Knowledge Rich Curriculum Plan

Year 7 Core – 3D Shapes, Surface Area and Volume

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this, students need to already know that…*	Assessment
To learn how to identify 3D shapes	• 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. **Opportunity for challenge:** • Students will know how to sketch 3D shapes.	**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	• Students need to understand a 3D shape that has length, width and depth. • Students need to be able to draw and identify 2D shapes.	Mini-Assessment 11
To learn how to draw and identify nets of 3D shapes.	• 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.	**Net** – net means a pattern that you can cut and fold to make a model of a solid shape.	• Students need to identify 3D shapes.	Mini-Assessment 11
To learn how to draw plans and elevations of 3D shapes.	• 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. **Opportunity for challenge:** • Students will draw the front, side and plan elevations of 3D solids with accurate measurements using a 1cm grid.	**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.	• Students need to be able to draw and identify 2D shapes. • Students need to be able to measure and draw lines with a ruler.	Mini-Assessment 11
To learn how to calculate the surface area of cubes and cuboids.	• 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. **Opportunity for challenge:** • Students will know how to find the surface area of triangular prisms.	**Surface area** - the total area of all of the faces of a 3D solid added together	• 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.	Mini-Assessment 11
To learn how to calculate the volume of cubes and cuboids.	• 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.	**Volume** – the amount of space inside a 3D object	• Students need to know how to multiple and divide numbers. • Students need to be able to find the area of 2D shapes.	Mini-Assessment 11

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To learn how to calculate the volume of triangular prisms.	• Students will know how to find the volume of triangular prisms. **Opportunity for challenge:** • Students will know how to find the volume of compound shapes.	Volume – the amount of space inside a 3D object Prism – A solid object with two identical ends and flat sides	• Students need to know how to multiple and divide numbers. • Students need to be able to find the area of 2D shapes.	Mini-Assessment 11