Scheme of Learning: Year 10 Summer Term

Topic Sequence: Geometry and Measure

16

3D shapes

Topic Overview:

Students will revisit correct vocabulary required to describe different 3D shapes. Students will look at surface area and volume, as well as looking at plans and elevations of 3 dimensional shapes.

Learning Sequence:

Names of 2D and 3D shapes
Students should already be aware of most of the names of shapes, but may need a recap on key vocabulary for describing shapes, such as faces, edges and vertices.

Recognise prisms (including language of edges and vertices)
Students will need to tell the difference between prisms and no prisms, looking for uniform cross-sectional face, which can be defined as a polygon.

Accurate nets of cuboids and other 3D shapes
Students will learn how to draw an accurate net of a 3D shape, which will help build understanding of surface area in the later step.

Sketch and recognise nets of cuboids and other 3D shapes
This step builds upon the last, but allows students to quickly draw a net and label key lengths which further builds on the skills needed to find the surface area of prisms.

Plans and Elevations
Students will use their knowledge of 3D shapes to draw plans and elevations, drawing what can be seen from the front, side and top of a shape.

Find area of 2D shapes (R)
In this step, students will revisit finding the area of 2D shapes which is a vital skill for finding the surface area of 3D shapes.

Surface area of cubes and cuboids
This step builds upon students knowledge of nets and 2D shapes to find the surface area of cubes and cuboids. Students should be able to identify matching sides, and will look at the difference between open and closed shapes.

Surface area of triangular prisms
Similar to the last step, students will use knowledge of sketching nets and 2D shapes to find all the shapes needed to work out the surface area of triangular prisms.

Surface area of cylinder
Students will revisit the difference between finding the area and circumference of a circle as both are needed to find the surface area of a cylinder. Then using the same skills as previous steps will be able to find the surface area of cylinders.

Volume of cubes and cuboids
Students will look at the links between area and volume (how a shape can be broken into unit squares or unit cubes) to help them build a better understanding of volume and the required formula. Students will then find the volume of cubes and cuboids.

Volume of other 3D shapes – prisms and cylinders, cones, pyramids and spheres
Students will learn that the volume of a prism is the product of the area of the prisms cross-section and its length by comparing volumes of right-angled triangular prisms to that of a cuboid. Using the knowledge of cross-sectional area multiplied by length students will work out the volume of various prisms and cylinders. Students are also introduced to more complex formulae using cones, pyramids and spheres

Sequence of Learning:	
1	*Names of 2D and 3D shapes*
2	*Recognise prisms (including language of edges and vertices)*
3	*Accurate nets of cuboids and other 3D shapes*
4	*Sketch and recognise nets of cuboids and other 3D shapes*
5	*Plans and Elevations*
6	*Find area of 2D shapes (R)*
7	*Surface area of cubes and cuboids*
8	*Surface area of triangular prisms*
9	*Surface area of cylinder*
10	*Volume of cubes and cuboids*
11	*Volume of other 3D shapes – prisms and cylinders, cones, pyramids and spheres*

Topic Resources:	
Knowledge Maps:	2D shapes 3D shapes
Assessment	
Knowledge:	End of Topic Test – 8 questions, 20 marks
Application of Knowledge:	Termly Summative Assessments
Supportive Reading:	
	Sparx Maths www.sparxmaths.co.uk
	Corbett Maths : www.corbettmaths.com
	AQA Revision Guide