="list-style-type: none"> <li>The use of similar shapes in architecture and engineering.</li> <li>Similar triangles in aerial photography.</li> </ol>	<p>The most common mistake pupils make when answering problems, and with proof, is to assume facts that are not actually given in the questions.</p> <p><b>Attentive</b></p> <p><b>Creation and Environment</b></p> <p>Familiarity with historical geometric patterns and designs, such as Islamic art's use of congruent shapes and symmetries.</p> <p>Familiarity with culturally significant patterns and designs, such as the intricate geometric motifs in Islamic architecture.</p>	<p><b>Geometry and Measures</b></p> <p>Mensuration and calculation</p>

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				<p>3. How did the Wright Brothers use similar triangles for flight landing.</p>	<p>Design Technology Science</p> <p>Architecture Engineering Photography</p>	
<p>Exploring and applying probability</p>	<ul style="list-style-type: none"> <li>Experimental probability</li> <li>Mutually exclusive events and exhaustive outcomes</li> <li>Expectation</li> <li>Probability and two-way tables</li> <li>Probability and Venn diagrams</li> </ul>	<ul style="list-style-type: none"> <li>Calculate experimental probabilities and relative frequencies.</li> <li>Estimate probabilities from experiments.</li> <li>Use different methods to estimate probabilities.</li> <li>Recognise mutually exclusive, complementary and exhaustive events.</li> <li>Predict the likely number of successful events, given the number of trials and the probability of any one outcome.</li> <li>Read two-way tables and use them to work out probabilities.</li> <li>Use Venn diagrams to solve probability questions.</li> </ul>		<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> <li>Videos</li> <li>Practice questions</li> <li>Past exam questions</li> <li>Differentiated activities.</li> <li>Opportunities for flipped learning</li> </ol> <p>Research opportunities:</p> <ol style="list-style-type: none"> <li>Use of probability in weather forecasts.</li> <li>How can you use probability to analyse political strategies.</li> </ol>	<p>Make sure that pupils understand the fact that mutually exclusive events cannot happen at the same time. This knowledge will help pupils to avoid confusion in later years with independent events. Pupils may also be confused by sentences with the words 'or' and 'and'. Explain the meanings carefully.</p> <p><b>United in Harmony</b></p> <p>Creation and Environment Peace</p> <p>Understand the cross-cultural variability of probability judgement.</p>	<p><b>Probability</b></p>

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				<p>3. Probability in buying and selling insurance.</p> <p>4. Probability in sports and gaming strategies.</p>	<p>PE Science Politics Sports Politics Insurance Statistics</p>	
<p>Powers and standard form</p>	<p>Powers (indices)</p> <p>Rules for multiplying and dividing powers</p> <p>Standard form</p>	<p>Use powers (also known as indices).</p> <ul style="list-style-type: none"> <li>• Multiply and divide by powers of 10.</li> <li>• Use rules for multiplying and dividing powers.</li> <li>• Change a number into standard form.</li> <li>• Calculate using numbers in standard form.</li> </ul>		<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> <li>1. Videos</li> <li>2. Practice questions</li> <li>3. Past exam questions</li> <li>4. Differentiated activities.</li> <li>5. Opportunities for flipped learning</li> </ol> <p>Research opportunities:</p> <ol style="list-style-type: none"> <li>1. Indices involved in exponential growth and decay.</li> <li>2. Compound interest</li> </ol>	<p>Financial Maths</p> <p><b>Discerning and joyful.</b> <b>Grateful and generous</b></p> <p><b>The option for the poor</b></p> <p><b>Creation and Environment</b></p> <p><b>The common good</b></p> <p><b>Exposure to diverse numerical systems used by different cultures, historical developments in numeration systems, and exploring culturally significant numbers or mathematical traditions.</b></p> <p><b>Appreciating cultural diversity in number systems and numeral representations, such as the use of different</b></p>	<p><b>Number</b></p> <p>Structure and calculation</p>

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					<p>symbols or counting systems in different cultures.</p> <p>Science</p> <p>Scientist</p> <p>Banking &amp; Finance</p>	
<b>Spring Term</b>						
Equations and inequalities	<ul style="list-style-type: none"> <li>Linear equations</li> <li>Elimination method for simultaneous equations</li> <li>Substitution method for simultaneous equations</li> </ul>	<ul style="list-style-type: none"> <li>Solve equations in which the variable (the letter) appears as part of the numerator of a fraction.</li> <li>Solve equations where you have to expand brackets first.</li> <li>Solve equations where the variable appears on both sides of the equals sign.</li> <li>Set up equations from given information and then solve them.</li> <li>Solve simultaneous linear equations in two variables using the elimination method.</li> <li>Solve simultaneous linear equations in two variables using the substitution method.</li> </ul>	<p>End of topic assessment</p> <p>End of term assessment</p>	<p>Mathswatch</p> <p>CorbettMaths</p> <p>Mathsbox</p> <p>MathsGenie</p> <p>MyMaths</p> <p>Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> <li>Videos</li> <li>Practice questions</li> <li>Past exam questions</li> <li>Differentiated activities.</li> <li>Opportunities for flipped learning</li> </ol> <p>Research opportunities:</p> <ol style="list-style-type: none"> <li>Using simultaneous equations to problem solve.</li> </ol> <p>Deciding between two car rental companies. Help</p>	<p><b>Courageous and resilient</b></p> <p>Peace</p> <p>Solidarity</p> <p>The word “Algebra” comes from the Arabic word “al jabr,” which translates to “reunion of broken parts.” Muhammad ibn Musa al-Khwarizmi, a 9th-century Persian mathematician, geographer, and astronomer, is regarded as “the father of algebra.”</p> <p>The common good</p> <p>Appreciating the contributions of</p>	<p><b>Algebra</b></p> <p>Solving equations and inequalities</p>

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				determine the best loan choice.	<p>mathematicians from various cultural backgrounds in developing methods and techniques for solving systems of equations and inequalities.</p> <p>ICT Computer Science Graphics</p> <p>Software engineer Computer programming</p>	
Equations and inequalities	<ul style="list-style-type: none"> <li>Balancing coefficients to solve simultaneous equations</li> <li>Using simultaneous equations to solve problems</li> <li>Linear inequalities</li> <li>Graphical inequalities</li> </ul>	<ul style="list-style-type: none"> <li>Solve simultaneous linear equations by balancing coefficients.</li> <li>Solve problems using simultaneous linear equations.</li> <li>Solve a simple linear inequality and represent it on a number line.</li> <li>Show a graphical inequality.</li> </ul>		<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> <li>Videos</li> <li>Practice questions</li> <li>Past exam questions</li> </ol>	<p>Using skills learnt to draw up graphs of real life examples.</p> <p><b>Loving and compassionate</b></p> <p>Peace</p> <p>The common good</p> <p>Appreciating the contributions of mathematicians from</p>	<p><b>Algebra</b></p> <p>Solving equations and inequalities</p> <p>Graphs</p>

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	<ul style="list-style-type: none"> <li>• Trial and improvement</li> </ul>	<ul style="list-style-type: none"> <li>• Find regions that satisfy more than one graphical inequality.</li> <li>• Estimate the answer to an equations that does not have an exact solution using trial and improvement.</li> </ul>		<p>4. Differentiated activities.</p> <p>5. Opportunities for flipped learning</p> <p>Research opportunities:</p> <ol style="list-style-type: none"> <li>1. How are speed limits determined.</li> <li>2. Inequalities in problem solving</li> </ol>	<p><b>various cultural backgrounds in developing methods and techniques for solving systems of equations and inequalities.</b></p> <p><b>ICT</b> <b>Computer Science</b> <b>Graphics</b></p> <p><b>Financial analyst</b> <b>Research Scientist</b></p>	
Counting, accuracy and surds	<ul style="list-style-type: none"> <li>• Rational numbers, reciprocals, terminating and recurring decimals</li> <li>• Estimating powers and roots</li> <li>• Negative and fractional powers</li> <li>• <b>Surds</b></li> <li>• <b>Limits of accuracy</b></li> <li>• Problems involving limits of accuracy</li> <li>• Choices and outcomes</li> </ul>	<ul style="list-style-type: none"> <li>• Recognise rational numbers, reciprocals, terminating decimals and recurring decimals.</li> <li>• Convert terminal decimals to fractions.</li> <li>• Convert fractions to recurring decimals.</li> <li>• Find reciprocals of numbers or fractions.</li> <li>• How to estimate powers and roots of any given positive number.</li> <li>• Apply the rules of powers to negative and fractional powers.</li> </ul>		<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> <li>1. Videos</li> <li>2. Practice questions</li> <li>3. Past exam questions</li> <li>4. Differentiated activities.</li> <li>5. Opportunities for flipped learning</li> </ol>	<p><b>Courageous and resilient</b></p> <p><b>The common good</b></p> <p><b>Appreciating cultural diversity in number systems and numeral representations, such as the use of different symbols or counting systems in different cultures.</b></p> <p><b>ICT</b> <b>Computer Science</b></p>	<p><b>Number</b></p> <p>Structure and calculation</p> <p>Fractions, decimals and percentages</p>

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		<ul style="list-style-type: none"> <li>• Find and use the relationship between negative powers and roots.</li> <li>• Simplify surds.</li> <li>• Calculate and manipulate surds, including rationalising a denominator.</li> <li>• Find the error interval or limits of accuracy of numbers that have been rounded to different degrees of accuracy.</li> <li>• Combine limits of two or more variables together to solve problems.</li> <li>• Work out the number of choices, arrangements or outcomes when choosing from lists or sets.</li> </ul>		<p>Research opportunities:</p> <ol style="list-style-type: none"> <li>1. How do surds help make precise calculations.</li> <li>2. Surds in engineering skyscrapers.</li> <li>3. Surds in building satellite dishes.</li> </ol>	<p><b>Geography (population growth)</b>  <b>Science</b>  <b>STEM</b></p> <p><b>Financial analyst</b>  <b>Research Scientist</b>  <b>Engineering</b></p>	
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Summer Term						
Quadratic equations	<ul style="list-style-type: none"> <li>Plotting quadratic graphs</li> <li>Solving quadratic equations by factorisation</li> <li>Solving a quadratic equation by using the quadratic formula</li> <li>Solving quadratic equations by completing the square</li> <li>The significant points of a quadratic curve</li> </ul>	<ul style="list-style-type: none"> <li>Draw and read values from quadratic graphs.</li> <li>Solve a quadratic equation by factorisation.</li> <li>Rearrange a quadratic equation so that it can be factorised.</li> <li>Solve a quadratic equation by using the quadratic formula.</li> <li>Recognise why some quadratic equations cannot be solved.</li> <li>Solve a quadratic equation by completing the square.</li> <li>Identify the significant points of a quadratic function graphically.</li> <li>Identify the roots of a quadratic function by solving a quadratic equation.</li> <li>Identify the turning point of a quadratic function by using symmetry or completing the square.</li> </ul>	<p>End of topic assessment</p> <p>End of term assessment</p>	<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> <li>Videos</li> <li>Practice questions</li> <li>Past exam questions</li> <li>Differentiated activities.</li> <li>Opportunities for flipped learning</li> </ol> <p>Research opportunities:</p> <ol style="list-style-type: none"> <li>Real life applications of quadratic functions. How can throwing a ball be modelled as a quadratic function.</li> <li>How can quadratic equations be used to help build a house.</li> <li>How do engineers use quadratic equations.</li> </ol>	<p><b>Grateful and generous</b> Grateful for the real life applications of quadratic equations.</p> <p><b>Courageous and resilient</b> While problem solving.</p> <p><b>Peace</b> Tolerant of different methods that could be used to solve problems.</p> <p><b>Appreciating the contributions of mathematicians from various cultural backgrounds in developing methods and techniques for solving systems of equations and inequalities.</b></p> <p><b>Computer Science Science STEM PE</b></p>	<p><b>Algebra</b> Solving equations and inequalities</p> <p>Graphs</p>



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					<p>Military Telecommunications Engineering Construction Astronomy Criminal Investigators Insurance agents</p>	
Quadratic equations	<ul style="list-style-type: none"> <li>Solving one linear and one non-linear equation using graphs</li> <li>Solving quadratic equations by the method of intersection</li> <li>Solving linear and non-linear simultaneous equations algebraically</li> <li>Quadratic inequalities</li> </ul>	<ul style="list-style-type: none"> <li>Solve a pair of simultaneous equations where one is linear and one is non-linear, using graphs.</li> <li>Solve equations by the method of intersecting graphs.</li> <li>Solve simultaneous equations where one equation is linear and the other is non-linear.</li> <li>Solve quadratic inequalities.</li> </ul>		<p>Mathswatch CorbettMaths Mathsbox MathsGenie MyMaths Quizizz</p> <p>These include:</p> <ol style="list-style-type: none"> <li>Videos</li> <li>Practice questions</li> <li>Past exam questions</li> <li>Differentiated activities.</li> <li>Opportunities for flipped learning</li> </ol> <p>Research opportunities:</p> <ol style="list-style-type: none"> <li>How can an air traffic controller use simultaneous equations to ensure two planes don't intersect at the same time.</li> </ol>	<p><b>Courageous and resilient</b></p> <p>Creation and Environment</p> <p>The common good</p> <p>Appreciating the contributions of mathematicians from various cultural backgrounds in developing methods and techniques for solving systems of equations and inequalities.</p> <p>Science STEM PE</p> <p>Bankers Economists</p>	<p><b>Algebra</b> Solving equations and inequalities</p> <p>Graphs</p>