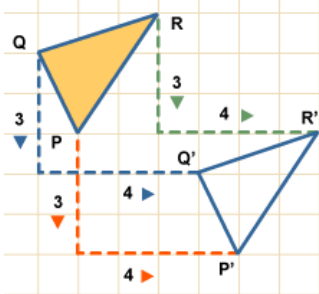
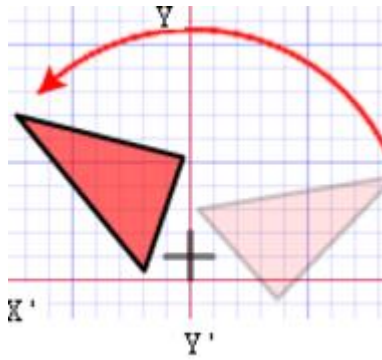
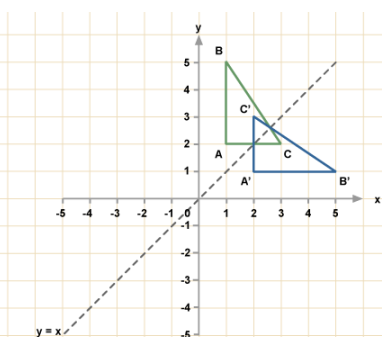
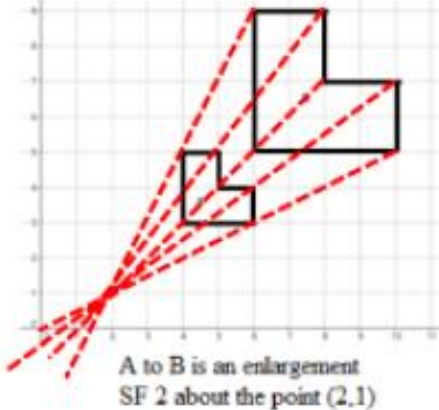
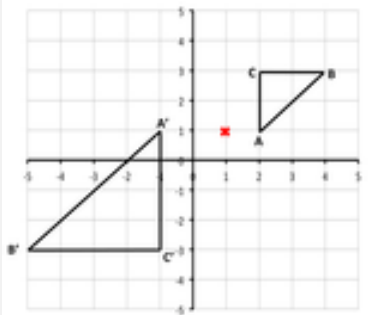


## Topic: Shape Transformations

Topic/Skill	Definition/Tips	Example
1. Translation	<b>Translate</b> means to <b>move a shape</b> . The shape does not change <b>size</b> or <b>orientation</b> .	
2. Column Vector	In a column vector, the <b>top</b> number moves <b>left (-) or right (+)</b> and the <b>bottom</b> number moves <b>up (+) or down (-)</b>	$\begin{pmatrix} 2 \\ 3 \end{pmatrix}$ means '2 right, 3 up' $\begin{pmatrix} -1 \\ -5 \end{pmatrix}$ means '1 left, 5 down'
3. Rotation	The size does not change, but the <b>shape is turned around a point</b> .  Use tracing paper.	Rotate Shape A 90° anti-clockwise about (0,1) 
4. Reflection	The size does not change, but the shape is ' <b>flipped</b> ' like in a <b>mirror</b> .  Line $x = ?$ is a <b>vertical line</b> . Line $y = ?$ is a <b>horizontal line</b> . Line $y = x$ is a <b>diagonal line</b> .	Reflect shape C in the line $y = x$ 
5. Enlargement	The shape will get <b>bigger or smaller</b> . Multiply each side by the <b>scale factor</b> .	Scale Factor = 3 means '3 times larger = multiply by 3'  Scale Factor = $\frac{1}{2}$ means 'half the size = divide by 2'



<p>6. Finding the Centre of Enlargement</p>	<p>Draw <b>straight lines</b> through <b>corresponding corners</b> of the two shapes.</p> <p>The centre of enlargement is the point <b>where all the lines cross over</b>.</p> <p>Be careful with negative enlargements as the corresponding corners will be the other way around.</p>	 <p>A to B is an enlargement SF 2 about the point (2,1)</p>
<p>7. Describing Transformations</p>	<p>Give the following information when describing each transformation:</p> <p>Look at the number of marks in the question for a hint of how many pieces of information are needed.</p> <p>If you are asked to describe a 'transformation', you need to say the <b>name of the type of transformation</b> as well as the other details.</p>	<ul style="list-style-type: none"> <li>- <b>Translation, Vector</b></li> <li>- <b>Rotation, Direction, Angle, Centre</b></li> <li>- <b>Reflection, Equation of mirror line</b></li> <li>- <b>Enlargement, Scale factor, Centre of enlargement</b></li> </ul>
<p>8. Negative Scale Factor Enlargements</p>	<p>Negative enlargements will <b>look like they have been rotated</b>.</p> <p><math>SF = -2</math> will be rotated, and also twice as big.</p>	<p>Enlarge ABC by scale factor -2, centre (1,1)</p> 
<p>9. Invariance</p>	<p>A point, line or shape is invariant if it <b>does not change/move</b> when a transformation is performed.</p> <p>An invariant point 'does not vary'.</p>	<p>If shape P is reflected in the <math>y</math> – axis, then exactly one vertex is invariant.</p> 