

1	(a)	Correct rotation	3	B2 for correct orientation, wrong position or for correct 90° acw rotation about O Or B1 for two correct vertices	In both (a) and (b) Ignore label. Clear intention to plot these points, condone freehand. [Overlays available] Allow 'point', 'about', 'through' etc for 'centre'
	(b)	Correct reflection	2	B1 for reflection in $x = -1$ or B1 for $y = -1$ drawn	
	(c)	(SF =) -2 Centre origin	1 1	Generally if >1 transformation, 0, 0 but SC1 for (enlargement) SF=2 and rotation 180° about O	

2	(a)	Correct rotation	3	M1 for any rotation A1 for correct centre A1 for correct angle	
	(b)	Correct translation	2	B1 for any translation	

3	(a)		Correct rotation	3	B2 for correct orientation, wrong position or for correct 90° anti-clockwise rotation about (2, 0) Or B1 for two correct vertices on correct rotation attempt or correct 180° rotation about (2, 0)	In both (a) and (b) Ignore label. Clear intention to plot these points, condone freehand. [Overlays available]
	(b)		Correct enlargement	2	B1 for SF -2 wrong centre, or SF = 2 centre (0, 0) or other negative SF centre (0, 0) or two correct vertices on correct enlargement attempt	Orientation must be different and all in third quadrant

4	(a)		Enlargement 3 (-5, -1)	B1 B1 B1	Enlargement as the only transformation.	eg 'enlargement and translation' does not score the 1 st B mark Condone missing brackets 'Centre of enlargement' implies the first mark if no other transformation given.
	(b)		Correct rotation	2	B1 if wrong centre but correct angle	Condone freehand. Mark vertices. Ignore any labels.

5	(a)		Translation $\begin{pmatrix} -7 \\ 2 \end{pmatrix}$ or 7 left and 2 up	1	Ignore the word 'transformation'	Condone line across vector (looks like fraction) Ignore vector if description worth credit
				2	B1 for 1 correct component If no marks for vector allow SC1 for $\begin{pmatrix} 7 \\ -2 \end{pmatrix}$ or $\begin{pmatrix} 2 \\ -7 \end{pmatrix}$ or (-7, 2)	
	(b)	(i)	180°	1		
		(ii)	Centre indicated	1	It should be nearer to the centre than grid lines	
	(c)		Enlargement $-1 < SF < 1$	1 1	Allow stretch Accept a number without sf	Double transformation scores 0

6	(a)		Correct reflection (-3, -1), (-1, -1), (-3, 2)	2	B1 for reflection in $x = -1$	
	(b)		Correct rotation (1, 1), (3, 1), (3, 4)	2	B1 for rotation 90° or wrong centre	
	(c)		Correct translation (4, -1), (2, -1), (2, -4)	3	M1 for attempt to add the vectors A1 for $\begin{pmatrix} 5 \\ 0 \end{pmatrix}$	eg 'along 5' Condone poor notation eg $\frac{5}{0}$