



The Sutton Academy

Knowledge Rich Curriculum Plan

Year 9 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
<p>To learn how to identify 3D shapes.</p>	<ul style="list-style-type: none"> Students will know the names of prisms, pyramids and spheres. Students will know that a prism is a 3D solid with identical ends and flat sides. 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. Students will know how to determine the number of faces, edges and vertices from 3D solids. Students will know vertices to mean a corner of a shape. Students will know that a face is the individual flat surface of a 3D solid. Students will know that an edge is a line segment where two faces meet. Students will know that a vertex is a point where two or more edges meet - a corner. Students will know how to sketch 3D shapes. <p>Opportunity for challenge:</p> <ul style="list-style-type: none"> Students will know how to identify a 3D shape based on the properties given. 	<p>Prism – A solid object with two identical ends and flat sides Vertex (plural vertices) – corner Face – in maths, a face is a flat surface of a solid object Polygon – a closed shape with straight sides Edge – a line segment where two faces meet</p>	<ul style="list-style-type: none"> Students need to understand a 3D shape that has length, width and depth. Students need to be able to draw and identify 2D shapes. 	<p>Mini-Assessment 11</p>
<p>To learn how to draw and identify nets of 3D shapes.</p>	<ul style="list-style-type: none"> Students will know a net means a pattern that you can cut and fold to make a model of a solid shape. Students will know how to sketch the nets of 3D solids. Students will know how to identify a 3D shape from its net by looking at the faces on the net. Students will know how to use isometric grids to sketch 3D solids. 	<p>Net – 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"> Students need to identify 3D shapes. 	<p>Mini-Assessment 11</p>
<p>To learn how to draw plans and elevations of 3D shapes.</p>	<ul style="list-style-type: none"> Students will identify front, side and plan elevations of 3D solids. Students will know that an elevation means a 2D drawing of a 3D shape from different viewpoints. Students will draw the front, side and plan elevations of 3D solids with cubes using a 1cm grid. Students will draw the front, side and plan elevations of 3D solids with accurate measurements using a 1cm grid. <p>Opportunity for challenge:</p> <ul style="list-style-type: none"> Students will know how to sketch a 3D solid using the front, side and plan elevations. 	<p>Plan – A drawing of something as viewed from above Elevation – 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"> Students need to be able to draw and identify 2D shapes. Students need to be able to measure and draw lines with a ruler. 	<p>Mini-Assessment 11</p>
<p>To learn how to calculate the surface area of cubes, cuboids and triangular prisms.</p>	<ul style="list-style-type: none"> 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. Students will know that the surface area is the total area of each face of a 3D solid. Students will know how to find the surface area of cubes. Students will know how to find the surface area of cuboids. Students will know how to find the surface area of triangular prisms. <p>Opportunity for challenge:</p> <ul style="list-style-type: none"> Students will know how to find the surface area of compound shapes. 	<p>Surface area - the total area of all of the faces of a 3D solid added together</p>	<ul style="list-style-type: none"> Students need to be able to draw the net of a shape. Students need to be able to use basic mathematical operations such as multiplication and addition. Students need to be able to find the area of 2D shapes. 	<p>Mini-Assessment 11</p>
<p>To learn how to calculate the volume of prisms.</p>	<ul style="list-style-type: none"> 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. Students will know how to find the volume of cubes. Students will know how to find the volume of cuboids. Students will know how to find the volume of triangular prisms. <p>Opportunity for challenge:</p> <ul style="list-style-type: none"> Students will know how to find the volume of compound shapes. 	<p>Volume – the amount of space inside a 3D object Prism – A solid object with two identical ends and flat sides</p>	<ul style="list-style-type: none"> Students need to know how to multiple and divide numbers. Students need to be able to find the area of 2D shapes. 	<p>Mini-Assessment 11</p>

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To learn how to calculate the volume of cylinders.	<ul style="list-style-type: none"> • Students will know how to find the volume of cylinders. Opportunity for challenge: <ul style="list-style-type: none"> • Students will know how to solve problems involving the volume of prisms. 		<ul style="list-style-type: none"> • Students need to know how to find the volume of prisms. • Students need to find the area of circles. 	Mini-Assessment 11