Year 7 : Working with Angles Medium Term Plan

Working with Angles		Measuring Angles	Understand the theories behind the history of angles (Babylonians being the leading). Draw and measure angles accurately including past 180.	
		Angle Notation	Understand the different representations of labelling angle notation.	
		Angles around a Point	Calculate missing angles around a point.	The ancient Babylonians developed the idea that the sides of a regular hexagon drawn nicely into six equal parts (60°). This then
		Angles at a Point on a Straight Line	Calculate missing angles at a point on a straight line.	
		Vertically Opposite Angles	Understand that vertically opposite angles are equal and distinguish if and when they are vertically opposite.	
		Angles in Triangle	Calculate missing angles in all types of triangles. Calculate missing angles that are exterior to the triangle. Solve compound triangle problems.	Hidden message - **mathematical team game B**
		Angles in Quadrilateral	Calculate interior and exterior angles of quadrilaterals. Solve problems using the properties of special quadrilaterals.	
		Darts Project (2 lessons)	Using a compass to draw concentric circles (Construction skills) Mental arithmetic Using reasoning to solve dart problems	

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		Angles in Quadrilateral	Calculate interior and exterior angles of quadrilaterals. Solve problems using the properties of special quadrilaterals.	
		Exterior and Interior Angles of Polygons	Calculate the interior and exterior angles of any polygon. Solve problems involving compound shapes.	Tessellation
		Darts Project (2 lessons)	Using a compass to draw concentric circles (Construction skills) Mental arithmetic Using reasoning to solve dart problems	

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	Angles at a Point on a Straight Line	Calculate missing angles at a point on a straight line.	
	Vertically Opposite Angles	Understand that vertically opposite angles are equal and distinguish if and when they are vertically opposite.	
	Angles in Triangles	Calculate missing angles in all types of triangles. Calculate missing angles that are exterior to the triangle. Solve compound triangle problems	Hidden message - **mathematical team game B**
	Angles in Quadrilaterals	Calculate interior and exterior angles of quadrilaterals. Solve problems using the properties of special quadrilaterals	
	Exterior and Interior Angles of Polygons	Calculate the interior and exterior angles of any polygon. Solve problems involving compound shapes.	Tessellation
	Bearings	Measure and draw bearings.	Orienteering and map reading
	Darts Project (2 lessons)	Using a compass to draw concentric circles (Construction skills) Mental arithmetic Using reasoning to solve dart problems	

Key Knowledge/Prior Learning KS2/Retrieval and Suggested Starters

- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
- Find unknown angles in triangles.
- Basic angle facts
- Calculations
- Line/shape properties
- Addition/subtraction/Division
- Solving equations
- Forming expressions

KS3 National Curriculum – what students will be practicing

- Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles
- Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons
- Measure and draw bearings

- Understand and use the relationship between parallel lines and alternate and corresponding angles???? (Check)

Specific Ambitious Knowledge
• Interleaving of topics to include: -Forming and solving equations • Real map reading of the local area.

Key Vocabulary/Literacy Opportunities
• Supplementary • Complementary • Acute, right, obtuse, reflex angles • Scalene, isosceles, equilateral triangles • Base angles • Polygon • Sum of interior angles • Exterior • Bearing • Alternate* • Corresponding* • Co-interior/Allied*

Key Formulae/Knowledge
• Triangles/straight lines sum to 180 • Isosceles triangle rules • Sum of Interior Angles: 180(n – 2) = triangles from the vertices triangles from the centre (using isosceles triangles) • 1 Exterior angle: 360/n • Number of Sides: 360/Exterior angle • Interior and exterior angles add to 180.

Cross Curricular Links
• Art – angles • Art - tesselation • Design Technology – shape properties and angles

Student' Thinking
• Map reading/bearings – do we rely on technology too much? E.g. Sat Navs and phones.

Projects/Enrichment/Investigations

- Triangles in circles: https://nrich.maths.org/trianglesincircles
- Right angles: https://nrich.maths.org/rightangles
- Which solids can we make? https://nrich.maths.org/7306
- Star polygons: https://nrich.maths.org/1145
- Angles inside: https://nrich.maths.org/13644
- Angle facts hidden message – mathematical team game B

Projects:
Core:
Darts Project
Upper:
Darts Project
Set 1:
Darts Project