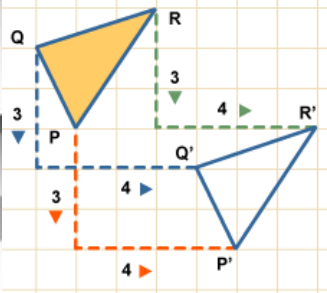


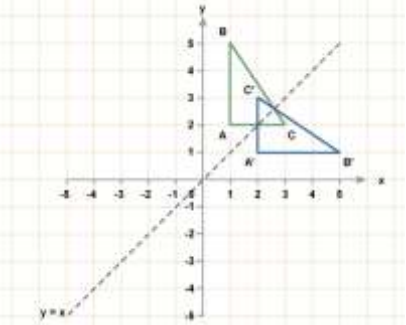
Topic: Shape Transformations

Topic/Skill	Definition/Tips	Example
1. Translation	<p>Translate means to move a shape. The shape does not change size or orientation.</p>	
2. Column Vector	<p>In a column vector, the top number moves left (-) or right (+) and the bottom number moves up (+) or down (-)</p>	<p>$\begin{pmatrix} 2 \\ 3 \end{pmatrix}$ means '2 right, 3 up' $\begin{pmatrix} -1 \\ -5 \end{pmatrix}$ means '1 left, 5 down'</p>
3. Rotation	<p>The size does not change, but the shape is turned around a point. Use tracing paper.</p>	<p>Rotate Shape A 90° anti-clockwise about (0,1)</p>



<p>4. Reflection</p>	<p>The size does not change, but the shape is 'flipped' like in a mirror.</p> <p>Line $x = ?$ is a vertical line. Line $y = ?$ is a horizontal line. Line $y = x$ is a diagonal line.</p>	<p>Reflect shape C in the line $y = x$</p>



		
5. Enlargement	The shape will get bigger or smaller . Multiply each side by the scale factor .	Scale Factor = 3 means '3 times larger = multiply by 3' Scale Factor = $\frac{1}{2}$ means 'half the size = divide by 2'



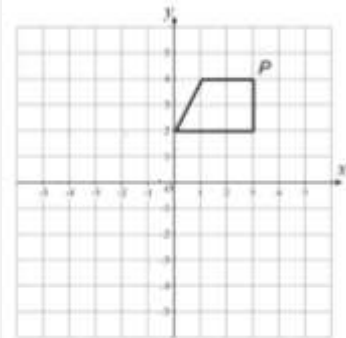
<p>6. Finding the Centre of Enlargement</p>	<p>Draw straight lines through corresponding corners of the two shapes. The centre of enlargement is the point where all the lines cross over.</p> <p>Be careful with negative enlargements as the corresponding corners will be the other way around.</p>	<p>A to 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>	<ul style="list-style-type: none"> - Translation, Vector - Rotation, Direction, Angle, Centre - Reflection, Equation of mirror line - Enlargement, Scale factor, Centre of enlargement



	<p>If you are asked to describe a 'transformation', you need to say the name of the type of transformation as well as the other details.</p>	
<p>8. Negative Scale Factor Enlargements</p>	<p>Negative enlargements will look like they have been rotated.</p> <p>$SF = -2$ will be rotated, and also twice as big.</p>	<p>Enlarge ABC by scale factor -2, centre (1,1)</p> <p>The diagram shows a coordinate grid with x and y axes ranging from -5 to 5. A small triangle ABC is located in the first quadrant with vertices at A(2,1), B(3,1), and C(2,2). A larger triangle A'B'C' is located in the third quadrant with vertices at A'(-2,-1), B'(-3,-1), and C'(-2,-2). A red dot marks the center of enlargement at (1,1).</p>
<p>9. Invariance</p>	<p>A point, line or shape is invariant if it does not change/move when a transformation is performed.</p>	<p>If shape P is reflected in the $y - axis$, then exactly one vertex is invariant.</p>



An invariant point 'does not vary'.



[Links to four operations on vectors, combinations of transformations, equations of lines](#)