KEVICC Key Stage 4 Curriculum Subject: Mathematics	Key Vocabulary and notation.

Term: Year 10 Summer Term – Block Three	**Topic: Surface Area, Volume and Sectors**

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

	Specification content	Specification notes
G16	Know and apply the formulae to calculate the volume of cuboids and other right prisms (including cylinders)	

Students should be able to:
- recall and use the formulae for the area of a rectangle, triangle, parallelogram and trapezium
- work out the area of a rectangle
- work out the area of a triangle
- work out the area of a parallelogram
- work out the area of a trapezium
- calculate the area of shapes made from triangles and rectangles
- calculate the area of compound shapes made from two or more rectangles, for example an L shape or T shape
- calculate the area of shapes drawn on a grid
- calculate the area of simple shapes
- work out the surface area of nets made up of rectangles and triangles
- recall and use the formula for the volume of a cube or cuboid
- recall and use the formula for the volume of a cylinder
- recall and use the formula for the volume of a prism
- work out the volume of a cube or cuboid
- work out the volume of a cylinder
- work out the volume of a prism, for example a triangular prism.

G17	Calculate the volume of spheres, pyramids, cones and composite solids	including frustums

Students should be able to:
- work out the perimeter of a rectangle
- work out the perimeter of a triangle
- calculate the perimeter of shapes made from triangles and rectangles
- calculate the perimeter of compound shapes made from two or more rectangles
- calculate the perimeter of shapes drawn on a grid
- calculate the perimeter of simple shapes
- recall and use the formula for the circumference of a circle
- work out the circumference of a circle, given the radius or diameter
- work out the radius or diameter given the circumference of a circle
- use π = 3.14 or the π button on a calculator
- work out the perimeter of semicircles, quarter circles or other fractions of a circle
- recall and use the formula for the area of a circle
- work out the area of a circle, given the radius or diameter
- work out the radius or diameter given the area of a circle
- work out the area of semicircles, quarter circles or other fractions of a circle
- work out the surface area of spheres, pyramids, and cones
- work out the surface area of compound solids constructed from cubes, cuboids, cones, pyramids, cylinders, spheres, and hemispheres
- work out volume of spheres, pyramids, and cones
- work out the volume of compound solids constructed from cubes, cuboids, cones, pyramids, cylinders, spheres, and hemispheres
- solve real-life problems using known solid shapes.

G18	Calculate arc lengths, angles and areas of sectors of circles	

Students should be able to:
- calculate the length of arcs of circles
- calculate the area of sectors of circles
- given the lengths or areas of arcs, calculate the angle subtended at the centre.

N8	Calculate exactly with multiples of π	

Students should be able to:
- give answers in terms of π and use values given in terms of π in calculations.

Key Vocabulary and notation.

Formula	Decagon
Area	Rectangle
Triangle	Estimate
Rhombus	Infinity
Trapezium	Radius
Trapezia	Diameter
Parallel	Tangent
Perpendicular	Arc
height	Sector
Compound	Segment
Component	Semi-circle
shapes	π
Perpendicular	Approximately
Sector	Estimate
Equilateral	In terms of π
Isosceles	Decimal
Scalene	place
Length	Estimate
Acute	Calculate
Obtuse	Substitute
Right-angle	Significant
Reflex	figures
Polygon	Cube
Square	Cuboid
Kite	Prism
Rhombus	Cylinder
Parallelogram	Pyramid
Trapezium	Cone
Polygon	Sphere
Edges	Hemi-spheres
Face	Uniform
Vertices	Cross-section
Vertex	Volume
Equal	Surface area
Triangle	Compound

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?

• Recall and use the formulae for the perimeter and area of a rectangle, triangle, parallelogram, and trapezium
• Calculate the perimeter and area of shapes made from triangles and rectangles
• Calculate the perimeter and area of compound shapes made from two or more rectangles, for example an L shape or T shape
• Work out the circumference of a circle, given the radius or diameter
• Work out the radius or diameter given the circumference of a circle
	• Use the standard ruler and compass constructions:
	   ○ Perpendicular bisector of a line segment.
	   ○ Constructing a perpendicular to a given line from / at a given point.
	   ○ Bisecting a given angle.
	• Know that the perpendicular distance from a point to a line is the shortest distance to the line.
	• Use these to construct given figures and solve loci problems, including constructing an angle of 60°.

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.