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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 $\frac{1}{2}\left(a+b\right)h$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
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| **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
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| **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 $Arc Length=\frac{θ}{360}πd$
* 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, $Area of a Sector=\frac{θ}{360}πr^{2}$
* 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
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| **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
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| **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
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