



Big Question - Constructing and geometric reasoning

AoLE: Mathematics and Numeracy	Subject: Maths	Year: 7
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Big Question / Aim / Objective / Concept	Vision (Proposed outcome) / Purpose of curriculum	Prior knowledge / Learners previous knowledge
How have angles helped me in real-life?	Pupils will gain an appreciation for the importance of geometry. The pupils will focus on methods of classifying, measuring and constructing angles and shapes. The pupils will link angles to measuring a turn and progress to applying this to the construction of angles and polygons. The application of geometric reasoning to calculate angles around a point, on a straight line and the sum within polygons. The pupils will aim to apply the appropriate angle rule to solve problems involving triangles and quadrilaterals and progress to solving more complex angle problems. Pupils will also aim to solve complex angle problems that include algebraic expressions.	Classification of regular polygons. Use of different measuring equipment. Four arithmetic operations. Algebra.

What does progression look like in this 'Big Question'?

Progression Indicator	Description of learning (What matters statements)	Student evidence of progression (Blooms) / Knowledge
Excelling	<p>I can explore trigonometric ratios in right-angled triangles and I can use my knowledge of them to solve problems involving lengths, angles and area of any triangle.</p> <p>I can use logical arguments and my knowledge of polygons, intersecting lines, angle and the circle theorems to deduce and calculate the size of angles and length of lines.</p>	<p>Solve complex angle problems.</p> <p>Calculate the interior angle sum of any polygon.</p> <p>Investigate parallel angle rules.</p> <p>Apply parallel angle rules to solve angle problems.</p>
Advancing	<p>I can use angle and shape facts to deduce further features and relationships of triangles and quadrilaterals.</p> <p>I can explore and calculate angles formed by parallel lines and by a transversal. I have applied my understanding of angles to model and solve problems involving bearings.</p>	<p>Classify perpendicular and parallel lines.</p> <p>Draw and measure angles between 180 and 360 degrees.</p> <p>Identify and classify polygons up to 10 sides.</p> <p>Construct triangles and more complex polygons.</p> <p>Understand and use the sum of angles at a point.</p> <p>Understand and use the sum of angles on a straight line.</p>
Securing	<p>I can explore and consolidate my understanding of the properties of two-dimensional shapes to include the number of sides and symmetry.</p> <p>I can demonstrate my understanding of angle as a measure of rotation.</p> <p>I can recognise, name and describe types of angles.</p>	<p>Identify and classify polygons by up to 4 sides.</p> <p>Connect angles as a measure of a rotation.</p> <p>Identify and classify angles.</p> <p>Measure and draw angles up to 180 degrees.</p>
Beginning	<p>I can make estimates and comparisons with measures, such as 'shorter than', 'heavier than'.</p>	<p>Understand and apply letter and labelling conventions, including those for geometric figures.</p> <p>Draw and measure line segments, including geometric figures.</p>



	<p>I have explored measuring, using counting, measuring equipment and calculating, and I can choose the most appropriate method to measure.</p> <p>I can estimate and measure, using non-standard units, before progressing onto standard units.</p> <p>I can use a variety of measuring devices from different starting points.</p> <p>I have explored two-dimensional and three-dimensional shapes and their properties in a range of contexts.</p>	<p>Use a range of equipment to measure.</p> <p>Use the appropriate units of measure.</p>
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Authentic learning experiences (Local / National / International)	Skills (Literacy / Numeracy / DCF) / Cross Curricular links
<p>Local links: Constructing scale diagrams of the local area through measuring dimensions and angles.</p> <p>National links: Discover how angles are used when considering maps and land use for the national road building programme given the latest restrictions on new construction.</p> <p>International links: Explore how angles are used in the construction of large infrastructure projects such as major bridges and in the reconstruction of public buildings in Ukraine following the conflict.</p>	<p>Cross-curricular Links: Art uses measures when completing blueprints and a range of different polygons. Product Design uses constructions to calculate angles.</p> <p>DCF: Cross curricular project incorporating numerous DCF skills embedded at the end of Summer term.</p> <p>Literacy: Frayer models and key word spelling tests will assist learners with tier 3 vocabulary. Reasoning and logic will be tested using additional constraints and higher order questioning.</p>

Assessment (How will we know that students have learnt what we taught them?)	
<p>Formative assessment: Teacher circulating. Cold calling. Mini whiteboards. Peer/self assessment tasks. Plickers. Desmos.</p>	<p>Summative assessment: Open book assessment covering all topics.</p>

Evaluation Evaluation (To be completed July 2024)		
Strengths	Areas for Development	Pupil Voice