**HIGHER GCSE UNIT SUMMARY: UNIT 8: Transformations; Constructions: triangles, nets, plan and elevation, loci, scale drawings and bearings**

8a) **Transformations**

| Unit Description | Taught | Revision Priority |
|---|---|---|
| Distinguish properties that are preserved under particular transformations; | | |
| Recognise and describe rotations – know that that they are specified by a centre and an angle; | | |
| Rotate 2D shapes using the origin or any other point (not necessarily on a coordinate grid); | | |
| Identify the equation of a line of symmetry; | | |
| Recognise and describe reflections on a coordinate grid – know to include the mirror line as a simple algebraic equation, $x = a$, $y = a$, $y = x$, $y = -x$ and lines not parallel to the axes; | | |
| Reflect 2D shapes using specified mirror lines including lines parallel to the axes and also $y = x$ and $y = -x$; | | |
| Recognise and describe single translations using column vectors on a coordinate grid; | | |
| Translate a given shape by a vector; | | |
| Understand the effect of one translation followed by another, in terms of column vectors; | | |
| Enlarge a shape on a grid without a centre specified; | | |
| Describe and transform 2D shapes using enlargements by a positive integer, positive fractional, and negative scale factor; | | |
| Know that an enlargement on a grid is specified by a centre and a scale factor; | | |
| Identify the scale factor of an enlargement of a shape; | | |
| Enlarge a given shape using a given centre as the centre of enlargement by counting distances from centre, and find the centre of enlargement by drawing; | | |
| Find areas after enlargement and compare with before enlargement, to deduce multiplicative relationship (area scale factor); given the areas of two shapes, one an enlargement of the other, find the scale factor of the enlargement (whole number values only); | | |
| 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; | | |
| Describe and transform 2D shapes using combined rotations, reflections, translations, or enlargements; | | |
| Describe the changes and invariance achieved by combinations of rotations, reflections and translations. | | |

8b) **Constructions, loci and bearings**

| Unit Description | Taught | Revision Priority |
|---|---|---|
| Draw 3D shapes using isometric grids; | | |
| Understand and draw front and side elevations and plans of shapes made from simple solids; | | |
| Given the front and side elevations and the plan of a solid, draw a sketch of the 3D solid; | | |
| Use and interpret maps and scale drawings, using a variety of scales and units; | | |
| Read and construct scale drawings, drawing lines and shapes to scale; | | |
| Estimate lengths using a scale diagram; | | |
| Understand, draw and measure bearings; | | |
| Calculate bearings and solve bearings problems, including on scaled maps, and find/mark and measure bearings | | |
| Use the standard ruler and compass constructions to bisect a given angle; construct a perpendicular to a given line from/at a given point; construct angles of 90°, 45°; produce the perpendicular bisector of a line segment; | | |
| Construct a region bounded by a circle and an intersecting line; a given distance from a point and a given distance from a line; equal distances from two points or two line segments; regions which may be defined by 'nearer to' or 'greater than'; | | |
| Find and describe regions satisfying a combination of loci, including in 3D; | | |
| Use constructions to solve loci problems including with bearings; | | |
| Know that the perpendicular distance from a point to a line is the shortest distance to the line. | | |