Geometry—Shape and Construction

Stage 6	Stage 7	Stage 8/Foundation	Stage 9/FH	Stage 10/Higher	Stage 11/Higher+
draw 2-D shapes using given dimensions and angles	identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres	identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference	know the formulae for: Pythagoras' theorem, $a^2 + b^2 = c^2$, and apply it to find lengths in right-angled triangles in two dimensional figures	know the formulae for: Pythagoras' theorem, $a^2 + b^2 = c^2$, and apply it to find lengths in right-angled triangles **and, where possible, general triangles and in three dimensional figures**	
illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius	identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres	know the formulae: circumference of a circle = $2\pi r = \pi d$,	identify and apply circle definitions and properties, including: tangent, arc, sector and segment	**apply and prove the standard circle theorems concerning angles, radii, tangents and chords, and use them to prove related results**	**Properties of shape**
recognise, describe and build simple 3-D shapes, including making nets	use conventional terms and notations: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, regular polygons and polygons with reflection and/or rotation symmetries	know the formulae: area of a circle = πr^2	construct plans and elevations of 3D shapes	use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle)	identify, describe and construct similar shapes, including on coordinate axes, by considering enlargement (including fractional scale factors)
	use the standard conventions for labelling and referring to the sides and angles of triangles	interpret plans and elevations of 3D shapes	use these to construct given figures and solve loci problems; know that the perpendicular distance from a point to a line is the shortest distance to the line	use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS)	**Construction**
	draw diagrams from written description	identify, describe and construct similar shapes, including on coordinate axes, by considering enlargement			
	identify, describe and construct congruent shapes, including on coordinate axes, by considering rotation, reflection and translation				
compare and classify geometric shapes based on their properties and sizes	derive and apply the properties and definitions of: special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and rhombus; and triangles and other plane figures using appropriate language	derive and use the sum of angles in a triangle (e.g. to deduce and use the angle sum in any polygon, and to derive properties of regular polygons)	apply angle facts, triangle congruence, similarity and properties of quadrilaterals to conjecture and derive results about angles and sides, including Pythagoras' Theorem and the fact that the base angles of an isosceles triangle are equal, and use known results to obtain simple proofs		**Proof**
find unknown angles in any triangles, quadrilaterals, and regular polygons	apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles	understand and use alternate and corresponding angles on parallel lines		know the trigonometric ratios, $\sin\theta$ = opposite/hypotenuse, $\cos\theta$ = adjacent/hypotenuse, $\tan\theta$ = opposite/adjacent	apply them to find angles and lengths in right-angled triangles and, **where possible, general triangles in three dimensional figures**
recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles				apply it to find angles and lengths in right-angled triangles in two dimensional figures	**know and apply the sine rule, $a/\sin A = b/\sin B = c/\sin C$, and the cosine rule, $a^2 = b^2 + c^2 - 2bc\cos A$, to find unknown lengths and angles**
				know the exact values of $\sin\theta$ and $\cos\theta$ for $\theta = 0°, 30°, 45°, 60°$ and $90°$; know the exact value of $\tan\theta$ for $\theta = 0°, 30°, 45°$ and $60°$	**know and apply Area = ½ab sinC to calculate the area, sides or angles of any triangle.**
					Angles