FOUNDATION & HIGHER

HIGHER EXTENDS

Name ..... Class .....

G7: Transformations

Solve problems involving transformations

20 marks · 25 minutes · Non-calculator

1) A triangle of area $12\,\text{cm}^2$ is enlarged by scale factor -2. Find the area of the image.

..... cm^2

[Question 1: 2 marks]

2) The point $(3, 5)$ is rotated $90°$ clockwise about $(1, 1)$. Find its image.

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[Question 2: 3 marks]

3) An enlargement maps $A(2, 1)$ to $(5, 7)$ and $B(4, 1)$ to $(11, 7)$. Find the scale factor and the centre of enlargement.

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[Question 3: 4 marks]

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4) A point is reflected in the line $y = x$ and then translated by $\begin{pmatrix} 2 \\ -1 \end{pmatrix}$. It ends at $(7, 1)$. Where did it start?

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[Question 4: 3 marks]

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5) A square of area $36\,cm^2$ is enlarged by scale factor $\frac{1}{2}$. Find the area and perimeter of the image.

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[Question 5: 2 marks]

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6) The point $(5, 4)$ is rotated $180°$ about $(2, 3)$. Find its image.

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[Question 6: 3 marks]

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7) A shape of area $5\,cm^2$ is enlarged by scale factor 2 and then by scale factor 3 with the same centre. Find the area of the final image.

..... cm^2

[Question 7: 3 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	48	Area factor $(-2)^2$ (P1); A1.
2	$(5, -1)$	Vector from centre $(2, 4)$ (P1); rotated to $(4, -2)$ (P1); A1.
3	3; $(0.5, -2)$	Lengths 2 and 6, scale factor 3 (P1); $A' = C + 3(A - C)$ (P1); solve (P1); A1.
4	$(2, 5)$	Undo translation: $(5, 2)$ (P1, P1); reflect back (A1).
5	$9\,\text{cm}^2$; 12 cm	Side 3 (P1); A1.
6	$(-1, 2)$	Vector $(3, 1)$ from centre (P1); reverse (P1); A1.
7	180	Combined scale factor 6 (P1); area factor 36 (P1); A1.