



The Sutton Academy

Knowledge Rich Curriculum Plan

Year 8 Support – Measures, 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
To learn how to convert metric units for measures.	<ul style="list-style-type: none"> • 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 	<p>Convert – change/ swap to</p> <p>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)</p> <p>Capacity – the maximum amount that something can contain.</p> <p>Volume – the amount of space inside a 3D object</p> <p>Mass – the weight of an object</p>	<ul style="list-style-type: none"> • Students need to know how to multiply and divide by 10, 100 and 1,000. • Students need to be aware of the basic unit measurements of length and distance. • Students need to be aware of the basic unit measurements of mass and volume. 	Mini-Assessment 8
To learn how to recognise and identify 2D shapes.	<ul style="list-style-type: none"> • Students will know the properties of different 2D shapes and will be able to identify them • Students will be able to identify regular and irregular shapes • Students will know how to recognise and draw the different types of triangle: isosceles, scalene, right-angled, equilateral • Students will know how to name and sketch all types of quadrilaterals and their properties including; square, rectangle, parallelogram, rhombus, kite, trapezium. 	<p>Polygon – a closed shape with straight sides</p> <p>Regular Polygon – A polygon where all sides are the same length and all angles are equal</p> <p>Irregular Polygon – A polygon where all sides are the same length and all angles are not equal</p> <p>Isosceles Triangle – a triangle with two equal sides and two equal angles</p> <p>Equilateral Triangle – a triangle with three equal sides and three equal, 60° angles</p> <p>Scalene Triangle – a triangle with no equal sides or angles</p> <p>Quadrilateral – a four-sided polygon, having four edges and four corners</p> <p>Perpendicular – at a right angle to</p> <p>Parallel – parallel lines are two lines that are side by side and have the same distance continuously between them</p>	<ul style="list-style-type: none"> • Students should already be able to name simple 2D shapes 	Mini-Assessment 8
To learn how to identify lines of symmetry and rotational symmetry.	<ul style="list-style-type: none"> • Students will know how to identify and label lines of symmetry in 2D shapes. • Students will know that a shape is symmetric if it can be divided into two or more identical pieces that are arranged in an organized fashion. • Students will know how to identify the order of rotational symmetry of any 2D shape by rotating the shape 360° (this can be done with the use of tracing paper). 	<p>Symmetry – the quality of being made up of exactly similar parts facing each other or around an axis.</p> <p>Rotational symmetry – A shape has rotational symmetry when it can be rotated and it still looks the same</p> <p>Order of Rotational Symmetry – order of rotational symmetry of a shape is the number of times it can be rotated around a full circle and still look the same</p>	<ul style="list-style-type: none"> • Students need to know how to identify regular polygons and irregular polygons. 	Mini-Assessment 8
To learn how to recognise different types of angles and estimate angles.	<ul style="list-style-type: none"> • Students will know that acute angles are angles that measure between 0 and 90°. • Students will know that obtuse angles are angles that measure between 90° and 180°. • Students will know that reflex angles are angles that measure between 180° and 360°. • Students will know that a right-angle is 90° and is represented by a square within the angle. • Students will know that angles on a straight line add up to 180°. • Students will know that angles in a full turn add up to 360°. • Students will know how to identify each type of angle by sight. 	<p>Estimate – roughly calculate or judge the value, number, quantity, or extent of.</p> <p>Acute angle – An angle that is less than 90°</p> <p>Obtuse angle – An angle that is more than 90° but less than 180°</p> <p>Reflex angle – An angle that is more than 180° but less than 360°</p> <p>Right angle – An angle that is exactly 90°</p>	<ul style="list-style-type: none"> • Students need to know that angles are measured in degrees. • Students need to know that an angle is the measure of a turn. 	Mini-Assessment 8

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	<ul style="list-style-type: none"> • Students will know how to accurately estimate angles based on their knowledge of the types of angles. • Students will know why angles are measured in degrees up to 360° - they will know that ancient Babylonian and Persian calendars were both based upon 360-day years and that that this observation is the reason a circle contains 360 degrees. (Cultural Capital) 			
To learn how to measure and draw angles.	<ul style="list-style-type: none"> • 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 then mark the reflex angle or by subtracting the reflex angle from 180°, drawing that angle on a straight line and then mark the reflex angle. 	Protractor – an instrument used for measuring angles	<ul style="list-style-type: none"> • Students should already know how to use a ruler to measure and draw accurately 	Mini-Assessment 8
To learn how to find missing angles on straight lines and around a point.	<ul style="list-style-type: none"> • Students will know that angles in a right-angle add upto 90°. • Students will know that angles on a straight line add upto 180°. • Students will know that vertically opposite angles are equal. • Students will know that angles at a point add upto 360°. • Students will know how to use angle facts to find missing angles on straight lines. • Students will know how to use angle facts to find missing angles at a point. 		<ul style="list-style-type: none"> • Students need to know how to identify different types of angles. • Students need to know how to recognise a straight line. • Students need to know how to recognise a full turn. 	Mini-Assessment 8
To learn how to find missing angles in triangles.	<ul style="list-style-type: none"> • Students will know that angles in a triangle add upto 180°. • Students will know that angles in an equilateral triangle are equal - 60°. • Students will know that two angles in an isosceles triangle are equal. • Students will know how to use angle facts to find the missing angles in triangles. • Students will know how to use angle facts to find missing angles in special triangles. 	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	<ul style="list-style-type: none"> • Students need to know how to add and subtract using the column method. 	Mini-Assessment 8
To learn how to find missing angles in quadrilaterals.	<ul style="list-style-type: none"> • Students will know that angles in a quadrilateral add up to 360°. • Students will know why the angles in a quadrilateral add to 360°. • Students will know how to use angle facts to find the missing angles in quadrilaterals • Students will know how to solve multi-step problems involving angles in quadrilaterals and other basic angle rules (straight lines, around a point etc.) 	Quadrilateral – a four-sided polygon, having four edges and four corners	<ul style="list-style-type: none"> • Students need to know how to find missing angles in a triangle 	Mini-Assessment 8

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
<p>To learn how to identify parts of a circle and draw circles and other 2D shapes accurately.</p>	<ul style="list-style-type: none"> • Students will know how to label the radius, diameter, circumference, tangent, chord, segment, sector and centre of a circle. • Students will know how to draw the radius, diameter, circumference, tangent, chord, segment, sector and centre of a circle • Students will know that the diameter is double the size of the radius or the radius is half the size of the diameter. • Students will know that the circumference is the distance around the circle and is a measure of length. • Students will know how to use a pair of compasses to accurately draw a circle when given the radius or diameter. • Students will know how to draw rectangles accurately using a ruler and protractor. • Students will know how to draw squares accurately using a ruler and protractor. • Students will know how to draw parallelograms accurately using a ruler and protractor. • Students will know how to draw trapezia accurately using a ruler and protractor. 	<p>Circumference – the perimeter of a circle Perimeter – the distance around the outside of a shape Arc – a part of a curve, a part of the circumference of a circle Radius – a straight line from the centre to the circumference of a circle or sphere Diameter – a straight line passing from side to side through the centre of a body or figure, especially a circle or sphere Tangent – a line touching a circle or curve at only one point Segment – a region bounded by a chord and a corresponding arc lying between the chord's endpoints Chord – the line segment joining two points on a curve Trapezium – a quadrilateral with one pair of sides parallel. Parallelogram – a four-sided shape with two pairs of parallel opposite sides. Construct – Build or make. In maths, construct means to draw a shape, line or angle accurately using a compass and rule</p>	<ul style="list-style-type: none"> • Students need to recognise and name 2D shapes 	<p>Mini-Assessment 8</p>
<p>To learn how to construct triangles.</p>	<ul style="list-style-type: none"> • Students will know how to construct SAS triangles using a ruler and protractor. • Students will know how to construct ASA triangles using a ruler and protractor. • Students will know how to construct SSS triangles using a pair of compasses. 	<p>Construct – Build or make. In maths, construct means to draw a shape, line or angle accurately using a compass and rule</p>	<ul style="list-style-type: none"> • Students need to know how to draw straight lines of a certain length using a ruler. • Students need to know how to measure and draw angles using a protractor. 	<p>Mini-Assessment 8</p>