

SUBJECT: Higher Shape, Space and Measure		CURRICULUM PROGRESSION PATHWAYS		CL: Miss Z. Bradshaw and Miss A. Hazell	
KS3 (Level 1)	KS4 (Level 2)	KS5 (Level 3)	Further Education and training	Careers	
→		→		→	
<p><u>Shape, Space and Measure</u></p> <p>Angles</p> <ul style="list-style-type: none"> Solve problems involving vertically opposite angles and angles in parallel lines Work out interior and exterior angles of polygons Use properties of special triangles to find unknown angles <p>2D Shapes/Area/ Perimeter</p> <ul style="list-style-type: none"> Describe line and rotational symmetry of triangles and quadrilaterals Calculate areas of triangles, parallelograms, trapeziums. Calculate areas and perimeters of compound shapes made up of rectangles and triangles <p>3D Shapes/Volume/Surface Area</p> <ul style="list-style-type: none"> Identify nets and properties of 3D shapes and draw accurate nets Use 2D representations of 3D solids Calculate surface area and volume of cubes, cuboids and prisms (including cylinders) <p>Transformations</p> <ul style="list-style-type: none"> Describe and carry out translations (no vectors), rotations and reflections Describe and carry out enlargements with negative and fractional scale factors. Carry out combinations of transformation <p>Construction and Loci</p> <ul style="list-style-type: none"> Accurately draw triangles Construct perpendicular bisectors and angle 	<p><u>Shape Space and Measure</u></p> <p>Angles</p> <ul style="list-style-type: none"> Derive and use sum of angles in triangles and quadrilaterals Use interior and exterior angles of polygons to solve problems <p>2D Shapes/Perimeter/Area</p> <ul style="list-style-type: none"> Find perimeter and area of any compound shape Find and recall area of trapezium Calculate areas and circumferences of circles (including in terms of pi). Calculate arc lengths, angles and areas of sectors. <p>3D Shapes/Volume/Surface Area</p> <ul style="list-style-type: none"> Draw plans and elevations of 3D solids Convert between metric units of area and volumes Calculate surface area and volume of prisms, spheres, pyramids and cones. Solve problems involving volumes and surfaces areas of 3D shapes <p>Transformations</p> <ul style="list-style-type: none"> Carry out translations using vectors Describe rotations around centres Enlarge shapes with fractional and negative scale factors around a center Describe combinations of transformation <p>Right Angled Triangles</p> <ul style="list-style-type: none"> Use Pythagoras theorem to find the hypotenuse or shorter sides of a right angled triangle and solve problems involving Pythagoras. Use trigonometric ratios to find lengths and angles in right angled triangles 	<p>Trigonometry</p> <ul style="list-style-type: none"> Using exact trigonometric ratios Complete proofs and solve equations using trigonometric identities Use double angle and compound angle formulae to complete proofs and solve equations Graphs of reciprocal trigonometric functions and their domains and ranges Use reciprocal trigonometric functions to solve equations Use inverse trigonometric functions and their domains and ranges Work interchangeably with degrees and radians Use radians to work out areas of sectors and segments Small angle approximations <p>Vectors</p> <ul style="list-style-type: none"> Use column vectors and unit vectors interchangeably 	<ul style="list-style-type: none"> Actuarial Science Aeronautical Engineering Chemical Engineering Civil Engineering Economics Electrical/Electronic Engineering Engineering (General) Mathematics Mechanical Engineering Physics Statistics 	<ul style="list-style-type: none"> Actuarial Science Aeronautical Engineering Chemical Engineering Civil Engineering Economics Electrical/Electronic Engineering Engineering (General) Mathematics Mechanical Engineering Physics Statistics 	

Quality of Education: Curriculum is planned and sequenced so that new **knowledge** and **skills** build on what has been taught before and towards its clearly defined end points.

<p>bisectors</p> <ul style="list-style-type: none"> • Draw and use loci to solve problems 	<ul style="list-style-type: none"> • Know and use exact trigonometric values <p>Construction and Loci</p> <ul style="list-style-type: none"> • Construct the shortest distance from a point to a line • Construct shapes made from triangles using a ruler and compasses <p>Similarity and Congruence</p> <ul style="list-style-type: none"> • Know conditions of congruency and prove two shapes are congruent • Use ratio of corresponding sides to calculate scale factors and use to find missing lengths of similar shapes • Use links between length, area and volume scale factors to solve problems <p>More Trigonometry</p> <ul style="list-style-type: none"> • Recognise and sketch sine, cosine and tangent graphs and know how to use them to find sine, cosine and tangent of any angle and solve equations • Find area of non-right angled triangles using $\frac{1}{2}ab\sin C$ • Use sine and cosine rules to solve problems including bearings problems • Use Pythagoras and trigonometric ratios in 3D. • Use transformations of trigonometric graphs <p>Circle Theorems</p> <ul style="list-style-type: none"> • Solve problems involving angles, triangles and circles • Solve problems involving chords and radii • Understand and use facts about tangents from a point and at a point • Understand, prove and use facts about angles subtended at the center and at the circumference • Understand, prove and use facts about cyclic quadrilaterals • Prove and use alternate segment theorem • Find the equation to the tangent to a circle at a given point <p>Vectors</p> <ul style="list-style-type: none"> • Use and understand vector notation 	<ul style="list-style-type: none"> • Calculate magnitude and direction of vectors • Use vectors to solve geometric problems • Use vectors in speeds and distance calculations • Use vectors in 3D • Use vectors in mechanics 		
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	<ul style="list-style-type: none">• Calculate magnitude and resultant of vectors• Express points as position vectors• Prove lines are collinear or parallel using vectors			
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