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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 $\frac{1}{2}\left(a+b\right)h$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 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
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| **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
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| **To learn how to calculate missing sides and angles using SOHCAHTOA** | * Students will know that $Sin=\frac{Opposite}{Hypotenuse}$
* Students will know that $Cos=\frac{Adjacent}{Hypotenuse}$
* Students will know that $Tan=\frac{Opposite}{Adjacent}$
* 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
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| **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
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