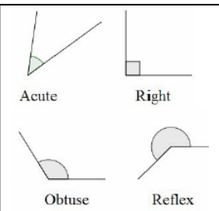
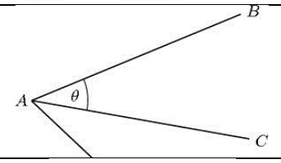
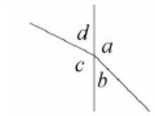
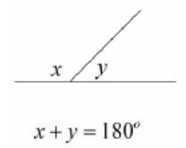
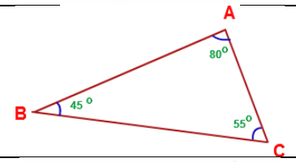
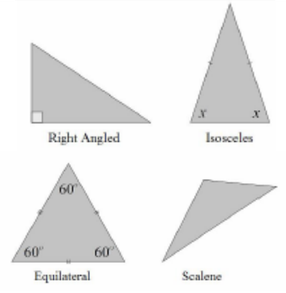
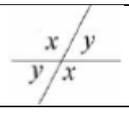
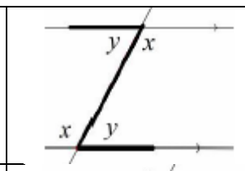
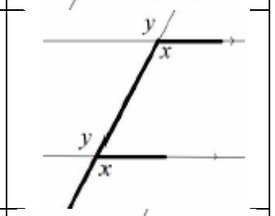
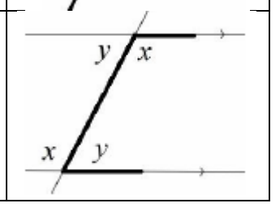
Maths *Knowledge Organiser*

9A2c: **Angles**

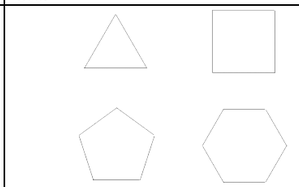
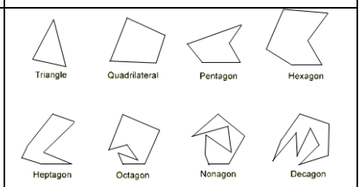
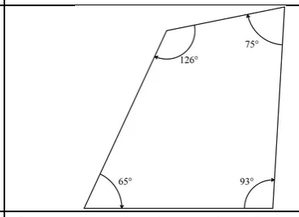
Basic Angle Facts

Types of Angles	**Acute angles** are less than 90°. **Right angles** are exactly 90°. **Obtuse angles** are greater than 90° but less than 180°. **Reflex angles** are greater than 180° but less than 360°.	
Angle Notation	Can use **one lower-case** letters, eg. θ or x Can use **three upper-case** letters, eg. BAC	
Angles at a Point	**Angles around a point add up to 360°**.	 $a+b+c+d=360^o$
Angles on a Straight Line	**Angles around a point on a straight line add up to 180°**.	 $x+y=180^o$
Angles in a Triangle	**Angles in a triangle add up to 180°.**	
Types of Triangles	**Right Angle** Triangles have a **90°** angle in. **Isosceles** Triangles have **2 equal sides** and **2 equal base angles**. **Equilateral** Triangles have **3 equal sides** and **3 equal angles (60°)**. **Scalene** Triangles have **different sides** and **different angles**. **Base angles in an isosceles triangle are equal.**	
Opposite Angles	**Vertically opposite angles are equal**.	

Parallel Lines

Alternate Angles	**Alternate angles are equal**. They look like Z angles, but never say this in the exam.	
Corresponding Angles	**Corresponding angles are equal**. They look like F angles, but never say this in the exam.	
Co-Interior Angles	**Co-Interior angles add up to 180°**. They look like C angles, but never say this in the exam.	

Polygons

Polygon	A **2D** shape with **only straight edges**.	Rectangle, Hexagon, Decagon, Kite etc.
Regular	A shape is regular if all the **sides** and all the **angles** are **equal**.	
Names of Polygons	**3**-sided = **Triangle** **4**-sided = **Quadrilateral** **5**-sided = **Pentagon** **6**-sided = **Hexagon** **7**-sided = **Heptagon** **8**-sided = **Octagon** **9**-sided = **Nonagon** **10**-sided = **Decagon**	
Angles in a Quadrilateral	**Angles in a quadrilateral add up to 360°.**	
Sum of Interior Angles	$(\boldsymbol{n-2})\times\boldsymbol{180}$ where n is the number of sides.	Sum of Interior Angles in a Decagon = $(10-2)\times 180 = 1440°$
Size of Interior Angle in a Regular Polygon	$\frac{(\boldsymbol{n-2})\times\boldsymbol{180}}{\boldsymbol{n}}$ You can also use the formula: $\boldsymbol{180 - Size\ of\ Exterior\ Angle}$	Size of Interior Angle in a Regular Pentagon = $\frac{(5-2)\times 180}{5} = 108°$
Size of Exterior Angle in a Regular Polygon	$\frac{\boldsymbol{360}}{\boldsymbol{n}}$ You can also use the formula: $\boldsymbol{180 - Size\ of\ Interior\ Angle}$	Size of Exterior Angle in a Regular Octagon = $\frac{360}{8} = 45°$