Year 9 – Curriculum Overview [2021-2022]
Subject – Maths

	Knowledge & Understanding			Literacy Skills	Employability Skills	Assessment Opportunities
	Composites	**Components** [includes understanding of KEY concepts & subject specific vocab]	**Formal Retrieval** [if any]	**Opportunities for developing literacy skills**	**[if any]**	
Autumn Term HT1 Block 1 Reasoning with Algebra	**Straight Line Graphs** Week 1/2	• Lines parallel to the axis y=x and y=-x • Using a table of values • Compare gradients • Compare intercepts • Understand and use y=mx+c • Write an equation in the form y=mx+c (H) • Find the equation of a line from a graph • Interpret gradients and intercepts from real life graphs • Model real life graphs involving inverse proportion (H) • Explore perpendicular lines (H)	• Mathsbox skills check 10 questions – once per week • Mathsbox skills check 20 questions HWK – once a week • Weekly retrieval chart current and long-term skills	• Key words – learned and understood • Encourage use of subject language • Questioning • Pupil explanations and reasoning • Engage with worded exam questions	• Analytical skills • Algebraic reasoning • General reasoning • Number skills • Communication • Retail • Hairdressers • Builders • Constructions • Teachers • Medical	Sam testing
Block 1 Reasoning with Algebra	**Forming and Solving Equations** Week 3/4	• One and two step equations and inequalities. • Equations and inequalities with brackets. • Inequalities with negative numbers • Solve equations with unknowns on both sides • Solve inequalities with unknowns on both sides.				Sam testing

Block 1 **Reasoning with Algebra**	**<u>Testing Conjectures</u>** Week 5/6	• Factors multiples and primes • True or False • Always sometimes never • Show that • Conjectures about number • Expand a pair of binomials • Conjecture with algebra • Explore the 100 squares grid				Sam testing
HT2 **Block 2** **Constructing in 2 and 3 Dimensions**	**<u>3 Dimensional Shapes</u>** Week 7/8/9	• Know names of 2D and 3D shapes • Recognise prisms including language of vertices and edges • Accurate nets of cuboids and other 3D shapes • Sketch and recognise the nets of cuboids and other 3D nets • Plans and elevations • Find area of 2D shapes • Surface area of cubes and cuboids • Volume of cubes and cuboids • Volume of other 3D shapes-prisms and cylinders • Explore volumes of cones pyramids and spheres (H)			• Statistician • Data Analyst • Law	Sam testing
Block 2 **Constructing in 2 and 3 Dimensions**	**<u>Construction and congruency</u>** Week 10/11/12	• Draw and measure angles • Construct and interpret scale drawings • Locus of distance from a point. • Locus of distance from a straight line. • 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			• Engineering and architecture and planning • Number skills involved in many areas of different work.	Sam testing End of term test

		• Identify congruent figures • Explore congruent triangles • Identify congruent triangles				
Spring Term **HT3** **Reasoning with number**	**<u>Numbers</u>** Week 1,2	• Integers, real and rational numbers • Understand and use surds • Work with directed numbers • Solve problems with integers • Solve problems with decimals • HCF and LCM • Adding and subtracting fractions • Multiplying and diving fractions • Solve problems with fractions • Numbers in standard forms	• Mathsbox skills check 10 questions – once per week • Mathsbox skills check 20 questions HWK – once a week • Weekly retrieval chart current and long-term skills	• Key words – learned and understood • Encourage use of subject language • Questioning • Pupil explanations and reasoning • Engage with worded exam questions		Sam testing
	<u>Using percentages</u> Week 3,4	• Use the equivalence of fractions, decimals, and percentages • Calculate percentage increase and decrease • Express change as a percentage • Solve reverse percentage problems • Recognise and solve percentage problems • Solve problems with repeated percentage change				Sam testing
	<u>Maths and Money</u> Week 5,6	• Solve problems with bills and bank statements • Calculate simple interest • Calculate compound interest • Solve problems with Value Added Tax • Calculate wages and taxes • Solve problems with exchange rates • Solve unit pricing problems				Sam testing

Spring Term **HT4** **Reasoning with Geometry**	**<u>Deduction</u>** Week 7,8	• Angles in parallel lines • Solve angle problems • Solve angle problems with algebra • Conjectures with angles • Conjectures with shapes • Link constructions and geometrical reasoning	• Mathsbox skills check 10 questions – once per week • Mathsbox skills check 20 questions HWK – once a week Weekly retrieval chart current and long-term skills	• Key words – learned and understood • Encourage use of subject language • Questioning • Pupil explanations and reasoning • Engage with worded exam questions	Engineering and architecture and planning	Sam testing End of term test
	<u>Rotation and Translation</u> Week 9,10	• Identify the order of rotational symmetry of a shape • Compare and contrast rotational symmetry with line 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			Engineering and architecture and planning	
	<u>Pythagoras</u> Week 11,12	• Squares and square roots • Identify the hypotenuse of a right-angled triangle • Determine whether a triangle is right-angled • Calculate the hypotenuse of a right-angled triangle • Calculate missing sides in right-angled triangles • Use Pythagoras' theorem on coordinate axes • Explore proofs of Pythagoras' theorem			Engineering and architecture and planning	

		• Use Pythagoras' theorem in 3D shapes				
Summer Term HT5 Reasoning and Proportion	**<u>Enlargement and Similarity</u>** Week 1,2	• 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	• Mathsbox skills check 10 questions – once per week • Mathsbox skills check 20 questions HWK – once a week • Weekly retrieval chart current and long-term skills	• Key words – learned and understood • Encourage use of subject language • Questioning • Pupil explanations and reasoning • Engage with worded exam questions		Sam testing
	<u>Solving Ratio and Proportion Problems</u> Week 3,4	• Solve problems with direct proportion • Direct proportion and conversion graphs • Solve problems with inverse proportion • Graphs of inverse relationships • Solve ratio problems given the whole or a part • Solve best buy problems • Solve problems involving ratio and algebra			• Number skills involved in many areas of different work.	Sam testing
	<u>Rates</u> Week 5,6	• Solve speed, distance and time problems with and without a calculator • Use distance-time graphs • Solve problems with density, mass and volume • Solve flow problems and their graphs				Sam testing

		• Rates of change and their units • Convert compound units				
Summer Term **HT6** **Representations and Revision**	**<u>Probability</u>** Week 7,8	• Single event probability • Relative frequency – including convergence • Expected outcomes • Independent events • Use tree diagrams • Use tree diagrams to solve without replacement problems • Use diagrams to work out probabilities	• Mathsbox skills check 10 questions – once per week • Mathsbox skills check 20 questions HWK – once a week Weekly retrieval chart current and long-term skills	• Key words – learned and understood • Encourage use of subject language • Questioning • Pupil explanations and reasoning Engage with worded exam questions		Sam testing End of term test
	<u>Algebraic Representation</u> Week 9	• Draw and interpret quadratic graphs • Interpret graphs, including reciprocal and piecewise • Investigate graphs of simultaneous equations • Represent inequalities				