

# Summer Learning Journey for Maths

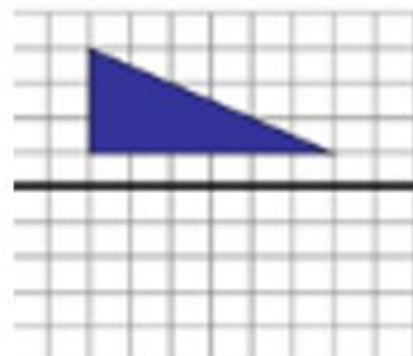
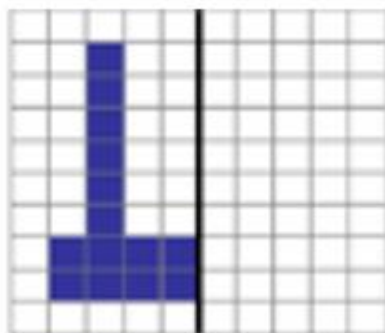
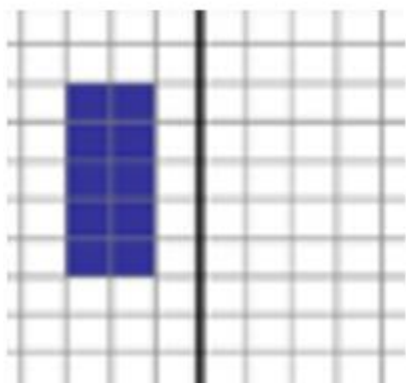
## Year 7F Unit 9 Transformations

How does this unit link to prior learning?

- Reflect shapes over a line

### Prior Knowledge Check

Reflect the shapes in the mirror line shown:



### What will you be learning about?

Transforming shapes using translation, reflection, rotation and enlargement.

We will develop our learning each week by focusing on:

1. Congruency and enlargements	RAG	2. Symmetry	RAG
<ul style="list-style-type: none"> <li>• Identify congruent shapes.</li> <li>• Use the language of enlargement.</li> <li>• Enlarge shapes using given scale factors.</li> <li>• Work out the scale factor given an object and its image.</li> </ul>		<ul style="list-style-type: none"> <li>• Recognise line and rotational symmetry in 2D shapes.</li> <li>• Identify all the symmetries of 2D shapes.</li> <li>• Identify reflection symmetry in 3D shapes.</li> </ul>	
<b>3. Reflection</b> <ul style="list-style-type: none"> <li>• Recognise and carry out reflections in a mirror line.</li> <li>• Reflect a shape on a coordinate grid.</li> <li>• Describe a reflection on a coordinate grid.</li> </ul>		<b>4. Rotation</b> <ul style="list-style-type: none"> <li>• Describe and carry out rotations on a coordinate grid.</li> </ul>	
<b>5. Translations and combined transformations</b> <ul style="list-style-type: none"> <li>• Translate 2D shapes.</li> <li>• Combine transformations.</li> </ul>		<b>6. Revision Lesson</b> <ul style="list-style-type: none"> <li>• Select topics you feel the class need to revise.</li> <li>• Classroom based or Mathswatch.</li> </ul>	
<b>7. Assessment Lesson (non-calculator)</b> <ul style="list-style-type: none"> <li>• Do 10-minute top up and go through answers together, students self-assess.</li> <li>• Open book assessment done in silence.</li> </ul>		<b>8. Feedback Lesson</b> <ul style="list-style-type: none"> <li>• Student to highlight their traffic light sheet.</li> <li>• Teacher to go through test and students to self-assess in green.</li> <li>• Students to complete the NOW section of the WOW-HOW-NOW sheet.</li> </ul>	

Key Vocabulary						
Image	Object	Congruent	Reflection	Mirror line	Line of symmetry	Enlarge
Coordinate	Angle	Translation	Similar	Translation	Rotation	Transformation

How will this help you in the future?	
KS4	Beyond LHS
<p><b>1. Congruency and Enlargements</b></p> <ul style="list-style-type: none"> <li>• <b>Twin vs. Zoom:</b> You'll move from spotting "identical twins" (congruent) to using "zoom" (similar) math with tricky fractions and negative numbers.</li> <li>• <b>Area Trap:</b> You'll learn why doubling a shape's side actually makes the area four times bigger, not just twice as big.</li> </ul> <p><b>2. Symmetry</b></p> <ul style="list-style-type: none"> <li>• <b>Proof Power:</b> You'll use symmetry to "prove" facts about shapes, like why certain angles in a circle or triangle must be equal.</li> <li>• <b>3D Slicing:</b> You'll have to imagine "planes of symmetry"—where you could slice a 3D shape (like a cube or pyramid) to get two perfect halves.</li> </ul> <p><b>3. Reflection</b></p> <ul style="list-style-type: none"> <li>• <b>Graph Flips:</b> You'll stop using plastic mirrors and start reflecting shapes across specific lines on a grid, like <math>y = x</math>.</li> <li>• <b>Function Moves:</b> In higher GCSE, you'll learn how to flip entire math "curves" (graphs of equations) upside down or sideways.</li> </ul> <p><b>4. Rotation</b></p> <ul style="list-style-type: none"> <li>• <b>The "Pin" Method:</b> You'll learn to use coordinates like (2,3) as a "pin" to swing shapes around a grid with perfect accuracy.</li> <li>• <b>Combined Moves:</b> You'll have to solve puzzles where you rotate a shape and then move it somewhere else to find the final "landing spot."</li> </ul> <p><b>5. Translations and Combined Transformations</b></p> <ul style="list-style-type: none"> <li>• <b>Vector Code:</b> You'll stop saying "right and up" and start using column vectors as a shortcut "code" to move shapes.</li> <li>• <b>Transformation Chains:</b> You'll learn how to describe two or three moves (like a flip then a slide) as just one single move.</li> </ul>	<p><b>1. Congruency and Enlargements</b></p> <ul style="list-style-type: none"> <li>• <b>Architecture:</b> Architects use scale factors to build tiny, perfect models of stadiums and skyscrapers before the real builders start.</li> <li>• <b>Phone Cameras:</b> Every time you "pinch-to-zoom," your phone is using scale factors to make the image bigger without ruining the shape.</li> </ul> <p><b>2. Symmetry</b></p> <ul style="list-style-type: none"> <li>• <b>Graphic Design:</b> Designers use symmetry to make logos (like Apple or VW) look balanced and professional to the human eye.</li> <li>• <b>Building Safety:</b> Engineers use symmetry to make sure bridges and buildings spread weight evenly so they don't fall over.</li> </ul> <p><b>3. Reflection</b></p> <ul style="list-style-type: none"> <li>• <b>Video Games:</b> "Ray tracing" in games uses the math of reflections to make light, water, and glass look exactly like they do in real life.</li> <li>• <b>Mirror Tech:</b> Scientists use this math to design telescopes that can see deep into space by bouncing light off mirrors.</li> </ul> <p><b>4. Rotation</b></p> <ul style="list-style-type: none"> <li>• <b>Robotics:</b> Programmers tell robot arms exactly how many degrees to rotate to pick up a car part or perform surgery.</li> <li>• <b>Animation:</b> Animators rotate "skeletons" of digital characters to make them walk, run, and move naturally in movies.</li> </ul> <p><b>5. Translations and Combined Transformations</b></p> <ul style="list-style-type: none"> <li>• <b>GPS &amp; Maps:</b> Your phone uses "translation" math to move your little icon across the map as you walk down the street.</li> <li>• <b>Coding &amp; UX:</b> App developers use these moves to make buttons slide on and off your screen smoothly when you swipe.</li> </ul>