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**Knowledge Rich Curriculum Plan**

Year 10 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 solve problems involving perimeter and area** | * Students will know how to solve problems involving perimeter and area of compound shapes (not including trapezia) | **Perimeter –** the distance around the outside of a shape  **Compound -** a thing that is composed of two or more separate elements.  **Area –** the amount of space inside a 2D shape  **Quadrilateral –** a four-sided shape | * Students should already know how to calculate the perimeter of a compound shape * Students should already know how to calculate the area of rectangles, squares, parallelograms and triangles |  |
| **To learn how to calculate the area of a trapezium** | * Students will know how to calculate the area of a compound shapes, by separating and calculating the areas of the more basic shapes. * Students will know how to use inverse operations to find the missing lengths of shapes when given the area. Students will know that to calculate the a missing side when given the area, you do the opposite operation (divide). * Students will know how to solve real life problems involving area * 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 | **Trapezium –** a quadrilateral with one pair of sides parallel. | * 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 using the circumference and area of a circle** | * Students will know that the circumference is the distance around the circle. * Students will know how to calculate the perimeter of semi circles and understand why they have to add the diameter. * Students will know how to use inverse operations to find the missing radius or diameter when given the circumference. * Students will know how to calculate the area of a circle using the formula π x radius², leaving answers rounded to a given degree of accuracy * Students will know how to calculate the area of semi circles * Students will know how to use inverse operations to find the missing radius or diameter when given the area or circumference. * Students will know how to solve problems involving area of circles. | **Circumference –** the perimeter 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 will need to be able to name all of the parts of a circle * Students will need to know how to substitute values into a formulae. |  |
| **To learn how to calculate the length of an arc.** | * Students will know how to calculate the perimeter of the sector using the formula angle/360 x π x diameter + 2r | **Arc –** a part of a curve, a part of the circumference of a circle. | * Students will know how to find the circumference of a circle |  |
| **To learn how to calculate the area of a sector** | * Students will know how to calculate the arc length of the sector using the formula angle/360 x π x diameter * Students will know how to calculate the area of a sector where the angle is not 90, 180 or 270 using the formula, angle/360 x πr², students will also be able to recall this formula. | **Sector –**  a part of a circle made of the arc of the circle along with its two radii. | * Students will know how to find the area of a circle. |  |
| **To learn how to solve problems in 2D shapes using Pythagoras' Theorem** | * Students will know how to find missing lengths in a right-angled triangle using Pythagoras' theorem * Students will know that to prove a triangle is right angled using Pythagoras' theorem they will substitute the values into the formula. * Students will know how to solve worded problems using Pythagoras' theorem * Students will know how to solve problems involving multiple right-angled triangles 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 should already know how to calculate missing lengths using Pythagoras’ theorem * Students will need to know how to rearrange formulae |  |
| **To learn how to calculate missing sides and angles using SOHCAHTOA** | * Students will know that * Students will know that * Students will know that * Students will know how to use the formula triangles for SOHCAHTOA to find missing sides. * Students will know how to calculate missing sides in right angled triangles using SOHCAHTOA * Students will know how to calculate missing angles in right angled triangles using SOHCAHTOA * Students will know how to solve worded problems involving SOHCAHTOA * Students will know how to solve multi-step problems involving more than one right-angled triangle using SOHCAHTOA. | **Trigonometry –** a branch of mathematics that studies relationships between side lengths and angles of triangles  **Hypotenuse** – the longest side in a right-angled triangle. It can always be found opposite the right angle  **Adjacent** – next to, in maths the adjacent side in a right-angled triangle is the side that is adjacent to the angle, forming the angle with the hypotenuse  **Opposite** – for right angled triangles the opposite is the side opposite the angle that we know or are trying to find. | * Students need to know how to rearrange formulae * Students need to know how to substitute numbers into formulae * Students need to know how to use a calculator |  |