Mark scheme

Transformations

Mathematics 0580 · Questions from Paper 1, Paper 3 and Paper 4

Total marks

61

MARKS FOR EACH QUESTION

1	2	3	4	5	6	7	8	9	10	Total
2	2	3	5	5	6	7	9	11	11	**61**

Question 1 **[2]**

1	Triangle (3, –2), (4, –2), (4, –1)	**2**	**B1** for movement 2 right or 3 down

Question 2 **[2]**

2	correctly enlarged triangle	**2**	**M1** for an enlargement scale factor 3 but incorrect position

Question 3 **[3]**

3	Enlargement Centre (0,0) [Scale factor] 3	**3**	**B1** for each

Question 4 **[5]**

4(a)	Rotation [centre] (**–**3, 3) 90º clockwise	**3**	**B1** for each
4(b)	Translation $\begin{pmatrix} 7 \\ -2 \end{pmatrix}$	**2**	**B1** for each

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Question 5 **[5]**

5(a)	Translation $\begin{pmatrix} 2 \\ -8 \end{pmatrix}$	**2**	**B1** for translation **B1** for $\begin{pmatrix} 2 \\ -8 \end{pmatrix}$
5(b)	Enlargement [scale factor] $-\frac{1}{3}$ [centre] (–3, 4)	**3**	**B1** for each

Question 6 **[6]**

6(a)	She counted 1 up instead of 1 down oe	**1**	
6(b)	Correct shape drawn at (–4,–1), (–2,–1), (–5,–2), (–2,–2)	**2**	**B1** for correct shape drawn 90 clockwise about the origin or for correct orientation, wrong centre
6(c)	Enlargement [scale factor] 2 [centre] (–5, 7)	**3**	**B1** for each

Question 7 **[7]**

7(a)(i)	Translation $\begin{pmatrix} 8 \\ -3 \end{pmatrix}$	**2**	**B1** for translation or for correct vector oe
7(a)(ii)	Rotation 90° [anticlockwise] [centre] (0, 0)	**3**	**B1** for each
7(b)	Image drawn at (0, 5) (0, 6) (2, 6) (2, 2) (1, 2) (1, 5)	**2**	**B1** for reflection in $x = k$ If 0 scored, **SC1** for reflection in $y = -2$

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Question 8 [9]

8(a)(i)	Triangle at (1, –1) (1, –3) (–3, –3)	**2**	**B1** for reflection in $x = k$ or for reflection in $y = 1$
8(a)(ii)	Triangle at (3, –1) (5, –1) (3, 0)	**2**	**B1** for correct size and orientation but wrong position
8(b)	Rotation 90 clockwise oe [centre] (2, 4) oe	**3**	**B1** for each
8(c)	(a, $2k$ –b) oe isw	**2**	**B1** for each coordinate

Question 9 [11]

9	**(a)**	reflection	**1**	
		y-axis oe	**1**	
	(b) (i)	correct reflection at (2, −1), (4, −1), (4, −5), (3, −5), (3, −2), (2, −2)	**2**	**SC1** reflection in $y = k$
	(ii)	rotation	**1**	
		[centre] (0, 0) oe	**1**	
		180°	**1**	
	(c) (i)	correct enlargement at (−8, 5), (−5, 5), (−5, −4), (−2, −4), (−2, −7), (−8, −7)	**2**	**SC1** for enlargement sf 3 in wrong position or for enlargement sf k using correct centre
	(ii)	9	**2**	**M1** for 3 × 3 or 3^2 or 45 seen If zero scored **SC1** for (correct area of their enlargement) ÷ 5

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Question 10 **[11]**

10(a)(i)	Image at (–5, 3), (–1, 3), (–1, 5)	**2**	**B1** for translation $\begin{pmatrix}-7\\k\end{pmatrix}$ or $\begin{pmatrix}k\\1\end{pmatrix}$
10(a)(ii)	Translation $\begin{pmatrix}7\\-1\end{pmatrix}$ cao	**1**	
10(b)	Image at (6, 4), (6, 6), (2, 6)	**2**	**B1** for reflection in line $x = 4$ or for reflection in line $y = k$
10(c)	Image at (2, –2), (2, –6), (4, –6)	**2**	**B1** for correct size and orientation or for rotation 90° anticlockwise about (0, 0)
10(d)(i)	Image at (–1, –1), (–3, –1), (–3, –2)	**2**	**B1** for correct size and orientation or for enlargement SF $\frac{1}{2}$, centre (0, 0)
10(d)(ii)	Enlargement and [centre] (0, 0) [factor] –2	**2**	**B1** for Enlargement **and** [centre] (0, 0) **B1** for [factor] –2

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