KEVICC Key Stage 4 Curriculum Subject: Mathematics

Autumn Half-Term

Term: Year 9 Autumn Term – Block Three | **Topic: Angles**

What is the essential knowledge from this unit?
What do students need to remember and understand?

	Specification content	Specification notes
G1	Use conventional terms and notations: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, regular polygons, and polygons with reflection and/or rotation symmetries Use the standard conventions for labelling and referring to the sides and angles of triangles Draw diagrams from written descriptions	

Students should be able to:

- distinguish between acute, obtuse, reflex and right angles
- name angles
- use one lower-case letter or three upper-case letters to represent an angle, for example x or *ABC*
- understand and draw lines that are parallel
- understand that two lines that are perpendicular are at 90° to each other
- identify lines that are perpendicular
- draw a perpendicular line in a diagram
- use geometrical language
- use letters to identify points and lines
- recognise that, for example, in a rectangle *ABCD* the points *A*, *B*, *C* and *D* go around in order
- recognise reflection symmetry of 2D shapes
- understand line symmetry
- identify lines of symmetry on a shape or diagram
- draw lines of symmetry on a shape or diagram
- draw or complete a diagram with a given number of lines of symmetry
- recognise rotational symmetry of 2D shapes
- identify the order of rotational symmetry on a shape or diagram draw or complete a diagram with rotational symmetry

G3	Apply the properties of: • angles at a point • angles at a point on a straight line • vertically opposite angles Understand and use alternate and corresponding angles on parallel lines	colloquial terms such as Z angles are not acceptable and should not be used

Students should be able to:

- work out the size of missing angles at a point
- work out the size of missing angles at a point on a straight line
- know that vertically opposite angles are equal
- estimate the size of an angle in degrees
- justify an answer with explanations such as 'angles on a straight line', etc.
- understand and use the angle properties of parallel lines
- recall and use the terms alternate angles and corresponding angles
- work out missing angles using properties of alternate angles, corresponding angles and interior angles
- understand the consequent properties of parallelograms
- understand the proof that the angle sum of a triangle is 180°
- understand the proof that the exterior angle of a triangle is equal to the sum of the interior angles at the other two vertices
- use angle properties of equilateral, isosceles and right-angled triangles
- use the fact that the angle sum of a quadrilateral is 360°
- calculate and use the sums of interior angles of polygons
- recognise and name regular polygons: pentagons, hexagons, octagons and decagons
- use the angle sum of irregular polygons
- calculate and use the angles of regular polygons
- use the fact that the sum of the interior angles of an *n*-sided polygon is $180(n - 2)$
- use the fact that the sum of the exterior angles of any polygon is 360°
- use the relationship - interior angle + exterior angle = 180°
- use the sum of the interior angles of a triangle to deduce the sum of the interior angles of any polygon.

Key Vocabulary and notation.

Multiples	Highest
Integer	Common
Factor	Factor
Divisible	Common
Remainder	Multiple
Term	Product
Factorise	Lowest
Divisor	Common
Multiple	Multiple
Prime	Prime Factor
number	Union
Odd	Intersection
Even	Conjecture
Digit	Explain
Number	Relationship
Relationship	True
Investigate	False
Square	Proof
Number	Demonstration
Expression	Always
Common	Systematic
Factor	Never
Factorising	Sometimes
Factorise	Assumption

Mathematical questioning should be designed to unpick the structure of the maths and deepen the student's understanding. When students talk about mathematical concepts, they should develop the vital mathematical language that helps them explain their ideas fully.

Students are expected and encouraged to use terminology during all discussions, verbal feedback and in written content.

What prior learning supports understanding of this content?	**How does this content link to future learning?**
• Measure a line segment in mm and cm. • Estimate the size of an angle. • Identify and name 2D shapes. • Recognise right angles, angles at a point and angles on a straight line. • Calculate missing angles on a straight line, at a point and in a triangle. • Use interior angle facts for triangles and quadrilaterals.	• Review and extend key stage 3 coverage of Angles and work on metric units. • Chains of reasoning to find angles. • Scale drawings and Bearings. • Interpret and use bearings. • Understand and use scale factors • Scale diagrams and maps.
Reading: *Where in the unit are students supported to read complex academic text?* • Reading and understanding mathematical questions and problems' – teacher input. • Decoding complex examination questions - explain what they are asking the student to do' – teacher input. • Following instructions to solve problems - break down the tasks – teacher input. • Recognising terminology, numbers, and symbols.	**Writing:** *Independent writing tasks and how they are structured* • Using the correct subject specific terminology for numbers and symbols – examination papers, class books. • Responding to questions that ask for an explanation or a reason – examination papers, class books. • Self-evaluation, reviewing, reflecting and analysis of own work – class books, personalised learning checklists and analysis. • Creating notes that can be used later for revision purposes - class books, revision cards, mind maps etc.

Key assessments:

How will do students review the information learned?

End of block assessments.

AQA end of block assessments provide a quick progress check at the end of each block of learning to make sure students have understood the content being covered. These are available for both foundation and higher tiers.

End of term/year assessments and mock examinations.

End of term assessments assessing the students' progress towards targets and provide diagnostic information to modify future teaching.

End of year 9 and 10 examinations assessing the students' progress towards targets and provide diagnostic information to modify future teaching.

Two mock examinations seasons take place during year 11 using previous years AQA 8300 examination papers. Students to experience the full suite of papers at both Foundation and higher tiers using Non-calculator and Calculator requirements.

All examinations will explore the three examination papers at both foundation and higher tiers using non-calculator and calculator requirements.

How will feedback be seen?

Marked end of block, term assessments and mock examinations.

Personalised learning checklists for all assessments identifying strengths and areas of development.

Written teacher feedback and marking in compliance with faculty and College Marking Policies. Student responses to marking. Students self-mark using purple pen. Verbal feedback given every lesson from teacher and peers as appropriate. Teacher and student self-assessment of presentation of class books will be completed to ensure written work is of high standard and students are achieving their potential.