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**Knowledge Rich Curriculum Plan**

Year 11 Foundation – Geometry 1



| **Lesson Objective** | **Intended Knowledge:**  *Students will know that…* | **Tiered Vocabulary** | **Prior Knowledge:**  *In order to know this, students need to already know that…* | **Assessment** |
| --- | --- | --- | --- | --- |
| **To learn how to convert units for measure** | * Students will know how to convert units for length including mm, cm, m, km * Students will know how to convert units for mass including mg, g, kg, tonnes * Students will know how to convert units for volume including ml, cl, l | **Convert** –change/ swap to  **Metric** – The metric system is a system of measurement that uses the meter, litre, and gram as base units of length (distance), capacity (volume), and weight (mass)  **Capacity –** the maximum amount that something can contain.  **Volume** – the amount of space inside a 3D object  **Mass** – the weight of an object | * Students need to know how to multiply and divide by powers of 10 |  |
| **To learn how to calculate missing angles in triangles and quadrilaterals** | * Students will know that the angles in a triangle add to 180° * Students will know that the angles in a quadrilateral add to 360° * Students will know how to find missing angles in special triangles using the rules; in isosceles triangles the base angles are equal and equilateral triangle all angles are the same size. * Students will know how to solve multi-step problems involving angles in triangles * Students will know how to find missing angles in quadrilaterals * Students will know how to solve multi-step problems involving angles in quadrilaterals | **Estimate –** roughly calculate or judge the value, number, quantity, or extent of.  **Acute angle –** An angle that is less than 90o  **Obtuse angle –** An angle that is more than 90o but less than 180o  **Reflex angle –** An angle that is more than 180o but less than 360o  **Right angle –** An angle that is exactly 90o  **Isosceles Triangle –** a triangle with two equal sides and two equal angles  **Equilateral Triangle** – a triangle with three equal sides and three equal, 60° angles  **Scalene Triangle** – a triangle with no equal sides or angles  **Quadrilateral –** a four-sided polygon, having four edges and four corners | * Students should already know the basic angle facts: angles on a straight line add to 180°, angles around a point add to 360°, angles in a triangle add to 180° * Students should already know the properties of special triangles |  |
| **To learn how to calculate interior angles in polygons** | * Students will know how to use the fact that angles in a triangle sum to 180 to find the angle sums of any polygon. * Students will know how to use the formula (n-2) x 180 to find the sum of interiors angles of any polygons. * Students will know how to find one interior angle of a polygon using the formula (n-2) x 180 and dividing by the number of sides of the polygon. * Students will know how to apply the rules for finding interior and exterior angles to solve multi-step problems involving both regular and irregular polygons | **Interior** – Inside  **Polygon** – a closed shape with straight sides  **Regular Polygon** – A polygon where all sides are the same length and all angles are equal  **Irregular Polygon** – A polygon where all sides are the same length and all angles are not equal  **Tesselate –** fit together without gaps or overlapping. | * Students need to know that the angles in a triangle add to 180 * Students need to know the difference between regular and irregular polygons |  |
| **To learn how to calculate exterior angles in polygons** | * Students will know how to calculate the size of an exterior angle of a polygon using the calculation 360/number of sides. Students will know that exterior angles are the angles on the outside of a polygon. * Students will know to calculate the size of an interior angle from subtracting the exterior angle from 180°. * Students will know that the interior and exterior angle add to 180 * Students will know how to determine the number of sides for a polygon using the exterior angle | **Exterior** – Outside  **Exterior angle** – is the angle between a side of a polygon and an extended adjacent side. | * Students need to know that angles on a straight line add to 180° |  |
| **To learn how to find missing angles in parallel lines** | * Students will know how to identify alternate, corresponding and co-interior angles * Students will know that vertically opposite angles are equal * Students will know that corresponding angles are equal * Students will know that alternate angles are equal * Students will know that co-interior angles add to 180 * Students will know how to find missing angles in parallel lines and give clear reasons for their answers | **Parallel –** parallel lines are two lines that are side by side and have the same distance continuously between them  **Corresponding –** matching  **Co-interior Angles –** angles thatlie between two lines and on the same side of a transversal  **Transversal –** a line that crosses at least two other lines | * Students need to know that angles on a straight line add to 180° * Students need to know that angles around a point add to 360° |  |
| **To learn how to combine angle rules to find missing angles in parallel lines** | * Students will know how to apply the rules of angles in parallel lines and other angle facts to solve multi-step problems involving angles in parallel lines * Students will know how to give clear, accurate reasons for their answers. |  | * Students need to be able to find missing angles in triangles * Students need to be able to identify alternate, corresponding and co-interior angles |  |
| **To learn how to draw and measure bearings.** | * Students will know the rules for bearings;  1) Always measure from North  2) Bearings must be written as 3 digits.  3) Always measure in a clockwise direction. * Students will know how to use a protractor to accurately draw bearings from A to B and B to A. * Students will know how to use a protractor and ruler to accurately measure bearings on a map, including measuring from A to B and B to A. * Students will know how to accurately draw and measuring bearings using a protractor to solve problems | **Bearing –** angles, measured clockwise from north | * Students should already know how to measure and draw angles * Students should know how to calculate angles in parallel lines using the fact that co-interior angles add to 180 |  |
| **To learn how to accurately construct triangles** | * Students will know how to accurately construct a triangle using a protractor and ruler given SAS or ASA for the triangle * Students will know how to accurately construct a triangle from three sides using a pair of compasses | **Construct –** In maths, construct means to draw a shape, line or angle accurately using a compass and rule | * Students should already know how to accurately draw angles using a protractor |  |
| **To learn how to construct angles and bisectors** | * Students will know how to construct a perpendicular bisector of any given line * Students will know how to construct a perpendicular from a point to a line. * Students will know how to construct a bisector of any given angle. * Students will know how to accurately construct angles including 45° and 90°. * Students will know that the perpendicular distance from a point to a line, is the shortest distance to the line. | **Perpendicular –** at a right angle to  **Bisect –** cut into two equal parts  **Bisector –** A line that splits an angle or line into two equal parts | * Students should already know how to measure the length of a line using a ruler |  |
| **To learn how to construct loci** | * Students will know how to construct a region bounded by a circle and an intersecting line. * Students will know how to construct a given distance from a point and given distance from a line. * Students will know how to construct equal distances from two points or two line segments. * Students will know how to construct regions which may define by 'nearer to' or 'greater than' * Students will know how to use the rules of loci to solve 2D loci problems. * Students will know how to solve loci problems involving the use of constructions; angle bisectors, perpendicular bisectors etc. | **Locus (Loci is the plural) –** the set of all points (usually forming a curve or surface) satisfying some condition  **Equidistant –** an equal distance | * Students need to know how to construct a perpendicular bisector of any given line * Students need to know how to construct a bisector of any given angle. |  |