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| **H Unit 1: Transformations, constructions, loci and bearings** | **Year 10 Road Map** |
| In this unit you will learn about geometry & measures. The aims are as follows:**LG1**: Knowledge **LG2**: Application **LG3**: SkillsAssessment Grades |
|  | **Learning Goals/Outcomes/Content** | Video clips | R A G |  |  |
| **1a Transformations** |
| 1 | Distinguish properties that are preserved under particular transformations;  |  |  |  |  |
| 2 | Recognise and describe rotations – know that that they are specified by a centre and an angle;  | 49 |  |  |  |
| 3 | Rotate 2D shapes using the origin or any other point (not necessarily on a coordinate grid);  | 49 |  |  |  |
| 4 | Identify the equation of a line of symmetry;  | 48 |  |  |  |
| 5 | 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;  | 48 |  |  |  |
| 6 | Reflect 2D shapes using specified mirror lines including lines parallel to the axes and *y* = *x* and *y* = –*x*; | 48 |  |  |  |
| 7 | Recognise and describe single translations using column vectors on a coordinate grid; | 50 |  |  |  |
| 8 | Translate a given shape by a vector;  | 50 |  |  |  |
| 9 | Understand the effect of one translation followed by another, in terms of column vectors (to introduce vectors in a concrete way);  | 50 |  |  |  |
| 10 | Enlarge a shape on a grid without a centre specified;  | 148 |  |  |  |
| 11 | Describe and transform 2D shapes using enlargements by a positive integer, positive fractional, and negative scale factor;  | 148, 181a |  |  |  |
| 12 | Know that an enlargement on a grid is specified by a centre and a scale factor;  | 148 |  |  |  |
| 13 | Identify the scale factor of an enlargement of a shape;  | 148 |  |  |  |
| 14 | 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;  | 148 |  |  |  |
| 15 | 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); | 148 |  |  |  |
| 16 | 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;  | 12b |  |  |  |
| 17 | Describe and transform 2D shapes using combined rotations, reflections, translations, or enlargements; | 182 |  |  |  |
| 18 | Describe the changes and invariance achieved by combinations of rotations, reflections and translations. | 182 |  |  |  |
| **1b Constructions, loci and bearings** |
| 21 | Draw 3D shapes using isometric grids; |  |  |  |  |
| 22 | Understand and draw front and side elevations and plans of shapes made from simple solids;  | 51 |  |  |  |
| 23 | Given the front and side elevations and the plan of a solid, draw a sketch of the 3D solid;  | 51 |  |  |  |
| 24 | Use and interpret maps and scale drawings, using a variety of scales and units;  | 38 |  |  |  |
| 25 | Read and construct scale drawings, drawing lines and shapes to scale; | 38 |  |  |  |
| 26 | Estimate lengths using a scale diagram;  | 38 |  |  |  |
| 27 | Understand, draw and measure bearings;  | 124 |  |  |  |
| 28 | Calculate bearings and solve bearings problems, including on scaled maps, and find/mark and measure bearings  | 124 |  |  |  |
| 29 | Use the standard ruler and compass constructions:  |  |  |  |  |
| 30 | bisect a given angle; | 145c |  |  |  |
| 31 | construct a perpendicular to a given line from/at a given point; | 145b |  |  |  |
| 32 | construct angles of 90°, 45°; | 145a, 145c |  |  |  |
| 33 | perpendicular bisector of a line segment; | 145a |  |  |  |
| 34 | Construct: |  |  |  |  |
| 35 | a region bounded by a circle and an intersecting line; | 146 |  |  |  |
| 36 | a given distance from a point and a given distance from a line; | 146 |  |  |  |
| 37 | equal distances from two points or two line segments; | 146 |  |  |  |
| 38 | regions which may be defined by ‘nearer to’ or ‘greater than’; | 146 |  |  |  |
| 39 | Find and describe regions satisfying a combination of loci, including in 3D; | 146 |  |  |  |
| 40 | Use constructions to solve loci problems including with bearings; | 146 |  |  |  |
| 41 | Know that the perpendicular distance from a point to a line is the shortest distance to the line.  | 146 |  |  |  |

Student’s comments or questions