

Year 9 Higher Mathematics Curriculum Plan

Year	Term	Week	Hours	Chapter: Topic	Topic break-down (sub-topics)	Learning Objectives: Students will be able to:			
	Term 1 – Module 1 and 2	1 – 3	10	1: Basic number	1.1 Solving real-life problems 1.2 Multiplication and division with decimals 1.3 Approximation of calculations 1.4 Multiples, factors, prime numbers, powers and roots 1.5 Prime factors, LCM and HCF 1.6 Negative numbers	Solve problems set in a real-life context. Multiply a decimal number by another decimal number. Divide by a decimal number. Round to a given number of significant figures. Estimate before calculating. Round a calculation to give a reasonable answer. Find multiples and factors. Identify prime numbers. Identify square and triangular numbers. Find square roots. Identify cubes and cube roots. Identify prime factors. Identify the least common multiple of two numbers. Identify the highest common factor of two multiples. Multiply and divide positive and negative numbers.			
		4 – 6	11	2: Fractions, ratio and proportion	2.1 One quantity as a fraction of another 2.2 Adding, subtracting and calculating with fractions 2.3 Multiplying and dividing fractions 2.4 Fractions on a calculator 2.5 Increasing and decreasing quantities by a percentage 2.6 Expressing one quantity as a percentage of another	Find one quantity as a fraction of another. Add and subtract fractions with different denominators. Multiply proper fractions and mixed numbers. Divide by fractions. Use a calculator to accurately solve problems involving fractions. Increase and decrease quantities by a percentage. Work out percentage change. Express one quantity as a percentage of another.			
		7	3	Review and revision 1	Number				
		8 – 9	Half Term Break						
		1 – 2	7	3: Statistical diagrams and averages	3.1 Statistical representation 3.2 Statistical measures 3.3 Scatter diagrams	Draw and interpret bar charts and pie charts. Draw and interpret line graphs. Use averages to solve more complex problems. Identify the advantages and disadvantages of each type of average and learn which one to use in different situations. Work out and use the range of a set of data. Calculate the mode, the median and the mean from a frequency table. Identify the modal group. Estimate the mean from a grouped frequency table. Draw, interpret and use scatter diagrams. Draw and use a line of best fit.			
		3 – 4	7	4: Number and sequences	4.1 Patterns in number 4.2 Number sequences 4.3 Finding the $n$ th term of a linear sequence 4.4 Special sequences 4.5 General rules from given patterns 4.6 The $n$ th term of a quadratic sequence 4.7 Finding the $n$ th term for quadratic sequences	Recognise patterns in number sequences. Generate sequences, given the $n$ th term. Find the $n$ th term of a linear sequence. Recognise and continue some special number sequences such as square numbers. Find the $n$ th term from practical problems involving sequences. Generate the terms of a quadratic sequence from the $n$ th term. Work out the $n$ th term of a quadratic sequence.			
		5 – 6	7	5: Ratio and proportion	5.1 Ratio 5.2 Direct proportion problems 5.3 Best buys	Simplify a ratio. Express a ratio as a fraction. Divide amounts in given ratios. Complete calculations from a given ratio and partial information. Recognise and solve problems that involve direct proportion. Find either the cost per unit mass or the mass per unit cost and use to this to find which product is cheaper.			
		7	4	Year 9 examinations and revision					
		8 – 9	Christmas Break						
		Term 2 – Module 3 and 4	1 – 2	7	5: Ratio and proportion	5.4 Compound measures 5.5 Compound interest and repeated percentage change 5.6 Reverse percentage (working out the original amount)	Recognise and solve problems involving the compound measures of rates of pay, speed, density and pressure. Calculate simple and compound interest. Solve problems involving repeated percentage change. Calculate the original amount after a known percentage change.		
			3 – 5	7	6: Angles	6.1 Angle facts 6.2 Triangles 6.3 Angles in a polygon 6.4 Regular polygons 6.5 Angles in parallel lines 6.6 Special quadrilaterals 6.7 Scale drawings and bearings	To know the sum of the angles on a straight line and around a point. Use vertically opposite angles. To solve missing angle problems in triangles. To work out the sum of the interior angles in a polygon. To be able to calculate the size of the interior and exterior angles of any regular polygon. To solve problems involving alternate, corresponding, allied and opposite angles. To be able to calculate the size of angles in special quadrilaterals using their geometric properties To read scale drawings and maps. To draw scale drawings. To use a bearing to specify a direction.		
			6	4	Review and revision 2				
			7	Half Term Break					
			1 – 3	10	7: Transformations, constructions and loci	7.1 Congruent triangles 7.2 Rotational symmetry 7.3 Transformations 7.4 Combinations of transformations 7.5 Bisectors 7.6 Defining a locus 7.7 Loci problems 7.8 Plans and elevations	Demonstrate that two triangles are congruent. Find the order of rotational symmetry for a 2D shape. Recognise shapes with rotational symmetry. Translate, reflect, rotate and enlarge a 2D shape. Combine transformations. Construct the bisectors of lines and angles. Construct angles of $60^\circ$ and $90^\circ$ . Draw a locus for a given rule. Solve practical problems using loci. Construct and interpret plans and elevations of 3D shapes.		
			4 – 5	7	8: Algebraic manipulation	8.1 Basic algebra 8.2 Factorisation 8.3 Quadratic expansion 8.4 Expanding squares 8.5 More than two binomials 8.6 Quadratic factorisation 8.7 Factorising $ax^2 + bx + c$ 8.8 Changing the subject of a formula	Recognise expressions, equations, formulae and identities. Substitute into, manipulate and simplify algebraic expressions. Factorise an algebraic expression. Expand two binomials to obtain a quadratic expression. Expand the square of a binomial. Expand more than two binomials. Factorise a quadratic expression of the form $x^2 + ax + b$ into two linear brackets. Factorise a quadratic expression of the form $ax^2 + bx + c$ into two linear brackets. Change the subject of a formula.		
			6	4	Review and revision 3				
			7 – 8	Easter Break					
			1 – 4	11	9: Length, area and volume	9.1 Circumference and area of a circle 9.2 Area of a parallelogram 9.3 Area of a trapezium 9.4 Sectors 9.5 Volume of a prism 9.6 Cylinders 9.7 Volume of a pyramid 9.8 Cones 9.9 Spheres	Calculate the circumference and area of a circle. Calculate the area of a parallelogram. Calculate the area of a trapezium. Calculate the length of an arc. Calculate the area and angle of a sector. Calculate the volume of a prism. Calculate the volume and surface area of a cylinder. Calculate the volume of a pyramid. Calculate the volume and surface area of a cone. Calculate the volume and surface area of a sphere.		

**Term 3 – Module 5 and 6**

5	3	Review and revision 4		
6	4	Review and revision 4		
7	Half Term Break			
1 – 2	7	10: Linear graphs	10.1 Drawing linear graphs from points	Draw linear graphs by finding points.
			10.2 Gradient of a line	Find the gradient of a straight line. Draw a line with a certain gradient.
			10.3 Drawing graphs by gradient-intercept and cover-up methods	Draw graphs using the gradient-intercept method. Draw graphs using the cover-up method.
			10.4 Finding the equation of a line from its graph	Find the equation of a line, using its gradient and intercept. Find the equation of a line given two points on the line.
			10.5 Real-life uses of graphs	Convert from one unit to another unit by using a conversion graph. Use straight-line graphs to find formulae.
			10.6 Solving simultaneous equations using graphs	Solve simultaneous linear equations using graphs.
			10.7 Parallel and perpendicular lines	Draw linear graphs parallel or perpendicular to other lines and passing through a specific point.
3	3	Summer examinations and revision		
4	4	Summer examinations and revision		
5 – 7	10	11: Right-angled triangles	11.1 Pythagoras' theorem	Calculate the length of the hypotenuse in a right angled triangle.
			11.2 Finding the length of the shorter side	Calculate the length of a shorter side in a right angled triangle.
			11.3 Applying Pythagoras' theorem in real-life situations	Solve practical problems involving Pythagoras' theorem.
			11.4 Pythagoras' theorem and isosceles triangles	Use Pythagoras' theorem and isosceles triangles.
			11.5 Pythagoras' theorem in three dimensions	Use Pythagoras' theorem to solve problems involving three dimensions
			11.6 Trigonometric ratios	Use the three trigonometric ratios.
			11.7 Calculating angles	Use the trigonometric ratios to calculate an angle.
			11.8 Using the sine and cosine functions	Find lengths of sides and angles in right-angled triangles using the sine and cosine functions.
			11.9 Using the tangent function	Find lengths of sides and angles in right-angled triangles using the tangent function.
			11.10 Which ratio to use	Decide which trigonometric ratio to use in a right-angled triangle.
			11.11 Solving problems using trigonometry	Solve practical problems using trigonometry. Solve problems using an angle of elevation or an angle of depression.
			11.12 Trigonometry and bearings	Solve bearing problems using trigonometry.
			11.13 Trigonometry and isosceles triangles	Use trigonometry to solve problems involving isosceles triangles.