KEVICC Key Stage 4 Curriculum Subject: Mathematics

Spring Half-Term

Term: Year 10 Spring Term – Block Two | **Topic: Transformations**

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

	Specification content	Specification notes
G7	Identify, describe, and construct congruent and similar shapes, including on co-ordinate axes, by considering rotation, reflection, translation and enlargement (including fractional **and negative** scale factors)	

Students should be able to:
- describe and transform 2D shapes using single rotations
- understand that rotations are specified by a centre and an angle
- find a centre of rotation
- rotate a shape about the origin or any other point
- measure the angle of rotation using right angles
- measure the angle of rotation using simple fractions of a turn or degrees
- describe and transform 2D shapes using single reflections
- understand that reflections are specified by a mirror line
- find the equation of a line of reflection
- describe and transform 2D shapes using translations
- understand that translations are specified by a distance and direction (using a vector)
- translate a given shape by a vector
- describe and transform 2D shapes using enlargements by a positive scale factor
- understand that an enlargement is specified by a centre and a scale factor
- draw an enlargement
- find the centre of enlargement
- enlarge a shape on a grid (centre not specified)
- recognise that enlargements preserve angle but not length
- identify the scale factor of an enlargement of a shape as the ratio of the lengths of two corresponding sides
- identify the scale factor of an enlargement as the ratio of the lengths of any two corresponding line segments
- describe and transform 2D shapes using combined rotations, reflections, translations, or enlargements
- distinguish properties that are preserved under particular transformations
- understand that distances and angles are preserved under rotations, reflections, and translations, so that any figure is congruent under any of these transformations
- use congruence to show that translations, rotations, and reflections preserve length and angle, so that any figure is congruent to its image under any of these transformations.

G7h	Identify, describe and construct congruent and similar shapes, including on coordinate axes, by considering rotation, reflection, translation and enlargement (including fractional and negative scale factors)

Students should be able to:
- identify the scale factor of an enlargement
- construct enlargements with fractional and negative scale factors.

G8	**Describe the changes and invariance achieved by combinations of rotations, reflections, and translations (including using column vector notation for translations)**

Students should be able to:
- list all the outcomes for a single event in a systematic way
- list all the outcomes for two events in a systematic way
- design and use two-way tables
- complete a two-way table from given information
- design and use frequency trees
- work out probabilities by counting or listing equally likely outcomes.

G8h	Describe the changes and invariance achieved by combinations of rotations, reflections and translations

Students should be able to:
- describe a combination of transformations as a single transformation
- understand and use the term 'invariance' for points, lines and shapes
- map a point on a shape under a combination of transformations
- use column vector notation for translations.

Key Vocabulary and notation.

Line	Rotation
symmetry	Angle
Regular	Clockwise
Polygon	Anti-clockwise
Isosceles	Turn
Equilateral	Quarter turn
Triangle	Congruent
Square	Object
Rhombus	Image
Trapezium	Vertical
Kite	Horizontal
Circle	Vertex
Pentagon	Perpendicular
Hexagon	distance
Semi-Circle	Enlarge
Reflection	Centre of
Reflect	enlargement
Line	Scale factor
Symmetry	Negative
Axis	Ratio
Translation	Origin
Translate	Object
Vector	Image
Movement	Correspond
Move	Similar

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?**
• Understand the language of faces, edges, and vertices. • Know the names of common prisms and non-prisms. • Identify 2-D shapes with 3-D shapes. • Calculate the perimeter of rectangles, squares and triangles in mm and cm. • Calculate the area of rectangles, squares and triangles in mm and cm. • Write the coordinates of points on a grid. • Write the equation of the line $y = x$, and of lines parallel to the x and *y-axis.*	• Use the basic congruence criteria for triangles (SSS, SAS, ASA, and RHS). • Describe the changes and invariance achieved by combinations of rotations, reflections and translations. • Apply and use the concepts of congruence and similarity, including the relationships between lengths, areas and volumes in similar figures.
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.