Summer Learning Journey for Maths
Unit 7 Transformations and Loci

How does this unit link to prior learning?

- Convert metric units of length
- Reflect over a mirror line
- Use a compass
- Use a ruler

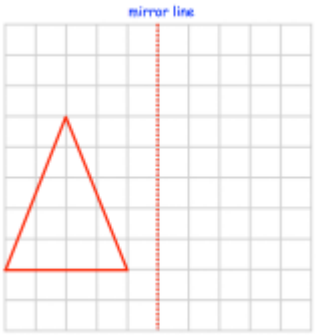
Prior Knowledge Check

1) Complete a) 1m = ...cm b) 1km = ...m c) 1km = ...cm

2) a) How many cm in 4m?

   b) How many m in 6.2km?

3) Reflect the triangle in the mirror line:



What will you be learning about?

To apply and describe transformations including translations, reflections, rotations and enlargements.
Perform constructions using a compass and protractor.
To understand and use bearings to solve problems and to solve problems using loci.

We will develop our learning each week by focusing on:

	RAG		RAG
1. 3D solids • Draw plans and elevations of 3D solids.		**2. Reflection** • Reflect a 2D shape in a mirror line. Describe reflections	
3. Rotation • Rotate a 2D shape about a centre of rotation. • Describe rotations.		**4. Enlargement** • Enlarge shapes by fractional and negative scale factors about a centre of enlargement	
5. Translations • Translate a shape using a vector.		**6. Combinations of transformations** • Carry out and describe combinations of transformations.	
7. Consolidation Lesson • Consolidation on all work covered so far on the topic. • Long periods of deliberate practice. • Should contain exam questions.		**8. Bearings and scale drawings** • Draw and use scales on maps and scale drawings. • Solve problems involving bearings.	
9. Constructions 1 • Construct triangles using a ruler and compasses. • Construct the perpendicular bisector of a line. • Construct the shortest distance from a point to a line using a ruler and compasses.		**10. Constructions 2** • Bisect an angle using a ruler and compasses. Construct angles using a ruler and compasses. • Construct shapes made from triangles using a ruler and compasses.	

11. Loci • Draw a locus. • Use loci to solve problems.		**12. Revision Lesson** • Teacher assess the topics the class need to revise. • Classroom based or Mathswatch.	
13. Assessment Lesson (calculator) • Do 10-minute top up and go through answers together, students self-assess. • Open book assessment done in silence.		**14. Feedback Lesson** • Student to highlight their traffic light sheet. • Teacher to go through test and students to self-assess in green. • Complete the NOW section of the WOW-HOW-NOW sheet.	

Key Vocabulary

Vertices	Edges	Planes	Parallel	Perpendicular	Symmetry	Faces	Points	Surfaces	Prisms

How will this help you in the future?

KS4

Solids (Plans and Elevations)
- Plans and elevations are a **common GCSE geometry topic**.
- Helps with **visualising 3D shapes from 2D views**.
- Links to **problem-solving questions involving shapes and space**.

Reflection and Rotation
- Transformations are a **key GCSE topic**.
- You must be able to **describe transformations accurately**.
- Links to **coordinates and symmetry**.

Enlargement
- Enlargement (including fractional and negative scale factors) is **commonly tested**.
- Links to **similar shapes and scale factors**.
- Important for **higher-tier GCSE questions**.

Transformations and Combinations
- Combining transformations is a **higher-level GCSE skill**.
- Requires clear understanding of **vectors and transformation types**.
- Appears in **multi-step problem-solving questions**.

Bearings and Scale Drawings
- Requires understanding of **angles, direction, and scale**.
- Links to **trigonometry and problem solving**.

Constructions 1
- Compass constructions are **exam-assessed skills**.
- Includes **perpendicular bisectors and shortest distances**.
- Builds accuracy for **geometry reasoning questions**.
- Angle construction and bisection are **key GCSE skills**.

Loci
- A **higher-tier GCSE topic** involving problem solving.
- Combines **geometry, constructions, and reasoning**.
- Often appears in **multi-step exam questions**.

Beyond LHS

Solids (Plans and Elevations)
- Used in **architecture** to show different views of buildings.
- Important in **engineering and design drawings**.
- Used in **construction and planning**.

Reflection and Rotation
- Used in **graphics, animation, and game design**.
- Important in **art and design**.
- Used in **engineering and manufacturing** processes.

Enlargement
- Used in **map reading and scale drawings**.
- Important in **architecture and design**.
- Used in **printing, modelling, and digital design**.

Transformations and Combinations
- Used in **computer graphics and animation**.
- Important in **robotics and programming movement**.
- Used in **engineering design and simulations**.

Bearings and Scale Drawings
- Used in **navigation (pilots, sailors, GPS systems)**.
- Important in **map reading and surveying**.
- Used in **military, aviation, and outdoor careers**.

Constructions 1
- Used in **technical drawing and CAD**.
- Important in **engineering and construction**.
- Helps with precision in **design and manufacturing**.

Constructions 2
- Used in **architecture and engineering**.
- Important in **product design and carpentry**.
- Helps develop precision in **creative and technical jobs**.

Loci
- Used in **tracking systems and GPS technology**.
- Important in **robotics and path planning**.
- Used in **engineering and safety design** (e.g. safe zones).