TNHA Scheme of Work

Year Group- 9	Developed by: SCA / RCU	Number of lessons:

Block	Topic	Lesson Objectives *What most students should be able to do….*	Suggested timing (hours)	Assessment opportunities
1	Straight Line Graphs	• Name lines parallel to the axes • Use tables of values • Compare gradients • Compare intercepts • Understand and use y=mx+c • Find the equation of a line from a graph • Interpret gradient and intercepts of real life graphs • **Write and equation on the form y=mx+c** • **Model real-life graphs involving inverse proportion** • **Explore perpendicular lines**		
2	3D Shapes	• Know names of 2D and 3D shapes • Recognise prisms • Accurate nets of cuboids and other 3D shapes • Plans and Elevations		

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		- Find area of 2D shapes - Surface area of cubes and cuboids - Surface area of triangular prisms - Surface area of a cylinder - Volume of cubes and cuboids - Volume of other 3D shapes – prisms and cylinders **Explore volumes of cones, pyramids and spheres**		
3	Testing Conjectures	- Factors, Multiples and Primes - True or False? - Always, Sometimes, Never True - Show that… - Conjectures about number - Expand a pair of binomials - Conjectures with algebra - Explore the 100 grid		
4	Forming and Solving Equations	- Solve 1 and 2 step equations and inequalities - Solve 1 and 2 step equations and inequalities with brackets - Inequalities with negative numbers - Solve equations with unknowns on both sides - Solve inequalities with unknowns on both sides - Solving equations and inequalities in context - Substituting into formulae and equations - Rearranging formulae (one and two step) **Rearrange complex formulae including brackets and squares**		
5	Constructions and Congruence	- Draw and measure angles - Construct and interpret scale drawings		

		• Locus of distance from a point • Locus of distance from a straight line/shape • Locus equidistant from two points • Construct a perpendicular bisector • Construct a perpendicular from a point • Construct a perpendicular to a point • Locus of distance from two lines • Construct an angle bisector • Construct triangles from given information • Identify congruent figures • Explore congruent triangles • Identify congruent triangles		
6	Numbers	• Integers, real and rational numbers • **Understand and use surds** • Work with directed number • Solve problems with integers • Solve problems with decimals • HCF and LCM • Adding and subtracting Fractions • Multiplying and Dividing Fraction • Solve problems • Numbers in standard form		
		CHRISTMAS		
7	Using Percentages	• Use the equivalence of FDP • Calculate percentage increase and decrease • Express a change as a percentage		

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		• Solve reverse percentage problems • Recognise and solve percentage problems (calc and non-calc) • **Solve problems with repeated percentage change**		
8	Maths and Money	• Solve problems with bills and bank statements • Calculate simple interest • Calculate compound interest • Solve problems with VAT • Calculate wages and tax • Solve problems with exchange rates • Solve unit pricing problems		
9	Deduction	• Angles in parallel lines • Solving angle problems • Angle problems with algebra • Conjectures with angles • Conjectures with shapes • **Link constructions and geometrical reasoning**		
10	Rotation and Translation	• Identify the order of rotational symmetry of a shape • Compare and contrast rotational symmetry with lines of symmetry • Rotate a shape about a point on a shape • Rotate a shape about a point not on a shape • Translate points and shapes by a given vector • Compare rotation and reflection of shapes • **Find the result of a series of transformations**		

11	Pythagoras' Theorem and Trigonometry	- Squares and square roots - Identify the hypotenuse of a right angles triangle - Determine whether a triangle is right angled - Calculate the hypotenuse of a right angled triangle - Use Pythagoras theorem on coordinate axes - Explore proofs of Pythagoras' Theorem **Use Pythagoras' Theorem in 3D shapes** **Introduce trigonometry and labelling sides** **Find a missing side using trigonometry** **Find a missing angle using Trigonometry**		
12	Enlargement and Similarity	- Recognise enlargement and similarity - Enlarge a shape by a positive integer scale factor - Enlarge a shape by a positive integer scale factor from a point - Enlarge a shape by a positive fractional scale factor **Enlarge a shape by a negative scale factor** - Work out missing sides and angles in a pair of given similar shapes **Solve problems with similar triangles** **Explore ratios in right angled triangles**		
EASTER				
13	Solving Ratio and Proportion Problems	- Solve problems with direct proportion - Direct proportion and conversion graphs - Solve problems with inverse proportion **Graphs of inverse relationship** - Solve ratio problems given the whole or a part		

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		• Solve Best Buys • **Solve problems ratio and algebra**		
14	Rates	• Solve speed, distance and time problems without a calculator • Solve speed, distance and time problems with a calculator • Use distance-time graphs • Solve problems with density, mass and volume • Solve flow problems and their graphs • **Convert compound units**		
15	Probability	• Single event probability • Relative frequency • Expected Outcomes • Independent Events • **Use Tree Diagrams** • **Use Tree Diagrams to solve 'without replacement' problems** • Use diagrams to work out probabilities		
16	Algebraic Representation	• Represent inequalities on a number line • Plot quadratic graphs • **To solve simultaneous equations graphically**		
	Revision	•		
End of Year Project		• Research and produce a presentation poster on John Nash • Understand the barriers he faced throughout his career.		

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