1(a)	Says that the wrong line has been given or says that for the given reflection the image would be in the second quadrant (may be implied by sketch) or says that the given line is vertical or gives the coordinates of at least one image point under the given reflection or says that after the given reflection, a rotation 180° (centre (–1, –1)) or an enlargement, scale factor –1 (centre (–1, –1)) is needed	B1	eg the line should be $y = -1$ eg the triangle would move to the other side of the y-axis eg $x = -1$ is vertical eg (1, 1) would move to (–3, 1) (1, 3) would move to (–3, 3) (4, 1) would move to (–6, 1)
	Additional Guidance for this question is on the next page		

	Additional Guidance	
1(a) cont	It is the wrong line/axis (of reflection)	B1
	It's not $x = -1$	B1
	The line should be horizontal	B1
	$y = -1$	B1
	$x = -1$ line drawn with explanation that it is incorrect	B1
	Q should be to the left of P	B1
	Correct line drawn, with indication that it should be that line	B1
	Correct statement with irrelevant statement eg It's the wrong line and Q is in the wrong place	B1
	Correct line drawn, but no explanation or equation given	B0
	$x = -1$ line drawn with no explanation that it is incorrect	B0
	It should be reflected in the y-axis	B0
	It is not a reflection in $x = -1$	B0
	Should be rotation about $y = -1$	B0
	They are not an equal distance from each other	B0
	It should be the point $x = -1$	B0
	Q is in the wrong place	B0
	It is a reflection in the x-axis then a translation by $\begin{pmatrix} 0 \\ -2 \end{pmatrix}$	B0
	Correct statement with incorrect statement eg It's the wrong line, it should be $x = -2$	B0
	If more than one image point is given, they must all be correct	

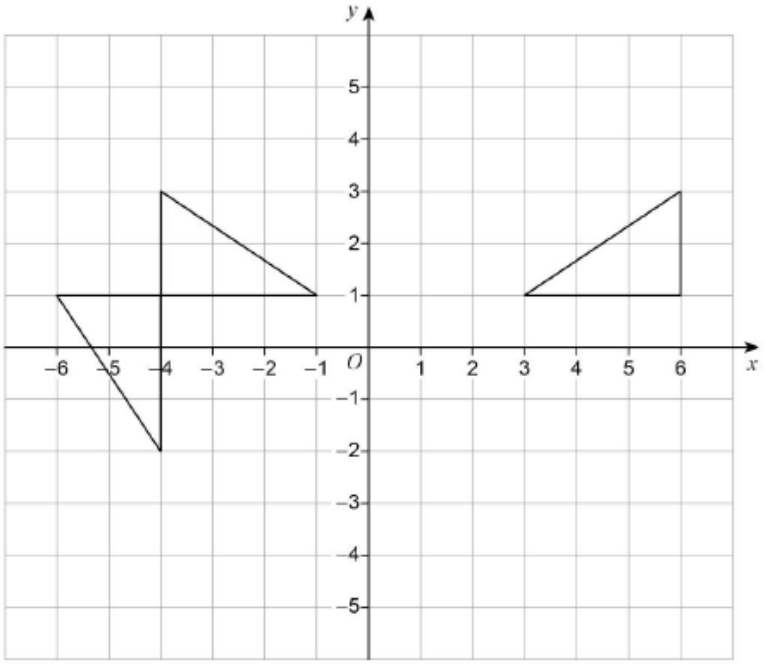
1(b)	Should say the centre of rotation (is O)	B1	oe statement accept 'axis of rotation' or 'point'
	Additional Guidance		
	Allow origin or (0, 0) for O		
	Should be about O		B1
	There is no centre		B1
	It should be around a point		B1
	It doesn't give the coordinates		B1
	Should/could be 270° clockwise about O		B1
	Should/could be 270° clockwise		B0
	Should be rotation through 90° clockwise about O		B0
	It is a reflection 90° anticlockwise with centre O		B0
	It's not reflected on a point		B0
	Doesn't say which line you're turning around		B0
	Correct statement with incorrect statement eg It should give a centre of rotation at (0, 1)		B0

2	Enlargement	B1	
	Scale factor (×) $-\frac{1}{2}$	B1	oe
	Centre $(1, -1)$	B1	
	Additional Guidance		
	Enlarge (×) $-\frac{1}{2}$ $(1, -1)$		B1B1B1
	'Reduces' or 'gets smaller' or 'shrinks'		1st B0
	Do not accept $\div \left(-\frac{1}{2}\right)$ for scale factor		2nd B0
	Centre $1, -1$		3rd B0
	Combined transformation given		B0B0B0

Question	Answer	Mark	Comments
3	**Alternative method 1**		
	Rotation, 180°, (about) (–1, 1)	B3	B2 rotation, 180° or rotation (about) (–1, 1) or turn, 180° (about) (–1, 1) B1 rotation or turn, 180° or turn (about) (–1, 1)
	Alternative method 2		
	Enlargement, scale factor –1 (with centre) (–1, 1)	B3	B2 enlargement, scale factor –1 B1 enlargement (with centre) (–1, 1)
	Alternative method 3		
	Reflection in (–1, 1)	B3	there are no part marks in this method
	Additional Guidance		
	Allow *B* instead of (–1, 1) throughout		
	Compound transformation		B0

Q	Answer	Mark	Comments
4	Enlargement	B1	
	$\frac{1}{4}$	B1	scale factor oe eg 0.25
	(3, 9) or *A*	B1	centre do not allow $\begin{pmatrix}3\\9\end{pmatrix}$
	Additional Guidance		
	Do not accept reduction or unenlargement or negative		1st B0
	Do not accept ÷ 4		2nd B0
	A combination of transformations cannot score the first B1 eg1 Enlarge sf $\frac{1}{4}$ Translate $\begin{pmatrix}0\\6\end{pmatrix}$ eg2 Enlarge sf $\frac{1}{4}$ 1.5 right up 6 (3, 9)		B0B1B0 B0B1B1
	Do not allow $\begin{pmatrix}3\\9\end{pmatrix}$ for (3, 9) but do not regard as implying a combination of transformations eg Enlargement sf 0.25 $\begin{pmatrix}3\\9\end{pmatrix}$		B1B1B0
	Enlargement, sf 4 about (3, 9)		B1B0B1
	Enlarge(d) 0.25 *A*		B1B1B1
	Condone *ABC* is an enlargement of *ADE*		1st B1
	Condone enlargement with other words unless referring to another transformation eg1 Enlargement making shapes bigger eg2 Enlarged then moved using a vector eg3 Enlarged which means *B* moves to *D* and *C* moves to *E*		1st B1 1st B0 1st B1
	If more than one point is listed it must be clear which point is their centre eg (1, 1) (5, 1) (3, 9) (2, 7)		3rd B0
	Reflected in the point (3, 9)		B0B0B1

Q	Answer	Mark	Comments
5	Enlargement	B1	accept Enlarge
	(Scale factor) $-\frac{1}{2}$	B1	oe
	(Centre) (7, 4)	B1	oe
	Additional Guidance		
	Do not accept reduces, gets smaller, shrinks or negative enlargement		
	Do not accept $\div -\frac{1}{2}$ or $\div -2$ for scale factor		
	Ignore missing brackets on 7, 4		
	Do not accept $\begin{pmatrix}7\\4\end{pmatrix}$ for centre of enlargement, however this does not imply a combined transformation		
	Enlarge, $-\frac{1}{2}$, (7, 4)		B1B1B1
	Combined transformation		B0B0B0

Q	Answer	Mark	Comment
6	Line $x = 1$ drawn	M1	any indication implied by a correct reflection
	Correct shape drawn, with vertices at (3, 1), (6, 1) and (6, 3)	M1dep	
	Correct shape drawn, with vertices at (–6, 1), (–4, 1) and (–4, –2),	M1	ft their $A'B'C'$
	B or (–4, 1) and both correct shapes drawn	A1	accept B circled with both correct shapes drawn
	Additional Guidance		
	Ignore incorrect labelling		
	Accept lines not ruled		
	Ignore extra lines drawn, but do not accept extra triangles unless the correct triangle(s) are clearly indicated		
			

Q	Answer	Mark	Comments
7	Enlarge(ment)	B1	
	$\frac{1}{2}$	B1	oe condone half
	(1, –7)	B1	condone missing bracket(s)
	Additional Guidance		
	For the third mark, a vector on its own does not imply a translation		
	Do not accept halved or half the size		
	Multiple transformations stated or implied		B0B0B0