Year 7 ：Working with Angles Medium Term Plan

|  | 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 $\left[60^{\circ}\right]$ ．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． <br> Solve compound triangle problems． | Hidden message－mathematical team game B |
|  | Angles in Quadrilateral | Calculate interior and exterior angles of quadrilaterals． <br> Solve problems using the properties of special quadrilaterals． |  |
|  | Darts Project（2 lessons） | Using a compass to draw concentric circles ［Construction skills］ Mental arithmetic <br> Using reasoning to solve dart problems |  |


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|  | Exterior snd Interior Angles of Polygons | Calculate the interior and exterior angles of any polygon． <br> Solve problems involving compound shapes． | Tesselation |
|  | Darts Project（2 lessons） | Using a compase to draw concentric circles <br> （Construction zkills） <br> Mental arithmetic <br> Using reasoning to solve dart problems |  |


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## 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
- Rightangles: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

