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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…* | **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 | * 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 | Exam Prep 6 |
| **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 substitute numbers into formulae | Exam Prep 6 |
| **To learn how to solve problems involving the circumference of a 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 calculate the 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 circumference of circles. | **Circumference** – 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  **Arc –** a part of a curve, a part of the circumference of a circle | * Students should already know how to calculate circumference | Exam Prep 6 |
| **To learn how to solve problems involving the area of a circle** | * 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 area and circumference of circles. |  | * Students should already know how to calculate the area of a circle | Exam Prep 6 |
| **To learn how to calculate the area of a sector** | * 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. * Students will know how to calculate the angle of a sector using inverse operations | **Sector –** the area in a circle formed by two radii and an arc | * Students will need to know how to find fractions of amounts * Students will need to know that the angles around a point add to 360 * Students will need to know how to calculate the area of a circle | Exam Prep 6 |
| **To learn how to calculate the arc length and perimeter for 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 perimeter of the sector using the formula angle/360 x π x diameter + 2r * Students will know how to calculate the angle of a sector using inverse operations | **Arc –** a part of a curve, a part of the circumference of a circle | * Students will need to know how to find fractions of amounts * Students will need to know that the angles around a point add to 360 * Students will need to know how to calculate the circumference of a circle | Exam Prep 6 |
| **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 connected right-angled triangles using Pythagoras’ theorem | **Hypotenuse** – the longest side in a right-angled triangle. It can always be found opposite the right angle | * 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 solve problems in 3D shapes using Pythagoras’ Theorem** | * Students will know how to find missing lengths in 3D shapes using Pythagoras’ theorem |  | * Students should already know how to calculate missing lengths using Pythagoras’ theorem |
| **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 and angles. * Students will know how to calculate missing sides and 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 |
| **To learn how to solve problems in 3D shapes using SOHCAHTOA** | * Students will know how to find missing lengths and angles in 3D shapes using SOHCAHTOA * Students will know how to use Pythagoras’ theorem and SOHCAHTOA together to find missing sides and angles in 3D shapes |  | * Students will need to know how to find missing sides and angles using SOHCAHTOA and Pythagoras’ theorem |