

# Geometry: Properties of Shapes



<p><b>Essential knowledge for a mathematician:</b></p> <ul style="list-style-type: none"> <li>• Knowledge of place value</li> <li>• Knowledge of calculation using all four operations</li> <li>• Knowledge of fractions and percentages</li> <li>• Knowledge of geometry (shape, space and measure)</li> <li>• Knowledge of statistics</li> <li>• Knowledge of ratio and proportion</li> <li>• Knowledge of algebra</li> </ul>	<p><b>Essential skills for a mathematician:</b></p> <ul style="list-style-type: none"> <li>• To problem solve</li> <li>• To reason about mathematical ideas and concepts</li> <li>• To make links and transfer skills across the mathematical curriculum, other areas of the curriculum and in real life</li> <li>• To be excited and inquisitive about maths</li> </ul>
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IDENTIFYING SHAPES AND THIER PROPERTIES							
F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>To select and use shapes appropriately in play, combining them to make models and enclosures.</p> <p>To show an awareness and name some 2D shapes in the environment.</p> <p>To talk about and explore 2D shapes using relevant mathematical vocabulary such as flat/sides/ round/ straight/ corners</p> <p>To show an awareness and name some 3D shapes in the environment.</p> <p>To talk about and explore 3D shapes using relevant mathematical vocabulary such as faces/sides/corners</p>	<p>To know the names of 2D shapes. To know the names of basic 2D shapes.</p> <p>To know that 2D shapes can have sides and corners.</p> <p>To know the names of some 3D shapes.</p> <p>To know that 3D shapes can have faces, vertices and edges.</p> <p>To select, rotate and manipulate shapes in order to develop spatial reasoning skills</p> <p>To compare and decompose shapes – recognition that a shape can have shapes within it (like a number).</p>	<p>recognise and name common 2-D and 3-D shapes, including: 2-D shapes [e.g. rectangles (including squares), circles and triangles]</p> <p>* 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].</p>	<p>identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line</p>		<p>identify lines of symmetry in 2-D shapes presented in different orientations</p>	<p>identify 3-D shapes, including cubes and other cuboids, from 2-D representations</p>	<p>recognise, describe and build simple 3-D shapes, including making nets</p>
<p>To know that some shapes more appropriate than others when building</p> <p>To select and use shapes appropriately in play, combining them to make models and enclosures.</p>			<p>identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</p> <p>identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]</p>				<p>illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</p>

DRAWING AND CONSTRUCTING							
F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	complete a simple symmetric figure with respect to a specific line of symmetry	draw given angles, and measure them in degrees ( <sup>o</sup> )	draw 2-D shapes using given dimensions and angles
							recognise, describe and build simple 3-D shapes, including making nets (appears also in Identifying Shapes and Their Properties)

COMPARING AND CLASSIFYING						
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
	compare and sort common 2-D and 3-D shapes and everyday objects		compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	use the properties of rectangles to deduce related facts and find missing lengths and angles  distinguish between regular and irregular polygons based on reasoning about equal sides and angles	compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons	
ANGLES						
		recognise angles as a property of shape or a description of a turn		know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles		
		identify right angles, recognise that two right angles make a half- turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle	identify acute and obtuse angles and compare and order angles up to two right angles by size	identify: * angles at a point and one whole turn (total 360 <sup>o</sup> ) * angles at a point on a straight line and ½ a turn (total 180 <sup>o</sup> ) * other multiples of 90 <sup>o</sup>	recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles	
		identify horizontal and vertical lines and pairs of perpendicular and parallel lines				

