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| **H Unit 16: Circle theorems and circle geometry** | **Road Map** |
| In this unit you will learn about Geometry. The aims are as follows:**LG1**: Knowledge**LG2**: Application**LG3**: Skills | Assessment Grades |  |  |
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| **Themes** | **Learning Goals/Outcomes/Content** |  |  |  |
| 16a Circle theorems | Recall the definition of a circle and identify (name) and draw parts of a circle, including sector, tangent, chord, segment;  |  |  |  |
| Prove and use the facts that: |  |  |  |
| the angle subtended by an arc at the centre of a circle is twice the angle subtended at any point on the circumference; |  |  |  |
| the angle in a semicircle is a right angle; |  |  |  |
| the perpendicular from the centre of a circle to a chord bisects the chord; |  |  |  |
| angles in the same segment are equal; |  |  |  |
| alternate segment theorem; |  |  |  |
| opposite angles of a cyclic quadrilateral sum to 180°; |  |  |  |
| Understand and use the fact that the tangent at any point on a circle is perpendicular to the radius at that point; |  |  |  |
| Find and give reasons for missing angles on diagrams using:  |  |  |  |
| circle theorems; |  |  |  |
| isosceles triangles (radius properties) in circles; |  |  |  |
| the fact that the angle between a tangent and radius is 90°; |  |  |  |
| the fact that tangents from an external point are equal in length. |  |  |  |

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| 16b Circle geometry | Select and apply construction techniques and understanding of loci to draw graphs based on circles and perpendiculars of lines;  |  |  |  |
| Find the equation of a tangent to a circle at a given point, by:  |  |  |  |
| finding the gradient of the radius that meets the circle at that point (circles all centre the origin); |  |  |  |
| finding the gradient of the tangent perpendicular to it;  |  |  |  |
| using the given point;  |  |  |  |
| Recognise and construct the graph of a circle using *x*2 + *y*2 = *r*2 for radius *r* centred at the origin of coordinates.  |  |  |  |

**Links:**

LG1: You will know the names of parts of a circle, and will learn how to recognise a number of circle theorems and use them to calculate angles. You will construct graphs of circles, and find gradients and equations of tangents to circles.

LG2: You will apply your knowledge of circle theorems to carry out multiple steps to calculate angles, explaining each step of your reasoning using key terms.

LG3: You will use your problem solving skills and mastery of circle theorems to construct geometric proofs such as proofs of congruence.