

HIGHER GCSE UNIT SUMMARY: UNIT 5: Angles, polygons, parallel lines; Right-angled triangles: Pythagoras and trigonometry

5a) Polygons, angles and parallel lines

Unit Description	Taught	Revision Priority
Classify quadrilaterals by their geometric properties and distinguish between scalene, isosceles and equilateral triangles;		
Understand 'regular' and 'irregular' as applied to polygons;		
Understand the proof that the angle sum of a triangle is 180° , and derive and use the sum of angles in a triangle;		
Use symmetry property of an isosceles triangle to show that base angles are equal;		
Find missing angles in a triangle using the angle sum in a triangle AND the properties of an isosceles triangle;		
Understand a proof of, and use the fact that, the exterior angle of a triangle is equal to the sum of the interior angles at the other two vertices;		
Explain why the angle sum of a quadrilateral is 360° ; use the angle properties of quadrilaterals and the fact that the angle sum of a quadrilateral is 360° ;		
Understand and use the angle properties of parallel lines and find missing angles using the properties of corresponding and alternate angles, giving reasons;		
Use the angle sums of irregular polygons;		
Calculate and use the sums of the interior angles of polygons, use the sum of angles in a triangle to deduce and use the angle sum in any polygon and to derive the properties of regular polygons;		
Use the sum of the exterior angles of any polygon is 360° ;		
Use the sum of the interior angles of an n-sided polygon;		
Use the sum of the interior angle and the exterior angle is 180° ;		
Find the size of each interior angle, or the size of each exterior angle, or the number of sides of a regular polygon, and use the sum of angles of irregular polygons;		
Calculate the angles of regular polygons and use these to solve problems;		
Use the side/angle properties of compound shapes made up of triangles, lines and quadrilaterals, including solving angle and symmetry problems for shapes in the first quadrant, more complex problems and using algebra;		
Use angle facts to demonstrate how shapes would 'fit together', and work out interior angles of shapes in a pattern.		

5b) Pythagoras' Theorem and trigonometry

Unit Description	Taught	Revision Priority
Understand, recall and use Pythagoras' Theorem in 2D;		
Given three sides of a triangle, justify if it is right-angled or not;		
Calculate the length of the hypotenuse in a right-angled triangle (including decimal lengths and a range of units);		
Find the length of a shorter side in a right-angled triangle;		
Calculate the length of a line segment AB given pairs of points;		
Give an answer to the use of Pythagoras' Theorem in surd form;		
Understand, use and recall the trigonometric ratios sine, cosine and tan, and apply them to find angles and lengths in general triangles in 2D figures;		
Use the trigonometric ratios to solve 2D problems;		
Find angles of elevation and depression;		
Know the exact values of $\sin \theta$ and $\cos \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90° ; know the exact value of $\tan \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ$ and 60° .		