



The Sutton Academy

# Knowledge Rich Curriculum Plan

Year 8 Prime – 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><b>To learn how to draw plans and elevations of 3D shapes.</b></p>	<ul style="list-style-type: none"> <li>• Students will know how to use isometric grids to sketch 3D solids.</li> <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> <li>• Students will draw the front, side and plan elevations of 3D solids with accurate measurements using a 1cm grid.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to sketch a 3D solid using the front, side and plan elevations.</li> </ul>	<p><b>Plan</b> – A drawing of something as viewed from above  <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 3D shapes.</li> </ul>	<p>Mini-Assessment 11</p>
<p><b>To learn how to calculate the surface area of cubes, cuboids and triangular prisms.</b></p>	<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> <li>• Students will know how to find the surface area of triangular prisms.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to solve problems involving the surface area of 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>	<p>Mini-Assessment 11</p>
<p><b>To learn how to calculate the surface area of a cylinder.</b></p>	<ul style="list-style-type: none"> <li>• Students will know how to find the surface area of compound solids involving prisms.</li> <li>• Students will know that a compound solid means a solid that is made up for 2 or more solids.</li> <li>• Students will know how to find the surface area of cylinders.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to solve problems involving the surface area of cylinders.</li> </ul>		<ul style="list-style-type: none"> <li>• Students need to be able to draw the net of a shape.</li> <li>• Students need to know how to find the area and circumference of circles.</li> </ul>	<p>Mini-Assessment 11</p>
<p><b>To learn how to calculate the volume of prisms and cylinders.</b></p>	<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> <li>• Students will know how to find the volume of triangular prisms.</li> <li>• Students will know how to find the volume of compound shapes.</li> <li>• Students will know how to find the volume of cylinders.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to solve problems involving the volume of prisms.</li> </ul>	<p><b>Volume</b> – the amount of space inside a 3D object  <b>Prism</b> – A solid object with two identical ends and flat sides</p>	<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>	<p>Mini-Assessment 11</p>
<p><b>To learn how to calculate with density, mass and volume.</b></p>	<ul style="list-style-type: none"> <li>• Students will know how to calculate density using the mass and volume.</li> <li>• Students will know how to calculate mass using the density and volume.</li> <li>• Students will know how to calculate volume using the density and mass.</li> <li>• Students will know how to calculate the mass, density or volume without converting any units.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to calculate the mass, density or volume converting units when necessary.</li> </ul>		<ul style="list-style-type: none"> <li>• Students will need to know how to multiply and divide numbers.</li> <li>• Students will need to know how to substitute values into formulae.</li> </ul>	<p>Mini-Assessment 11</p>

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 speed, distance and time.</b>	<ul style="list-style-type: none"> <li>Students will know that <math>Speed = \frac{distance}{time}</math></li> <li>Students will know that <math>Time = \frac{distance}{speed}</math></li> <li>Students will know that <math>Distance = Speed \times Time</math></li> <li>Students will know how to make simple conversions for minutes to decimal hours - they will know that 30 minutes is 0.5 hours and 15 minutes is 0.25 hours.</li> <li>Students will know how to calculate speed, distance or time given the two other variables including where the time needs to be converted into a decimal number of minutes or hours.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>Students will know how to solve problems involving speed, distance and time.</li> </ul>		<ul style="list-style-type: none"> <li>Students need to know how to convert time between minutes and hours.</li> </ul>	Mini-Assessment 11
<b>To learn how to interpret real-life graphs.</b>	<ul style="list-style-type: none"> <li>Students will know how to use conversion graphs to do simple conversions with currency.</li> <li>Students will know how to use conversion graphs to do simple conversions with metric and imperial units.</li> <li>Students will know how to use conversion graphs to carry out conversions that involve scaling up.</li> <li>Students will know how to use linear graphs to in order to explore the relationships between costs and variables.</li> <li>Students will know how to use linear graphs involving money to state a fixed cost.</li> <li>Students will know how to draw a conversion graph.</li> </ul>		<ul style="list-style-type: none"> <li>Students need to plot and read coordinates.</li> </ul>	Mini-Assessment 11
<b>To learn how to interpret a distance-time graph.</b>	<ul style="list-style-type: none"> <li>Students will know how to make simple interpretations from a distance-time graph.</li> <li>Students will know how to find distances and times from a distance-time graph.</li> <li>Students will know how to complete a distance-time graph from a worded scenario.</li> <li>Students will know how to draw a complete distance-time graph from a worded scenario.</li> <li>Students will know how to find the distance by finding the area under the graph.</li> <li>Students will know how to interpret the speed within each section of the graph by looking at the steepness of the line.</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>Students will know how to find the speed within each section of a distance-time graph.</li> </ul>			Mini-Assessment 11