The Sutton Academy

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 measure, draw and estimate angles.	• Students will know how to accurately estimate angles based on their knowledge of the types of angles. • Students will know how to use a protractor to measure an angle. • Students will know how to draw an angle. • Students will know how to measure reflex angles. Either by measuring the other angle(s) on the point and subtracting from 360° or by splitting the reflex angle into two angles and adding both measured angles together. • Students will know how to draw reflex angles. Either by subtracting the angle from 360°, drawing that angle or by drawing a straight line of 180°, then using this as a base line to draw the reminder of the angle.	**Acute angle –** An angle that is less than 90° **Obtuse angle –** An angle that is more than 90° but less than 180° **Reflex angle –** An angle that is more than 180° but less than 360° **Right angle –** An angle that is exactly 90° **Protractor** – an instrument used for measuring angles **Estimate –** roughly calculate or judge the value, number, quantity, or extent of.	• Students need to know how to identify different types of angles.	
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 90° **Obtuse angle –** An angle that is more than 90° but less than 180° **Reflex angle –** An angle that is more than 180° but less than 360° **Right angle –** An angle that is exactly 90° **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	

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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 that lie 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	

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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.	