

# YEAR 9 COURSE GUIDE

(Optional 'higher' objectives are in **bold**.)

	Selected Success Criteria, from this year's course	
<b>UNIT 1: STRAIGHT LINE GRAPHS</b>	<ul style="list-style-type: none"> <li>Identify/use the equations of lines parallel to the axes, <math>y=x</math>, and <math>y=-x</math></li> <li>Use a table of values to plot a line graph</li> <li>Understand and use the line equation <math>y = mx + c</math></li> <li>Identify the equation of a line from its graph</li> <li>Interpret the gradient and y-intercept of real-life graphs</li> <li><b>Explore gradients of perpendicular lines</b></li> </ul>	
<b>UNIT 2: FORMING AND SOLVING EQUATIONS</b>	<ul style="list-style-type: none"> <li>Solve 1-step and 2-step equations and inequalities, including brackets</li> <li>Solve inequalities where negative numbers are involved</li> <li>Solve equations and inequalities with the unknown on both sides</li> <li>Substitute into formulae and expressions</li> <li>Rearrange 1-step formulae</li> </ul>	
<b>UNIT 3: TESTING CONJECTURES</b>	<ul style="list-style-type: none"> <li>Identify factors, common factors, and the highest common factor</li> <li>Identify multiples, common multiples, and the lowest common multiple</li> <li>Identify prime numbers</li> <li>Identify statements as true or false</li> <li>Identify statements as always, sometimes or never true</li> <li>Use mathematical argument to show that a statement is true</li> <li><b>Expand a product of three binomials</b></li> </ul>	
<b>UNIT 4: 3D SHAPES</b>	<ul style="list-style-type: none"> <li>Use the language of vertices and edges</li> <li>Identify/sketch/construct nets of cuboids and other 3D shapes</li> <li>Identify/draw plans and elevations of 3D shapes</li> <li>Calculate the area of rectangles, triangles, parallelograms, trapeziums and circles</li> <li>Calculate the surface area of cubes, cuboids, prisms and cylinders</li> <li>Calculate the volume of cubes, cuboids, prisms and cylinders</li> <li><b>Calculate the volume of spheres, pyramids and cones</b></li> </ul>	
<b>UNIT 5: CONSTRUCTION AND CONGRUENCY</b>	<ul style="list-style-type: none"> <li>Draw and measure acute, obtuse and reflex angles</li> <li>Interpret scale drawings</li> <li>Construct the locus of a distance from a point, and distance from a line/shape, or equidistant from two points</li> <li>Construct a perpendicular bisector and perpendicular to/from a point</li> <li>Construct the locus of points equidistant from two lines</li> <li>Construct an angle bisector</li> <li>Construct triangles using protractor and compasses</li> <li>Identify congruent triangles using SSS, SAS, ASA, RHS</li> </ul>	
<b>UNIT 6: NUMBERS</b>	<ul style="list-style-type: none"> <li>Understand the terms integer, real number, rational number</li> <li><b>Understand and use surds</b></li> <li>Work with directed number in algebraic contexts</li> <li>Use prime factorisation to identify HCF and LCM</li> <li>Add, subtract, multiply and divide fractions</li> <li>Solve problems with integers, decimals, fractions and standard form</li> </ul>	

<p><b>UNIT 7: USING PERCENTAGES</b></p>	<ul style="list-style-type: none"> <li>• Convert between fractions, decimals and percentages</li> <li>• Increase/decrease by a percentage using a calculator</li> <li>• Identify the percentage of a given increase, decrease, profit or loss</li> <li>• Solve reverse percentage problems</li> <li>• <b>Solve problems involving repeated percentage change</b></li> </ul>	
<p><b>UNIT 8: MATHS &amp; MONEY</b></p>	<ul style="list-style-type: none"> <li>• Understand/interpret bills and bank statements</li> <li>• Calculate simple interest, compound interest, wages, tax and VAT</li> <li>• Understand/use exchange rates</li> <li>• Solve problems using unit pricing</li> </ul>	
<p><b>UNIT 9: DEDUCTION</b></p>	<ul style="list-style-type: none"> <li>• Identify/calculate angles near parallel lines</li> <li>• Solve angle problems involving algebra</li> <li>• Conjecture with angles and shapes</li> </ul>	
<p><b>UNIT 10: ROTATION &amp; TRANSLATION</b></p>	<ul style="list-style-type: none"> <li>• Identify line symmetry and rotational symmetry</li> <li>• Rotate a shape on a grid or on co-ordinate axes</li> <li>• Translate a shape using a vector</li> <li>• Identify rotations, reflections and invariance</li> <li>• <b>Perform a series of reflections, rotations and translations</b></li> </ul>	
<p><b>UNIT 11: PYTHAGORAS' THEOREM</b></p>	<ul style="list-style-type: none"> <li>• Calculate missing sides in right-angled triangles</li> <li>• Use Pythagoras' theorem to decide whether a triangle is right-angled</li> <li>• <b>Use Pythagoras' theorem in 3D shapes</b></li> </ul>	
<p><b>UNIT 12: ENLARGEMENT &amp; SIMILARITY</b></p>	<ul style="list-style-type: none"> <li>• Enlarge a shape using a positive integer or fraction scale factor</li> <li>• Use a centre of enlargement</li> <li>• <b>Enlarge a shape by a negative scale factor</b></li> <li>• Work out missing sides and angles in similar shapes</li> <li>• <b>Solve problems with similar triangles</b></li> <li>• <b>Explore ratios of sides in right-angled triangles</b></li> </ul>	
<p><b>UNIT 13: SOLVING RATIO &amp; PROPORTION PROBLEMS</b></p>	<ul style="list-style-type: none"> <li>• Solve problems involving direct proportion</li> <li>• Interpret conversion graphs and relate them to direct proportion</li> <li>• Solve problems involving inverse proportion</li> <li>• <b>Recognise/interpret graphs showing inverse proportion</b></li> <li>• Solve problems involving division in a ratio</li> <li>• Solve 'best buy' problems</li> <li>• Solve ratio problems involving algebra</li> </ul>	
<p><b>UNIT 14: RATES</b></p>	<ul style="list-style-type: none"> <li>• Solve problems involving speed, distance and time</li> <li>• Plot/interpret distance-time graphs</li> <li>• Solve problems involving density, mass and volume</li> <li>• Understand the units used for different rates of change</li> <li>• <b>Convert between compound units of speed and density</b></li> </ul>	
<p><b>UNIT 15: PROBABILITY</b></p>	<ul style="list-style-type: none"> <li>• Identify simple theoretical probabilities as decimals and fractions</li> <li>• Use experimental data to identify relative frequency and expected outcomes</li> <li>• Construct/use a sample space diagram for independent events</li> <li>• <b>Construct/use a probability tree diagram</b></li> <li>• Use Venn diagrams and two-way tables to identify probabilities</li> </ul>	