Question	Answer	Marks	AO Element	Notes	Guidance
1	Three correct lines on first shape AND One correct line on second shape	**3**		**B2** for three correct lines on first shape or **B1** for one or more correct lines and no wrong lines **B1** for one correct line on second shape	
2	5	**1**			
3	12	**2**		**M1** for 360 ÷ 30	
4(a)	[$x =$] 66	**2**		**B1** for angle $BED = 90°$ soi	
4(b)	[$y =$] 24	**1**			
4(c)	**2FT** for [$z =$] 48	**2**		**M1FT** for angle $ABC = 90° - $ *their y*	
5(a)	66	**1**			
5(b)	42	**2**		**FT** *their* **(a)** – 24, only if *their* **(a)** > 24 or **B1** for either of these, may be on diagram, angle $OAC = 24$ or angle $BAC = $ *their* **(a)**	

Question	Answer	Marks	AO Element	Notes	Guidance
6	32	3		**B1** for angle *DBC* = 58 **B1** for angle *BCD* = 90	
7(a)(i)	62 and Isosceles [triangle] and Angle at centre is twice angle at circumference oe	3		**B2** for 62 and one correct reason or **B1** for 62 with no/wrong reason or for angle *EOD* = 124 soi or for no/wrong angle with correct reason	
7(a)(ii)	62 and [Angles in] same segment oe or angle at centre is twice angle at circumference oe	2		**2FT** *their* **(a)(i)** and correct reason **B1FT** for *their* **(a)(i)** with no/wrong reason or for no/wrong angle with correct reason	
7(b)	8	3		**M2** for (180 −109) − 28 − 35 oe or **M1** for [angle *AED* =] 180 − 109 oe	
8(a)	$(M \cup G) \cap P'$	1			

Question	Answer	Marks	AO Element	Notes	Guidance
8(b)	22	1			
8(c)	$\dfrac{8}{23}$ oe	2		**M1** for $\dfrac{k}{23}$ or $\dfrac{k}{3+9+5+6}$ or $\dfrac{8}{c}$ or $\dfrac{3+5}{c}$ $c \neq 1$ or for 8 and 23 identified	
9	3, −1	1			
10(a)	(5, 3)	1			
10(b)	Point plotted at (4, −3)	1			
10(c)	$\begin{pmatrix} -8 \\ 2 \end{pmatrix}$	1			
11(a)	Image at (1, 7), (4, 7), (4, 9), (3, 9)	2		**B1** for translation by $\begin{pmatrix} -1 \\ k \end{pmatrix}$ or $\begin{pmatrix} k \\ 6 \end{pmatrix}$	
11(b)	Image at (5, 3), (6, 3), (8, 5), (5, 5)	2		**B1** for 180° rotation with wrong centre	

Question	Answer	Marks	AO Element	Notes	Guidance
11(c)	Rotation 180° (4.5, 6) OR Enlargement [factor] −1 (4.5, 6)	3		**B1** for rotation **B1** for 180° **B1FT** for centre from *their* (a) **B1** for enlargement **B1** for −1 **B1FT** for centre from *their* (a)	
12	$\dfrac{5}{9}\,\mathbf{a} + \dfrac{4}{9}\,\mathbf{b}$	2		**M1** for $\dfrac{4}{9}\,(\mathbf{b} - \mathbf{a})$ or $\dfrac{5}{9}\,(\mathbf{a} - \mathbf{b})$ or a correct route	
					[Total: 42]