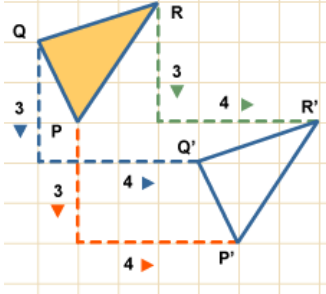
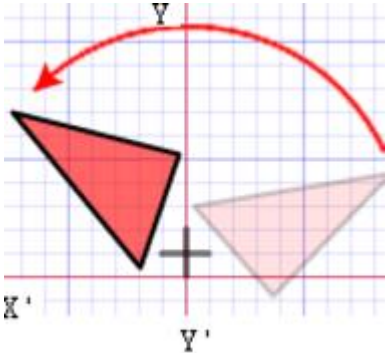
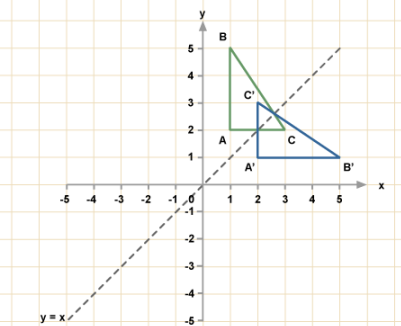


## Topic: Shape Transformations

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

<p>6. Finding the Centre of Enlargement</p>	<p>Draw <b>straight lines</b> through <b>corresponding corners</b> of the two shapes. 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>- Translation, Vector</li> <li>- Rotation, Direction, Angle, Centre</li> <li>- Reflection, Equation of mirror line</li> <li>- Enlargement, Scale factor, Centre of enlargement</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 - axis</math>, then exactly one vertex is invariant.</p>