



Year 11 Maths Learning Journey

Spring Term 4

Revision and communication: Transforming and constructing

Core knowledge	Reference
<u>Perform and describe line symmetry and reflection (R)</u> “How many lines of symmetry do regular polygons have?”	Worksheet
<u>Perform and describe rotation and rotational symmetry (R)</u> “What is the order of rotational symmetry for different regular polygons? What do you notice?”	Worksheet
<u>Perform and describe translations of shapes (R)</u> “Why do we measure from one vertex on the object to the corresponding vertex on the image?”	Worksheet
<u>Perform and describe enlargements of shapes (R)</u> “How can you work out the scale factor?”	Worksheet
<u>Perform and describe negative enlargements of shapes (R) (H)</u> “Does a negative scale factor always reduce the dimensions of a shape?”	Worksheet
<u>Identify transformations of shapes (R)</u> “Give the names of the four types of transformation.”	Worksheet
<u>Perform and describe a series of transformations of shapes</u> “Does the order a series of transformations are performed in always, sometimes or never make a difference?”	Worksheet
<u>Identify invariant points and lines (H)</u> “Is it possible for any point to be invariant after a translation?”	Worksheet
<u>Perform standard constructions using ruler and protractor or ruler and compasses (R)</u> “What do we know about all points on the perpendicular bisector in relation to A and B?”	Worksheet
<u>Solve loci problems</u> “How can we use scale to work out actual distances?”	Worksheet
<u>Understand and use trigonometrical graphs (H)</u> “Why can angles be greater than 360°? Is there a limit for the size of a measure of turn?”	Worksheet
<u>Sketch and identify translations of the graph of a given function (H)</u> “How do we know, by considering the equation, which direction the translation is in?”	Worksheet
<u>Sketch and identify reflections of the graph of a given function (H)</u> “Why is the relationship between $y = f(x)$ and $y = -f(x)$ a reflection in the x -axis?”	Worksheet

Learning Checkpoints

LC Title	Completed	Dirt
Transforming and constructing		

Key Vocabulary:

Anti-clockwise: In the direction the opposite direction to the clock.

Bisector: A point, line or plane that divides a line, an angle or a solid shape into two equal parts. A perpendicular bisector is a line at right angles to a line-segment that divides it into two equal parts.

Centre of enlargement: Point which tells you where to draw an enlargement.

Clockwise: In the direction in which the hands of an analogue clock travel.

Congruent: The same shape and size (but we are allowed to flip, slide or turn).

Construct: in Geometry means to draw shapes, angles or lines accurately.

Enlargement: A transformation of the plane in which lengths are multiplied whilst directions and angles are preserved

Invariant: A quantity which remains unchanged under certain classes of transformations.

Line symmetry: an object is said to have symmetry if it can be divided into two identical halves.

Locus/Loci: The set of all points that share a property. This usually results in a curve or surface.

Multiplier: a quantity by which a given number (the multiplicand) is to be multiplied.

Order of rotational symmetry: A 2-D shape has rotation symmetry about a point if an identical-looking shape in the same position is produced by a rotation.

Perpendicular: A line or plane that is at right angles to another line or plane.

Rotation: In 2-D, a transformation of the whole plane which turns about a fixed point, the centre of rotation.

Scale: A measuring device usually consisting of points on a line with equal intervals.

Similar: Two figures are said to be similar if they are the same shape

Reflection symmetry: A 2-D shape has reflection symmetry about a line if an identical looking object in the same position is produced by reflection in that line.

Transformation: Transformation means to change. Hence, a geometric transformation would mean to make some changes in any given geometric shape.

Translation: A transformation in which every point of a body moves the same distance in the same direction. A transformation specified by a distance and direction

Vector: The instruction that translates a shape up, down or from side to side but it does not change its appearance in any other way.

Vertex: The point at which two or more lines intersect. Plural: vertices