AQA GCSE Maths – Geometry & Measures

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Subject: Maths

Grade: KS4

Detailed revision guide for the Geometry & Measures topic in AQA GCSE Maths covering definitions, examples, methods, advantages, disadvantages, and practice questions.

Geometry & Measures – AQA GCSE Maths (8300)

Key Concepts

- Angles: interior, exterior, vertically opposite, complementary, supplementary
- Triangles, quadrilaterals, polygons, and their properties
- Circles: radius, diameter, circumference, area, arcs, sectors
- Perimeter, area, and volume of 2D and 3D shapes
- Pythagoras' theorem and trigonometry
- Transformations: translations, rotations, reflections, enlargements
- Coordinate geometry
- Units of measurement, conversions, scale diagrams, bearings

Definitions & Examples

- Interior Angle: The angle inside a polygon.
- Exterior Angle: Angle formed outside a polygon adjacent to interior angle.
- Pythagoras' Theorem: In a right-angled triangle, $a^2 + b^2 = c^2$.
- Trigonometry: sin, cos, tan ratios to find missing sides/angles.
- Transformation: Moving or resizing shapes (translation, rotation, reflection, enlargement).

Methods

- Calculate missing angles using sum of angles in polygons
- Use Pythagoras and trigonometric ratios to solve problems
- Find perimeter, area, and volume using formulas
- Apply transformations using coordinates or geometrically
- Convert between units (length, area, volume, time)
- Draw and interpret scale diagrams and bearings

Advantages & Disadvantages

- Advantages: Develops spatial awareness, useful in real-life contexts such as construction, navigation, and engineering.
- Disadvantages: Requires careful diagram drawing, mistakes in units can cause errors, trigonometry can be challenging for some students.

Practice Questions

- Find the missing angle in a triangle with angles 50° and 60°.
- Calculate the area of a circle with radius 5 cm.
- Use Pythagoras' theorem to find the hypotenuse of a right triangle with sides 6 cm and 8 cm.
- Find sin, cos, and tan for a right triangle with sides 3, 4, 5.
- Translate a triangle 3 units right and 2 units down on a coordinate grid.
- Convert 2500 m^2 to hectares.
- Calculate the volume of a cylinder with radius 4 cm and height 10 cm.