

### KS4 Curriculum Overview: Maths

**Rationale: Year 11 is for students to practise their retrieval of the past 2 years of content. Students look at the 4 main areas of maths and use these skills to help solve problems solving questions and develop their mathematical reasoning.**

Term / Length of Unit	Outline	Assessment	Home Learning	Resources	Knowledge/Skills End Points	Reading
Yr11 Foundation Sets Autumn 1	Number Algebra	Number unit test	Set every week by individual teachers	Full SOW in shared area	<ul style="list-style-type: none"> <li>• Addition, subtraction, multiplication and division</li> <li>• Estimation</li> <li>• Prime factorisation</li> <li>• HCF and LCM</li> <li>• Simplifying and comparing fractions</li> <li>• Fractions of shapes and fractions of amounts</li> <li>• Addition of subtraction of fractions</li> <li>• Multiplication and division of fractions</li> <li>• Operations with mixed numbers</li> <li>• Powers and roots including zero power and reciprocals</li> <li>• Converting numbers to standard form</li> <li>• Calculations in Standard form</li> <li>• Simplifying Expressions</li> <li>• Expanding single brackets and factorising by taking out a common factor</li> <li>• Expanding double brackets</li> <li>• Factorising quadratic expressions</li> <li>• Sequences (including the Fibonacci) and nth term of a sequence</li> <li>• Solving basic linear equations</li> <li>• Solving equations with variables on both sides</li> </ul>	<p><b>Reading strategy:</b> Go through key words and annotate worded problems.</p> <p><b>Books:</b> The Life-Changing Magic of Numbers by Bobby Seagull A Quick History of Maths: From counting cavemen to Big Data by Clive Gifford</p> <p><b>Key words:</b> Indices, significant, algebra, formulae, factorising, reciprocal, Fibonacci, quadratic, variables.</p> <p>Words with the same meaning: Add &amp; Sum Multiply &amp; Product Divide &amp; Quotient Subtract &amp; Difference Estimation &amp; approximate</p> <p>Etymology of Fraction.</p>

					<ul style="list-style-type: none"> <li>• Representing inequalities on a number line and error intervals</li> <li>• Algebra and shape</li> <li>• Changing the subject of the formula</li> </ul>	
Yr11 Foundation Sets Autumn 2	Algebra Probability and Statistics	Algebra test Probability and Statistics test	Set every week by individual teachers	Full SOW in shared area	<ul style="list-style-type: none"> <li>• Coordinates and plotting graphs of straight lines</li> <li>• Finding the gradient of a straight line and the <math>y</math> – intercept (<math>y = mx + c</math>)</li> <li>• Plotting quadratic / cubic / reciprocal graphs</li> <li>• Solving simultaneous equations graphically</li> <li>• Solving simultaneous equations algebraically</li> <li>• Pictograms, Bar charts and Scatter graphs including commenting on extrapolation</li> <li>• Averages and range including mean from a table</li> <li>• Frequency polygons and pie charts</li> <li>• Stem and leaf diagrams and comparing distributions</li> <li>• Random and stratified sampling</li> <li>• Basic theoretical and experimental probability, including sample space diagrams</li> <li>• Two-way tables and frequency trees</li> <li>• Venn diagrams</li> <li>• Introduction to tree diagrams (independent events)</li> </ul>	<p><b>Reading strategy:</b> Go through key words and annotate worded problems.</p> <p><b>Books:</b> Damned Lies and Statistics by Joel Best. Dr. Math Explains Algebra: Learning Algebra Is Easy! Just Ask Dr. Math! by The Math Forum</p> <p><b>Key words:</b> Coordinates, intercept, quadratic, cubic, reciprocal, simultaneous, correlation, frequency, probability.</p>

					<ul style="list-style-type: none"> <li>• Further Tree diagrams (dependent events)</li> </ul>	
Yr11 Foundation Sets Spring 1	Ratio and Proportion Geometry	Ratio and Proportion test	Set every week by individual teachers	Full SOW in shared area	<ul style="list-style-type: none"> <li>• Percentages <b>without</b> a calculator including percentage change</li> <li>• Percentages <b>with</b> a calculator including percentage change</li> <li>• Simple and compound interest</li> <li>• Reverse percentages and percentage problems</li> <li>• Simplifying ratio and dividing a quantity into a ratio</li> <li>• Speed / Distance / Time including travel graphs</li> <li>• Density and Pressure</li> <li>• Angle facts and solving angle problems</li> <li>• Naming polygons and finding angles in polygons</li> <li>• Perimeter and area problems including the area of a trapezium</li> <li>• Naming 3D shapes and finding surface area</li> <li>• Volume of prisms</li> <li>• Converting metric units including units of area and volume</li> <li>• Vector notation and translations</li> <li>• Reflections and Rotations</li> <li>• Enlargements including centre of enlargement</li> <li>• Pythagoras</li> <li>• Using trigonometry to find <b>sides</b> of right-angled triangles</li> </ul>	<p><b>Reading strategy:</b> Go through key words and annotate worded problems.</p> <p><b>Books:</b> Plundermore &amp; Pythagoras: the Treasure of the Conquistadors by David Smith</p> <p><b>Key words:</b> Parallelogram, rhombus, trapezium, quadrilateral, Pentagon, hexagon, octagon, Pythagoras, translation, reflection, rotation, enlargement, transformation, trigonometry, hypotenuse.</p> <p>Etymology of percentage</p>

					<ul style="list-style-type: none"> <li>Using trigonometry to find <b>angles</b> in right-angled triangles</li> </ul>	
Yr11 Foundation Sets Spring 2	Geometry	Geometry test	Set every week by individual teachers	Full SOW in shared area	<ul style="list-style-type: none"> <li>Plans and elevations / Scale drawings</li> <li>Constructions</li> <li>Loci</li> <li>Bearings</li> <li>Circumference and area of a circle including naming parts of a circle</li> <li>Volume and surface area of a cylinder</li> <li>Similar shapes</li> <li>Congruent triangles</li> </ul>	<p><b>Reading strategy:</b></p> <p>Go through key words and annotate worded problems.</p> <p><b>Books:</b></p> <p>Geometry: Seeing, Doing, Understanding by Harold R. Jacobs</p> <p><b>Key words:</b></p> <p>Perpendicular, bisect, loci, locus, sector, segment, arc, chord, radius, diameter, circumference, congruent.</p> <p>Etymology of bisect.</p>
Yr11 Foundation Sets Summer 1	Revision bases on PPE data and Exams		Set every week by individual teachers	Class teacher to update SOW and put in shared area	Each class teacher will individualise SOW based on the needs of the class to tailor to their needs.	<p><b>Reading strategy:</b></p> <p>Go through key words and annotate worded problems.</p> <p><b>Books:</b></p> <p>Humble Pi: A Comedy of Maths Errors by Matt Parker</p>
Yr11 Foundation Sets Summer 2	Students not present after exams					