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**Knowledge Rich Curriculum Plan**

Year 10 Higher+ Geometry 3

| **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 apply the circle theorems** | * Students will know that the angle at the centre of a circle is double the angle at the circumference
* Students will know how to prove this circle theorem using isosceles triangles
 | **Theorem –** a statement that has been proved, or can be proved**Circumference –** the perimeter of a circle | * Students need to be able to label parts of a circle, e.g. radius, diameter, etc.
* Students will need to know how to find missing angles in isosceles triangles
 | Exam Prep 6 |
| **To learn how to apply the circle theorems** | * Students will know that the angle in a semi-circle is 90 degrees
* Students will know how to prove this circle theorem using isosceles triangles. They will also understand how this links to the first circle theorem (the angle at the centre is double the angle at the circumference).
 |  | * Students will need to know how to find missing angles in isosceles triangles
 | Exam Prep 6 |
| **To learn how to apply the circle theorems**  | * Students will know that angles in the same segment are equal
* Students will know how to prove this circle theorem using the theorem that the angle at the centre is double the angle at the circumference
 | **Segment –** a region bounded by a chord and a corresponding arc lying between the chord's endpoints | * Students need to know the angle sums of triangles and quadrilaterals.
* Students need to be able to label parts of a circle, e.g. radius, diameter, etc.
* Students need to know angle facts such as angles on a line, angels in parallel lines, etc.
 | Exam Prep 6 |
| **To learn how to apply circle theorems** | * Students will know that the opposite angles of a cyclic quadrilateral add to 180°
* Students will know how to prove this circle theorem using the theorem that the angle at the centre is double the angle at the circumference
 | **Cyclic Quadrilateral –** a quadrilateral whose vertices all lie on a single circle | * Students need to know the angle sums of triangles and quadrilaterals.
* Students need to be able to find missing angles within isosceles triangles.
* Students need to be able to label parts of a circle, e.g. radius, diameter, etc.
* Students need to know angle facts such as angles on a line, angels in parallel lines, etc.
 | Exam Prep 6 |
| **To learn how to calculate missing sides and angles using the sine rule** | * Students will know the sine rule to find missing lengths to be $\frac{a}{SinA}=\frac{b}{SinB}$
* Students will know the sine rule to find missing angles to be $\frac{SinA}{a}=\frac{SinB}{b}$
* Students will know how to find missing sides with the sine rule
* Students will know how to find missing angles with the sine rule
* Students will know that we use the Sine rule for non-right angled triangles when we have a pair of opposites (side and a corresponding angle)
* Students will know that for all of the further trig formulae we use capital letters (A, B and C) to label the angles and that the side opposite each angles is labelled as the lower case letter that corresponds with the angle (A is opposite a, B is opposite b and C is opposite c)
* Students will know how to solve problems using the sine rule
 |  | * Students need to be able to substitute into and rearrange formulae.
* Students need to be able to label triangles and right-angle triangles.
* Students need to be able to use all four operations.
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| **To learn how to calculate missing sides and angles of a triangle using the cosine rule** | * Students will know the cosine rule to find missing angles to be a²= b² + c² – 2bc cos(A)
* Students will know the cosine rule to find missing angles to be $CosA=\frac{b^{2}+c^{2}-a^{2}}{2bc}$
* Students will know that we use the Cosine rule to find a missing side for non-right-angled triangles when we know two sides and the included angle
* Students will know that we use the Cosine rule to find missing angles when we know all three sides for the triangle but no angles
* Students will know how to use the cosine rule to find missing sides and angles
* Students will know how to solve problems using the cosine rule
* Students will know how to use the sine rule and cosine rule together to solve multi-step problems
 |  | * Students need to be able to substitute into and rearrange formulae.
* Students need to be able to label triangles and right-angle triangles.
* Students need to be able to use all four operations.
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| **To learn how to calculate the area of a triangle using Sine** | * Students will know how to calculate the area of a triangle using the formula$ Area= \frac{1}{2}abSinC$.
* Students will know how to use the inverse of $Area= \frac{1}{2}abSinC$ to find a missing length or angle when given the area of a triangle.
* Students will know how to solve multi-step problems involving the sine rule, cosine rule and area of a triangle formula.
 |  | * Students need to know how to find the area of a triangle and understand height is the perpendicular height.
* Students need to be able to substitute into and rearrange formulae.
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| **To learn how to solve multi-step problems involving triangles**  | * Students will know which formula is appropriate to use in different scenarios
* Students will know how to solve problems using the different trig formulae
 |  | * Students need to know how to use SOHCAHTOA, the sine rule, the cosine rule and 1/2absinC.
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