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**Knowledge Rich Curriculum Plan**

Year 11 Higher – Geometry 2

| **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 area of a trapezium** | * Students will know that the formula for the area of a trapezium is  where a and b are the parallel sides and h is the height of the trapezium * Students will know how to calculate the area of a trapezium * Students will know how to calculate the area of compound shapes involving trapezia * Students will know how to solve worded problems involving the area of a trapezium * Students will know how to work backwards to find missing lengths given the area of a trapezium | **Area –** the amount of space inside a 2D shape  **Trapezium –** a quadrilateral with one pair of sides parallel.  **Quadrilateral –** a four-sided shape | * Students should already know how to calculate the area of rectangles, squares, parallelograms and triangles * Students should already know how to calculate the area of compound shapes involving rectangles, squares, parallelograms and triangles |  |
| **To learn how to solve problems involving circumference and area of circles** | * Students will know how to calculate the circumference of a circle using the formula - πd, giving their answer to a suitable degree of accuracy * Students will know how to calculate the arc length and perimeter of a semi-circle * Students will know how to calculate the arc length and perimeter of quarter circles or three quarters of a circle * Students will know how to use inverse operations to find the missing radius or diameter when given the circumference. * Students will know how to solve problems involving area and circumference of circles * Students will know how to calculate the area of a circle using the formula πr² leaving answers rounded to a given degree of accuracy * Students will know how to calculate the area of a circle using the formula πr², without a calculator leaving answers in terms of π. * Students will know how to calculate the area of semi circles * Students will know how to calculate the area of quarter circles or three-quarters of a circle * Students will know how to use inverse operations to find the missing radius or diameter when given the area. * Students will know how to solve problems involving the area of circles. * Students will know how to calculate the area of compound shapes involving circles or parts of circles | **Circumference –** the perimeter of a circle  **Perimeter –** the distance around the outside of a shape  **Arc –** a part of a curve, a part of the circumference of a circle  **Radius –** a straight line from the centre to the circumference of a circle or sphere  **Diameter –** a straight line passing from side to side through the centre of a body or figure, especially a circle or sphere | * Students should already know how to calculate circumference |  |
| **To learn how to calculate the length of an arc and the perimeter of a sector** | * Students will know how to calculate the arc length of the sector using the formula * Students will know how to calculate the perimeter of a sector * Students will know how to calculate the angle of a sector given its arc length using inverse operations * Students will know how to calculate the radius of a sector given its arc length | **Arc – A fraction of the circumference of a circle** |  |  |
| **To learn how to calculate the area of a sector** | * Students will know how to calculate the area of a sector using the formula, * Students will know how to calculate the angle of a sector given its area * Students will know how to calculate the radius of a sector given its area | **Sector –**  a part of a circle made of the arc of the circle along with its two radii. | * Students need to know how to calculate area and circumference of a circle * Students need to know that angles around a point add to 360 |  |
| **To learn how to solve problems using Pythagoras’ theorem in 3D** | * Students will know how to calculate missing lengths in 3D shapes using Pythagoras’ theorem | **Hypotenuse** – the longest side in a right-angled triangle. It can always be found opposite the right angle  **Theorem** – a statement that has been proved, or can be proved | * Students will need to be confident using Pythagoras’ theorem to find missing lengths in right angled triangles |  |
| **To learn how to use Trigonometry** | * Students will memorize the SOHCAHTOA * Students will be able to calculate missing sides and angles of Right Angled Triangles using SOHCAHTOA * Students will know how to answer multiple step questions on Trigonometry |  |  |  |