

Mathematics Year 9 Curriculum Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Reasoning with Algebra						Constructing in 2 and 3 Dimensions					
	Straight line graphs	Forming and solving equations	Testing conjectures				Three-dimensional shapes			Constructions and congruency		
Spring	Reasoning with Number						Reasoning with Geometry					
	Numbers	Using percentages	Maths and money				Deduction	Rotation and translation	Pythagoras' Theorem			
Summer	Reasoning with Proportion						Representations and Revision					
	Enlargement and similarity	Solving ratio & proportion problems	Rates				Probability	Algebraic representation	Revision			

	Autumn		Spring		Summer	
	Learning Cycle 1	Learning Cycle 2	Learning Cycle 3	Learning Cycle 4	Learning Cycle 5	Learning Cycle 6
Topic	Reasoning with Algebra	Constructing in 2 & 3 Dimensions	Reasoning with Number	Reasoning with Geometry	Reasoning with Proportion	Representations & Revision
Critical Prior Knowledge	Y8Sp3 – Solving equations Y8Au2 – Plotting points & straight lines Y7Au2 – Types of number	Y8Su5 – Area of triangles, circles & quadrilaterals	Y7Sp3 – Directed numbers Y8Sp4 – Decimals, percentages & fractions Y8Sp4 – Standard index form Y8Sp4 – Calculate with money	Y8Su5 – Symmetry	Y8Au1 – Understanding ratio	Y8Au2 – Sample spaces for 1 or more events
Overall Intent (Big ideas & key concepts)	Straight line graphs <i>Forming & solving equations</i> Testing conjectures	Three-dimensional shapes <i>Constructions & congruency</i>	Numbers <i>Using percentages</i> Maths & money	Deduction <i>Rotation & translation</i> Pythagoras' Theorem	Enlargement & similarity <i>Solving ratio & proportion problems</i> Rates	Probability <i>Algebraic representation</i> Revision
Essential Knowledge milestones (What students must master)	Lines parallel to the axes, $y = x$ & $y = -x$ Using tables of values Compare gradients & intercepts Understand & use $y = mx + c$ Write an equation in the form $y = mx + c$ Find the equation of a line from a graph	Know names of 2-D & 3-D shapes Recognise prisms Accurate nets of cuboids & other 3-D shapes Sketch & recognise nets of cuboids & other 3-D shapes Plans & elevations Find area of 2-D shapes	Integers, real & rational numbers Understand & use surds Work with directed number Solve problems with integers Solve problems with decimals HCF & LCM Adding & subtracting fractions	Angles in parallel lines Solving angles problems (using chains of reasoning) Angles problems with algebra Conjectures with angles Conjectures with shapes	Recognise enlargement & 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	Single event probability Relative frequency – include convergence Expected outcomes Independent events Use tree diagrams Use tree diagrams to solve 'without replacement' problems

	Autumn		Spring		Summer	
	Learning Cycle 1	Learning Cycle 2	Learning Cycle 3	Learning Cycle 4	Learning Cycle 5	Learning Cycle 6
Topic	Reasoning with Algebra	Constructing in 2 & 3 Dimensions	Reasoning with Number	Reasoning with Geometry	Reasoning with Proportion	Representations & Revision
	<p>Interpret gradient & intercepts of real-life graphs</p> <p>Model real-life graphs involving inverse proportion</p> <p>Explore perpendicular lines</p> <p><i>Solve one- & two-step equations & inequalities</i></p> <p><i>Solve one- & two-step equations & inequalities with brackets</i></p> <p><i>Inequalities with negative numbers</i></p> <p><i>Solve equations with unknowns on both sides</i></p> <p><i>Solve inequalities with unknowns on both sides</i></p> <p><i>Solving equations & inequalities in context</i></p> <p><i>Substituting into formulae &</i></p>	<p>Surface area of cubes & cuboids</p> <p>Surface area of triangular prisms</p> <p>Surface area of a cylinder</p> <p>Volume of cubes & cuboids</p> <p>Volume of other 3-D shapes – prisms & cylinders</p> <p>Explore volumes of cones, pyramids & spheres</p> <p><i>Draw & measure angles</i></p> <p><i>Construct & interpret scale drawings</i></p> <p><i>Locus of distance from a point</i></p> <p><i>Locus of distance from a straight line/shape</i></p> <p><i>Locus equidistant from two points</i></p> <p><i>Construct a perpendicular bisector</i></p>	<p>Multiplying & dividing fractions</p> <p>Solving problems with fractions</p> <p>Numbers in standard form</p> <p><i>Use the equivalence of fractions, decimals & percentages</i></p> <p><i>Calculate percentage increase & decrease</i></p> <p><i>Express a change as a percentage</i></p> <p><i>Solve 'reverse' percentage problems</i></p> <p><i>Recognise & solve percentage problems (non-calculator)</i></p> <p><i>Recognise & solve percentage problems (calculator)</i></p>	<p>Link constructions & geometrical reasoning</p> <p><i>Identify the order of rotational symmetry of a shape</i></p> <p><i>Compare & contrast rotational symmetry with line symmetry</i></p> <p><i>Rotate a shape about a point on a shape</i></p> <p><i>Rotate a shape about a point not on a shape</i></p> <p><i>Translate points & shapes by a given vector</i></p> <p><i>Compare rotation & reflection of shapes</i></p> <p>Find the result of a series of transformations</p> <p>Squares & square roots</p> <p>Identify the hypotenuse of a right-angled triangle</p>	<p>Enlarge a shape by a negative scale factor</p> <p>Work out missing sides & angles in a pair of given similar shapes</p> <p>Solve problems with similar triangles</p> <p>Explore ratios in right-angled triangles</p> <p><i>Solve problems with direct proportion</i></p> <p><i>Direct proportion & conversion graphs</i></p> <p><i>Solve problems with inverse proportion</i></p> <p>Graphs of inverse relationships</p> <p><i>Solve ratio problems given the whole or a part</i></p> <p><i>Solve 'best buy' problems</i></p> <p>Solve problems ratio & algebra</p>	<p>Use diagrams to work out probabilities</p> <p><i>Draw & interpret quadratic graphs</i></p> <p><i>Interpret graphs, including reciprocal & piece-wise</i></p> <p>Investigate graphs of simultaneous equations</p> <p><i>Represent inequalities</i></p>

	Autumn		Spring		Summer	
	Learning Cycle 1	Learning Cycle 2	Learning Cycle 3	Learning Cycle 4	Learning Cycle 5	Learning Cycle 6
Topic	Reasoning with Algebra	Constructing in 2 & 3 Dimensions	Reasoning with Number	Reasoning with Geometry	Reasoning with Proportion	Representations & Revision
	<i>equations Rearrange formulae (one-step)</i> <i>Rearrange formulae (two-step)</i> Rearrange complex formulae including brackets & squares Factors, Multiples & 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 Expand three binomials	<i>Construct a perpendicular from a point</i> <i>Construct a perpendicular to a point</i> <i>Locus of distance from two lines</i> <i>Construct an angle bisector</i> <i>Construct triangles from given information</i> <i>Identify congruent figures</i> <i>Explore congruent triangles</i> <i>Identify congruent triangles</i>	Solve problems with repeated percentage change Solve problems with bills & bank statements Calculate simple interest Calculate compound interest Solve problems with Value Added Tax Calculate wages & taxes Solve problems with exchange rates Solve unit pricing problems	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 Use Pythagoras' theorem in 3-D shapes	Solve speed, distance & time problems without a calculator Solve speed, distance & time problems with a calculator Use distance/time graphs Solve problems with density, mass & volume Solve flow problems & their graphs Rates of change & their units Convert compound units	
Cultural Capital	Y9 Enriching mathematics 1	Y9 Enriching mathematics 2	Y9 Enriching mathematics 3	Y9 Enriching mathematics 4	Y9 Enriching mathematics 5	Y9 Enriching mathematics 6
Mode of Retrieval	Flashback starters	Formal assessment of Y8 Summer Term	Flashback starters	Formal assessment of Y9 Autumn Term	Flashback starters	Formal assessment of Y9 Spring Term

	Autumn		Spring		Summer	
	Learning Cycle 1	Learning Cycle 2	Learning Cycle 3	Learning Cycle 4	Learning Cycle 5	Learning Cycle 6
Topic	Reasoning with Algebra	Constructing in 2 & 3 Dimensions	Reasoning with Number	Reasoning with Geometry	Reasoning with Proportion	Representations & Revision
	Combined unit tests; knowledge & application covering previous 2 units.	application of knowledge	Combined unit tests; knowledge & application covering previous 2 units.	application of knowledge	Combined unit tests; knowledge & application covering previous 2 units.	application of knowledge
ECC Student Characteristics	<p>Always endeavour to show resilience. Be aspirational. Be knowledgeable & able to deeply understand & recall information easily & be skilled in applying this knowledge in a range of circumstances. Have confidence & communicate effectively. Know how to behave well & respect other members of our community when sharing ideas remember to be mutually tolerant & empathetic.</p>					
Connection to future learning (When is this developed / revisited)?	Y10Au2 – Representing solutions of equations & inequalities	Y10Sp1 – Working with circles	Y10Sp2 – Percentage & interest Y10Su2 – Non-calculator methods Y10Su2 – Types of numbers & sequences	Y10Au1 – Trigonometry	Y10Au1 – Congruence, similarity & enlargement Y10Sp4 – Ratio & fractions	Y10Au2 – Simultaneous equations Y10Sp4 - Probability