



The Sutton Academy

# Knowledge Rich Curriculum Plan

Year 8 Support – 3D Shapes, Surface Area and Volume

Lesson/Learning Sequence	Intended Knowledge: <i>Students will know that...</i>	Tiered Vocabulary	Prior Knowledge: <i>In order to know this, students need to already know that...</i>	Assessment
<b>To learn how to identify 3D shapes</b>	<ul style="list-style-type: none"> <li>Students will know the names of prisms, pyramids and spheres.</li> <li>Students will know that a prism is a 3D solid with identical ends and flat sides.</li> <li>Students will know that a pyramid is a 3D solid where the sides are triangles meeting at the apex and the base is a polygon.</li> <li>Students will know how to determine the number of faces, edges and vertices from 3D solids.</li> <li>Students will know vertices to mean a corner of a shape.</li> <li>Students will know that a face is the individual flat surface of a 3D solid.</li> <li>Students will know that an edge is a line segment where two faces meet.</li> <li>Students will know that a vertex is a point where two or more edges meet - a corner.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>Students will know how to sketch 3D shapes.</li> </ul>	<p><b>Prism</b> – A solid object with two identical ends and flat sides</p> <p><b>Vertex (plural vertices)</b> – corner</p> <p><b>Face</b> – in maths, a face is a flat surface of a solid object</p> <p><b>Polygon</b> – a closed shape with straight sides</p> <p><b>Edge</b> – a line segment where two faces meet</p>	<ul style="list-style-type: none"> <li>Students need to understand a 3D shape that has length, width and depth.</li> <li>Students need to be able to draw and identify 2D shapes.</li> </ul>	Mini-Assessment 11
<b>To learn how to draw and identify nets of 3D shapes.</b>	<ul style="list-style-type: none"> <li>Students will know a net means a pattern that you can cut and fold to make a model of a solid shape.</li> <li>Students will know how to sketch the nets of 3D solids.</li> <li>Students will know how to identify a 3D shape from its net by looking at the faces on the net.</li> <li>Students will know how to use isometric grids to sketch 3D solids.</li> </ul>	<p><b>Net</b> – net means a pattern that you can cut and fold to make a model of a solid shape.</p>	<ul style="list-style-type: none"> <li>Students need to identify 3D shapes.</li> </ul>	Mini-Assessment 11
<b>To learn how to draw plans and elevations of 3D shapes.</b>	<ul style="list-style-type: none"> <li>Students will identify front, side and plan elevations of 3D solids.</li> <li>Students will know that an elevation means a 2D drawing of a 3D shape from different viewpoints.</li> <li>Students will draw the front, side and plan elevations of 3D solids with cubes using a 1cm grid.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>Students will draw the front, side and plan elevations of 3D solids with accurate measurements using a 1cm grid.</li> </ul>	<p><b>Plan</b> – A drawing of something as viewed from above</p> <p><b>Elevation</b> – the view of a 3D shape when it is looked at from the side or from the front.</p>	<ul style="list-style-type: none"> <li>Students need to be able to draw and identify 2D shapes.</li> <li>Students need to be able to measure and draw lines with a ruler.</li> </ul>	Mini-Assessment 11
<b>To learn how to calculate the surface area of cubes and cuboids.</b>	<ul style="list-style-type: none"> <li>Students will know how to find the surface area of a 3D solid using the net. Students will know that surface area means the total area of the surface of a three-dimensional object.</li> <li>Students will know that the surface area is the total area of each face of a 3D solid.</li> <li>Students will know how to find the surface area of cubes.</li> <li>Students will know how to find the surface area of cuboids.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>Students will know how to find the surface area of triangular prisms.</li> </ul>	<p><b>Surface area</b> - the total area of all of the faces of a 3D solid added together</p>	<ul style="list-style-type: none"> <li>Students need to be able to draw the net of a shape.</li> <li>Students need to be able to use basic mathematical operations such as multiplication and addition.</li> <li>Students need to be able to find the area of 2D shapes.</li> </ul>	Mini-Assessment 11
<b>To learn how to calculate the volume of cubes and cuboids.</b>	<ul style="list-style-type: none"> <li>Students will know that the volume is the amount of 3-dimensional space a 3D solid occupies. Students will know that volume means the amount of three-dimensional space something takes up.</li> <li>Students will know how to find the volume of cubes.</li> <li>Students will know how to find the volume of cuboids.</li> </ul>	<p><b>Volume</b> – the amount of space inside a 3D object</p>	<ul style="list-style-type: none"> <li>Students need to know how to multiply and divide numbers.</li> <li>Students need to be able to find the area of 2D shapes.</li> </ul>	Mini-Assessment 11

Lesson/Learning Sequence	Intended Knowledge: <i>Students will know that...</i>	Tiered Vocabulary	Prior Knowledge: <i>In order to know this, students need to already know that...</i>	Assessment
<b>To learn how to calculate the volume of triangular prisms.</b>	<ul style="list-style-type: none"> <li>Students will know how to find the volume of triangular prisms.</li> </ul> <b>Opportunity for challenge:</b> <ul style="list-style-type: none"> <li>Students will know how to find the volume of compound shapes.</li> </ul>	<b>Volume</b> – the amount of space inside a 3D object <b>Prism</b> – A solid object with two identical ends and flat sides	<ul style="list-style-type: none"> <li>Students need to know how to multiple and divide numbers.</li> <li>Students need to be able to find the area of 2D shapes.</li> </ul>	Mini-Assessment 11