

## Year 7 Maths - Shape 1 (Properties, Measurements, Area, Surface Area, Nets, Plans and Elevations)

	Knowledge, Skills, Understanding
<b>Higher</b>	<p>Pupils/I:</p> <ul style="list-style-type: none"> <li>Draw and label diagrams from given instructions</li> <li>Solve geometric problems using side and angle properties of equilateral, isosceles and right-angled triangles</li> <li>Know that the perpendicular distance from a point to a line is the shortest distance to the line</li> <li>Convert between Imperial and metric units of measurement when given a formula</li> <li>State conclusions clearly using the units correctly</li> <li>Deduce and use formula for the area of a trapezium</li> <li>Find missing lengths in 2D shapes when the area is known</li> <li>Calculate surface areas of shapes made from cuboids, for lengths given as whole numbers</li> <li>Calculate the surface area of right prisms</li> <li>Find missing lengths in simple 3D shapes when the surface area is known</li> <li>Identify more complex nets of 3D shapes including irregular polyhedra</li> <li>Deduce properties of simple 3D shapes from their 2D representations</li> <li>Draw plans and elevations from 3D shapes and vice versa</li> </ul>
<b>Intermediate</b>	<p>Pupils/I:</p> <ul style="list-style-type: none"> <li>Use geometric language appropriately</li> <li>Identify regular and irregular polygons</li> <li>Recognise, visualise, draw or complete diagrams with a given number of lines of symmetry and rotational symmetry</li> <li>Find co-ordinates of points determined by geometric information</li> <li>Solve geometric problems using properties of; equilateral and isosceles triangles, and quadrilaterals</li> <li>List the properties of each, or identify (name) a given shape</li> <li>Solve simple problems involving units of measurement in the context of length and area</li> <li>Convert fluently between metric units of measurement</li> <li>Find the perimeter of a square/rectangle</li> <li>Calculate the perimeter and area of shapes made from rectangles</li> <li>Find the area of triangles by counting i.e. adding full and partial squares</li> <li>Use a formula to calculate the area of triangles and parallelograms</li> <li>Calculate areas of compound shapes made from rectangles and triangles</li> <li>Calculate the surface area of cubes and cuboids, without a net</li> <li>Draw accurate nets for common 3D shapes</li> <li>Identify all arrangements of a net of a cuboid</li> <li>Identify simple nets of 3D shapes - regular polyhedral</li> <li>Use a net to visualise the edges or vertices that will meet when folded</li> <li>Begin to use plans and elevations of simple shapes</li> </ul>

<b>Foundation</b>	<p>Pupils/I:</p> <ul style="list-style-type: none"> <li>Draw sketches of shapes</li> <li>Recognise properties of squares and rectangles</li> <li>Use correct notation for labelling lines (parallel and perpendicular) and triangles</li> <li>Know the sum of angles in a triangle is <math>180^\circ</math> and calculate unknown angles inside a triangle</li> <li>Recognise and visualise the symmetry of a 2-D shape: line symmetry</li> <li>Identify simple angle, side and symmetry properties of triangles and simple quadrilaterals</li> <li>Identify and name common solids: cube, cuboid, cylinder, prism, pyramid, sphere and cone</li> <li>Use mathematical language to describe 3D shapes; edges, vertices and faces</li> <li>Draw and measure lines accurately</li> <li>Suggest suitable units to estimate or measure length, mass and capacity</li> <li>Record readings from scales to a suitable degree of accuracy</li> <li>Read and interpret scales on a range of measuring instruments</li> <li>Choose suitable metric units to estimate length and area.</li> <li>Use units of measurement to estimate and solve problems in everyday contexts involving length, area, volume, mass, time and angle</li> <li>Find the perimeter and area of a square/rectangle by counting</li> <li>Use the formula for the area of a rectangle/square</li> <li>Calculate perimeter and area of compound shapes made from rectangles</li> <li>Understand the meaning of surface area</li> <li>Calculate the surface area of cubes and cuboids with a net</li> <li>Construct 3D shapes from given nets</li> <li>Identify all arrangements of a net of a cube</li> </ul>
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**NB: direct command = knowledge, 'can'= understanding, 'able to'=skills**