Angle Facts

Key Knowledge/Prior Learning KS2/3 and Retrieval and Suggested Starters
• Calculations • Substitution • Solving equations • Rearranging formula • Classifying shapes • Fractions of amounts

KS3 National Curriculum – what students will be practicing and Key Questions
• Estimate, draw and measure angles • Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles (inc problem solving with a mixture of these). • 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 • Calculate exterior angles of a polygon • Calculate the number of sides of a polygon. • Understand and use the relationship between parallel lines and alternate and corresponding angles • Calculate bearings (including scales and scaled drawings) • Locate a point given two bearings.

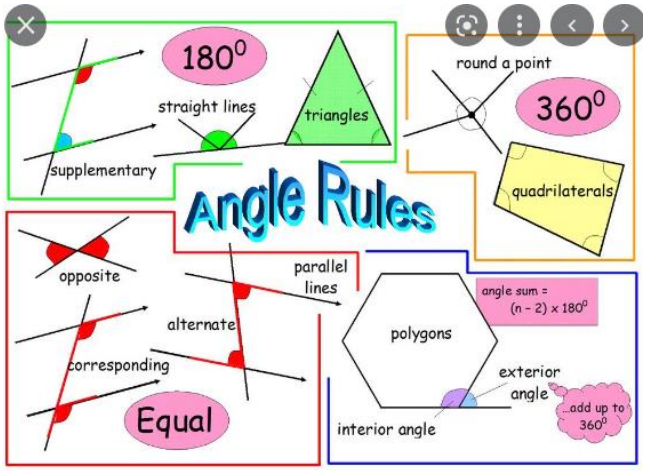
Specific Ambitious Knowledge
• Interleaving of topics to include: -Forming and solving equations • Real map reading of the local area. • Interior angles and sum of interior methods: Exterior angles method Triangles from the vertices Triangles from the centre Triangles from an interior point **(See Methods book for more info)**

Key Vocabulary/Literacy Opportunities
• Angle • Turn

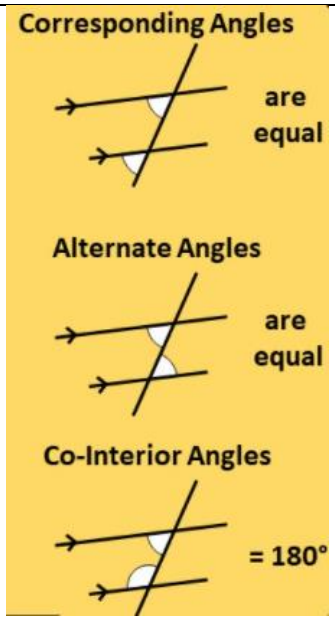
- Complementary
- Supplementary
- Acute, right, obtuse, reflex angles
- Scalene, isosceles, right, equilateral
- Vertically opposite
- Polygons
- Parallel
- Perpendicular
- Alternate
- Corresponding
- Co-interior
- Bearings
- Scale drawings
- Compass
- Direction
- North

Key Formulae/Knowledge and Misconceptions

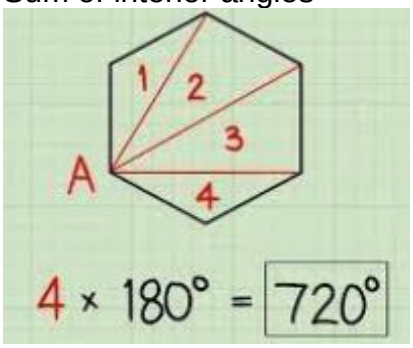
General Rules



Angles on parallel lines



Sum of interior angles



(n-2) x 180

From the centre

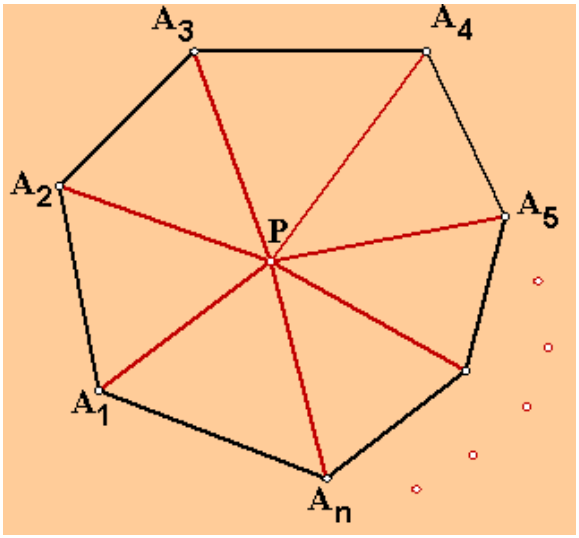
From any one point P inside the polygon,
construct lines to the vertices.

There are altogether n triangles.

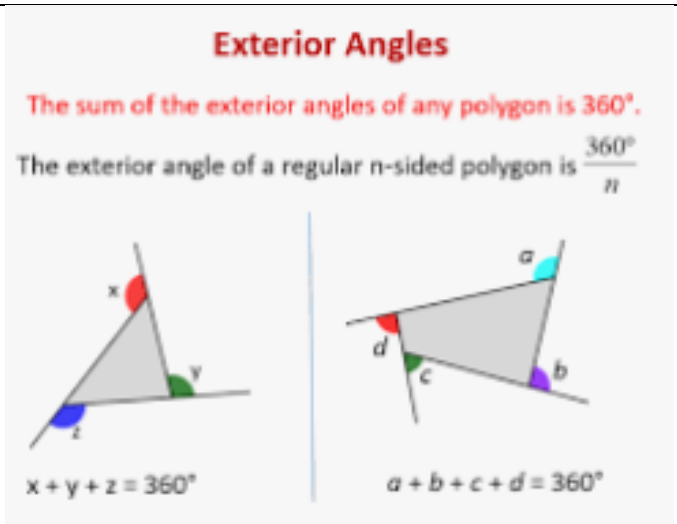
Sum of angles of each triangle = 180°

Please note that there is an angle at a point = 360° around P containing angles which are not interior angles of the given polygon.

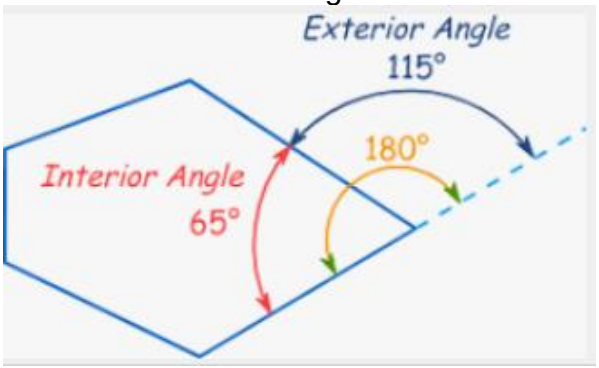
Sum of interior angles of n-sided polygon
= n x 180°- 360° = (n-2) x 180°



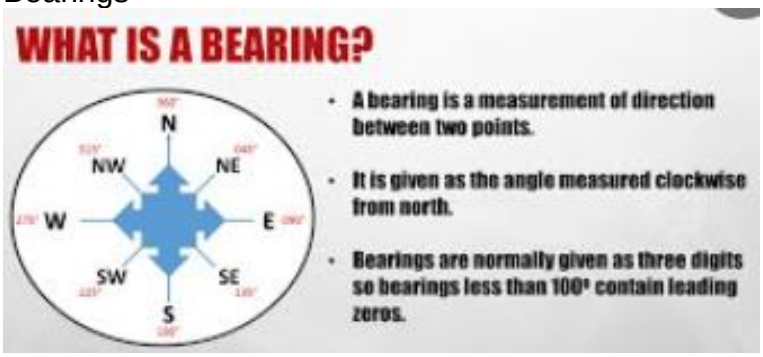
Exterior angles



Interior and exterior angles add to 180.



Bearings



Maths in Context (Historical, Real Life and Student Thinking Points)
Orienteering

Projects/Enrichment/Investigations
• Star polygons: https://nrich.maths.org/11456?utm_source=secondary-map • Superhero angles: http://www.mathematicshed.com/uploads/1/2/5/7/12572836/superheroangles.pdf • Map Investigations • Orienteering tasks Project Ideas: