



The Sutton Academy

# Knowledge Rich Curriculum Plan

Year 9 Prime – 2D Shapes and Angles



Lesson/Learning Sequence	Intended Knowledge: <i>Students will know that...</i>	Tiered Vocabulary	Prior Knowledge: <i>In order to know this students, need to already know that...</i>	Assessment
<b>To learn how to find missing angles on straight lines, around a point, in triangles and quadrilaterals.</b>	<ul style="list-style-type: none"> <li>• Students will know that angles in a right-angle add upto 90°.</li> <li>• Students will know that angles on a straight line add upto 180°.</li> <li>• Students will know that vertically opposite angles are equal.</li> <li>• Students will know that angles at a point add upto 360°.</li> <li>• Students will know how to use angle facts to find missing angles on straight lines.</li> <li>• Students will know how to use angle facts to find missing angles at a point.</li> <li>• Students will know that angles in a triangle add upto 180°.</li> <li>• Students will know that angles in an equilateral triangle are equal - 60°.</li> <li>• Students will know that two angles in an isosceles triangle are equal.</li> <li>• Students will know how to use angle facts to find the missing angles in triangles.</li> <li>• Students will know how to use angle facts to find missing angles in special triangles.</li> <li>• Students will know that angles in a quadrilateral add upto 360°.</li> <li>• Students will know how to use angle facts to find the missing angles in quadrilaterals</li> </ul>	<p><b>Isosceles Triangle</b> – a triangle with two equal sides and two equal angles</p> <p><b>Equilateral Triangle</b> – a triangle with three equal sides and three equal, 60° angles</p> <p><b>Scalene Triangle</b> – a triangle with no equal sides or angles</p> <p><b>Quadrilateral</b> – a four-sided polygon, having four edges and four corners</p>	<ul style="list-style-type: none"> <li>• Students need to know how to recognise a 90° angle.</li> <li>• Students need to know how to recognise a straight line.</li> <li>• Students need to know how to recognise a full turn.</li> <li>• Students need to know how to recognise different types of triangles.</li> </ul>	Mini-Assessment 6
<b>To learn how to calculate interior and exterior angles in polygons.</b>	<ul style="list-style-type: none"> <li>• Students will know how to use angles in a triangle add up to 180° to find the angle sums of any polygon.</li> <li>• Students will know that the interior angles of a polygon are the angles inside the polygon.</li> <li>• Students will know how to use the formula <math>(n - 2) \times 180</math> to find the sum of interiors angles of any polygon.</li> <li>• Students will know how to find one interior angle of a regular polygon using the formula <math>(n - 2) \times 180</math> and dividing by the number of angles of the polygon.</li> <li>• Students will know an exterior angle is the angle between a side of a polygon and an extended adjacent side.</li> <li>• Students will know that the sum of the exterior angles for every polygon is 360°.</li> <li>• Students will know that to dividing 360° by the number of sides will find one exterior angle.</li> <li>• Students will know that interior and exterior angles add up to 180° as they sit on a straight line.</li> </ul>	<p><b>Interior – Inside</b></p> <p><b>Polygon</b> – a closed shape with straight sides</p> <p><b>Regular Polygon</b> – A polygon where all sides are the same length and all angles are equal</p> <p><b>Irregular Polygon</b> – A polygon where all sides are the same length and all angles are not equal</p> <p><b>Tessellate</b> – fit together without gaps or overlapping.</p> <p><b>Exterior – Outside</b></p> <p><b>Exterior angle</b> – is the angle between a side of a polygon and an extended adjacent side.</p>	<ul style="list-style-type: none"> <li>• Students need to know that angles in a triangle add up to 180°.</li> <li>• Students need to recognise different types of polygons.</li> <li>• Students need to know that a regular polygon is a polygon where all angles are the same size and all sides are the same length</li> <li>• Students need to know that an irregular polygon is a polygon that does not have all sides equal and all angles equal.</li> </ul>	Mini-Assessment 6
<b>To learn how to solve problems involving angles in polygons.</b>	<ul style="list-style-type: none"> <li>• Students will know how to find missing angles in irregular polygons by finding the sum of the interior angles and subtracting all known angles.</li> <li>• Students will know how to apply the rules for finding interior and exterior angles to solve problems.</li> </ul>		<ul style="list-style-type: none"> <li>• Students need to know how to find interior and exterior angles of regular polygons.</li> </ul>	Mini-Assessment 6
<b>To learn how to find missing angles in parallel lines.</b>	<ul style="list-style-type: none"> <li>• Students will know that alternate angles are angles that occur on opposite sides of the transversal line and are the same size.</li> <li>• Students will know that alternate angles are equal.</li> <li>• Students will know how to identify alternate angles.</li> <li>• Students will know that corresponding angles occur on the same side of the transversal line and are the same size.</li> <li>• Students will know that corresponding angles are equal.</li> <li>• Students will know how to identify corresponding angles.</li> <li>• Students will know that co-interior angles occur on the same side on the transversal line and are trapped within the parallel lines.</li> <li>• Students will know that co-interior angles add up to 180°.</li> <li>• Students will know how to identify co-interior angles.</li> </ul>	<p><b>Parallel</b> – parallel lines are two lines that are side by side and have the same distance continuously between them</p> <p><b>Isosceles Triangle</b> – a triangle with two equal sides and two equal angles</p> <p><b>Corresponding</b> – matching</p> <p><b>Co-interior Angles</b> – angles that lie between two lines and on the same side of a transversal</p> <p><b>Transversal</b> – a line that crosses at least two other lines</p>	<ul style="list-style-type: none"> <li>• Students need to know that parallel lines are a set of lines that are always the same distance apart and never meet.</li> <li>• Students need to use basic angle rules.</li> </ul>	Mini-Assessment 6

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<b>To learn how to find missing angles in parallel lines using a combination of rules.</b>	<ul style="list-style-type: none"> <li>• Students will know how to use a mixture of parallel line rules to find missing angles.</li> </ul>		<ul style="list-style-type: none"> <li>• Students need to know how to use basic angle rules.</li> <li>• Students need to know how to find angles on parallel lines.</li> </ul>	Mini-Assessment 6
<b>To learn how to draw and measure bearings.</b>	<ul style="list-style-type: none"> <li>• Students will know that a bearing is always measured from North.</li> <li>• Students will know that a bearing is always measured in a clockwise direction.</li> <li>• Students will know that bearings must be written as 3 digits.</li> <li>• Students will know how to use a protractor to accurately draw bearings from A to B and B to A.</li> <li>• 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.</li> <li>• Students will know how to measure reflex bearings. Either by measuring the other angle(s) on the point in an anti-clockwise direction and subtracting from 360° or by splitting the reflex bearing into two bearings and adding both measured angles together.</li> <li>• Students will know how to draw reflex bearings. Either by subtracting the bearing from 360°, drawing that bearing in the anti-clockwise or by drawing a straight line of 180°, then using this as a base line to draw the remainder of the bearing.</li> <li>• Students will know how to use bearings to solve problems.</li> </ul>	<b>Bearing</b> – angles, measured clockwise from north	<ul style="list-style-type: none"> <li>• Students need to know how to draw angles.</li> <li>• Students need to know how to measure angles.</li> <li>• Students need to know how to draw lines accurately.</li> <li>• Students need to know how to measure lines accurately.</li> </ul>	Mini-Assessment 6
<b>To learn how to construct triangles.</b>	<ul style="list-style-type: none"> <li>• Students will know how to use a pair of compasses to accurately draw a circle when given the radius.</li> <li>• Students will know how to draw 2D polygons accurately using a protractor and ruler.</li> <li>• Students will know how to construct SAS triangles using a ruler and protractor.</li> <li>• Students will know how to construct ASA triangles using a ruler and protractor.</li> <li>• Students will know how to construct SSS triangles using a ruler and compass.</li> </ul>	<b>Construct</b> – In maths, construct means to draw a shape, line or angle accurately using a compass and rule	<ul style="list-style-type: none"> <li>• Students need to know how to draw straight lines of a certain length using a ruler.</li> <li>• Students need to know how to measure angles using a protractor.</li> <li>• Student need to know that angles in a triangle add upto 180°.</li> <li>• Students need to recognise and know the properties of different 2D shapes.</li> <li>• Students need to know the radius is measured from the centre of a circle to the circumference.</li> </ul>	Mini-Assessment 6
<b>To learn how to perpendicular bisectors and angle bisectors.</b>	<ul style="list-style-type: none"> <li>• Students will know that perpendicular lines are at a 90° to each other.</li> <li>• Students will know that to bisect means to cut into two equal pieces</li> <li>• Students will know how to construct a perpendicular bisector of a line.</li> <li>• Students will know how to construct an angle bisector.</li> <li>• Students will know that the line of an angle bisector is equidistant to the two lines of the angle.</li> <li>• Students will know that the perpendicular distance from a point to a line is the shortest distance to the line.</li> <li>• Students will know how to construct a perpendicular line from a point to a line.</li> </ul>	<b>Perpendicular</b> – at a right angle to <b>Bisect</b> – cut into two equal parts <b>Bisector</b> – A line that splits an angle or line into two equal parts	<ul style="list-style-type: none"> <li>• Students need to know how to use a compass to draw circles.</li> <li>• Students need to know how to draw lines accurately with a ruler.</li> <li>• Students need to know how to measure straight line.</li> </ul>	Mini-Assessment 6

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<p><b>To learn how to construct loci.</b></p>	<ul style="list-style-type: none"> <li>• Students will know how to construct a region bounded by a circle.</li> <li>• Students will know how to construct a region bounded by two circles.</li> <li>• Students will know how to construct a given distance from a point.</li> <li>• Students will know how to construct a given distance from a line.</li> <li>• Students will know how to construct equal distances from two points.</li> <li>• Students will know how to construct equal distances from two-line segments.</li> <li>• Students will know how to construct regions defined by 'less than', 'nearer to' or 'greater than'.</li> <li>• Students will know how to use constructions to solve loci problems.</li> </ul>	<p><b>Locus (Loci is the plural)</b> – the set of all points (usually forming a curve or surface) satisfying some condition</p> <p><b>Equidistant</b> – an equal distance</p>	<ul style="list-style-type: none"> <li>• Students need to know how to draw circles using a known radius.</li> <li>• Students need to know how to find the perpendicular bisector of a line.</li> <li>• Students need to know how to find the perpendicular bisector of two point.</li> <li>• Students need to know how to bisect an angle.</li> <li>• Students need to know how to construct a perpendicular line from a point to a line.</li> <li>• Students need to know how to measure lines accurately.</li> <li>• Students need to know how to draw lines accurately.</li> </ul>	<p>Mini-Assessment 6</p>