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**Knowledge Rich Curriculum Plan**

Year 11 Foundation+ Geometry 4



| **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**  |
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| **To learn how to calculate the surface area of prisms**  | * Students will know how to find the surface area of prisms including cubes, cuboids and triangular prisms
* Students will know how to find the surface area of other prisms including compound prisms.
* Students will know how to solve problems involving the surface area of prisms
 | **Surface area** - the total area of all of the faces of a 3D solid added together**Prism** – A solid object with two identical ends and flat sides**Compound Solid** - a solid that is made up of 2 or more solids. | * Students need to know how to calculate the area of squares, rectangles, triangles and compound shapes
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| **To learn how to calculate the surface area of cylinders** | * Students will know how to find the surface area of cylinders. Students will know how to calculate this in terms of π as well as by using a calculator.
* Students will know how to solve problems involving the surface area of cylinders
 |  | * Students need to know how to calculate area and circumference of circles
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| **To learn how to calculate the surface area of pyramids, cones and spheres** | * Students will know how to find the surface area of pyramids.
* Students will know how to find the surface area of cones.
* Students will know how to find the surface area of sphere and hemi-spheres.
 |  | * Students will need to know how to find missing lengths using Pythagoras’ theorem
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| **To learn how to calculate the volume of prisms** | * Students will know that: Volume of a Prism = Area of Cross Section x Length
* Students will know how to find the volume of cubes, cuboids, triangular prisms and compound prisms by calculating the area of the cross-section and multiplying it by the length of the prism
* Students will know how to solve problems involving the volume of prisms
 | **Volume** – the amount of space inside a 3D object**Prism** – A solid object with two identical ends and flat sides**Compound Solid** - a solid that is made up of 2 or more solids. | * Students need to be able to calculate the area of squares, rectangles, triangles and compound shapes
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| **To learn how to calculate the volume of cylinders** | * Students will know how to find the volume of cylinders. Students will know how to leave their answers for this in terms of π.
* Students will know how to work backwards from the volume of a cylinder to calculate its height or the radius/diameter
* Students will know how to solve problems involving the volume of cylinders
 |  | * Students need to be able to calculate the area of circles
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| **To learn how to calculate the volume of pyramids, cones and spheres** | * Students will know how to find the volume of pyramids.
* Students will know how to find the volume of cones.
* Students will know how to find the volume of spheres and hemi-spheres.
 |  | * Students will need to know how to substitute into formulae
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| **To learn how to calculate Density, Mass and Volume** | * Students will know how to calculate mass, density or volume using two variables.
* Students will know how to combine the densities, mass and volumes of two materials/liquids to make a third material/liquid. Students will know how to find missing values from a liquid using the density, mass or volumes for the other liquids.
* Students will know how to solve more complex problems involving density, mass and volume
 | **Density** – a measurement of the amount of a substance contained in a certain volume**Mass** – the weight of an object | * Students need to be able to convert units for mass
* Students need to be able to convert units for length and understand how to convert units for volume
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