

## Mixed Transformations Past Paper Questions (MS)



Q1.

| PAPER: 1MA0 1F |         |  |      |  |
|----------------|---------|--|------|--|
| Question       | Working | Answer   | Mark | Notes  |
| (a)            |         | Shape with vertices at $(-1, 3), (0, 6), (2, 6), (1, 3)$ | 1    | B1 for correct shape in correct position   |
| (b)            |         | Rotation centre $(0,0)$<br>$90^\circ$ anticlockwise      | 3    | B1 Rotation<br>B1 (centre) $(0,0)$ or $O$ or origin<br>B1 $90^\circ$ anticlockwise or $270^\circ$ clockwise<br>Note: award no marks if more than one transformation is given |

Q2.

| PAPER: 5MB3H 01 |         |                                    |      |   |
|-----------------|---------|------------------------------------|------|---|
| Question        | Working | Answer                             | Mark | Notes   |
| (a)             |         | Reflection in $x = 0$ or $y$ -axis | 2    | B1 for reflection<br>B1 for $x = 0$ or $y$ -axis<br>(NB: a combination of transformations gets B0)  |
| (b)             |         | Triangle $(1, 0)(4, 0)(1, -2)$     | 2    | M1 for any correct rotation of $90^\circ$ clockwise OR for any correct rotation about the point $(0, 2)$<br>A1 for a triangle with vertices at $(1, 0), (4, 0)$ and $(1, -2)$ |

Q3.

| PAPER: 5MB3H_01 |         |                                     |      |   |
|-----------------|---------|-------------------------------------|------|---|
| Question        | Working | Answer                              | Mark | Notes   |
| (a)             |         | reflection                          | 2    | B2 cao<br>(B1 for reflection in vertical line)  |
| (b)             |         | enlargement sf 2<br>centre $(-6,2)$ | 3    | B1 for enlargement<br>B1 for (scale) factor 2 or $\times 2$<br>B1 for $(-6, 2)$<br>(NB B0 if not single transformation) |

Q4.

| Question | Working | Answer        | Mark | Notes  |
|----------|---------|---------------|------|--|
| (a)      |         | Correct shape | 2    | B2 for correct reflection with vertices $(-4, 2) (-6, 3) (-6, 7) (-4, 6)$<br>(B1 for reflection in a vertical or horizontal line)  |
| (b)      |         | Correct shape | 2    | B2 for correct rotation with vertices $(-1, 3) (-5, 3) (-6, 5) (-2, 5)$<br>(B1 for rotation of $90^\circ$ clockwise about $(0,1)$ or correct orientation fully in top left quadrant) |



Q5.

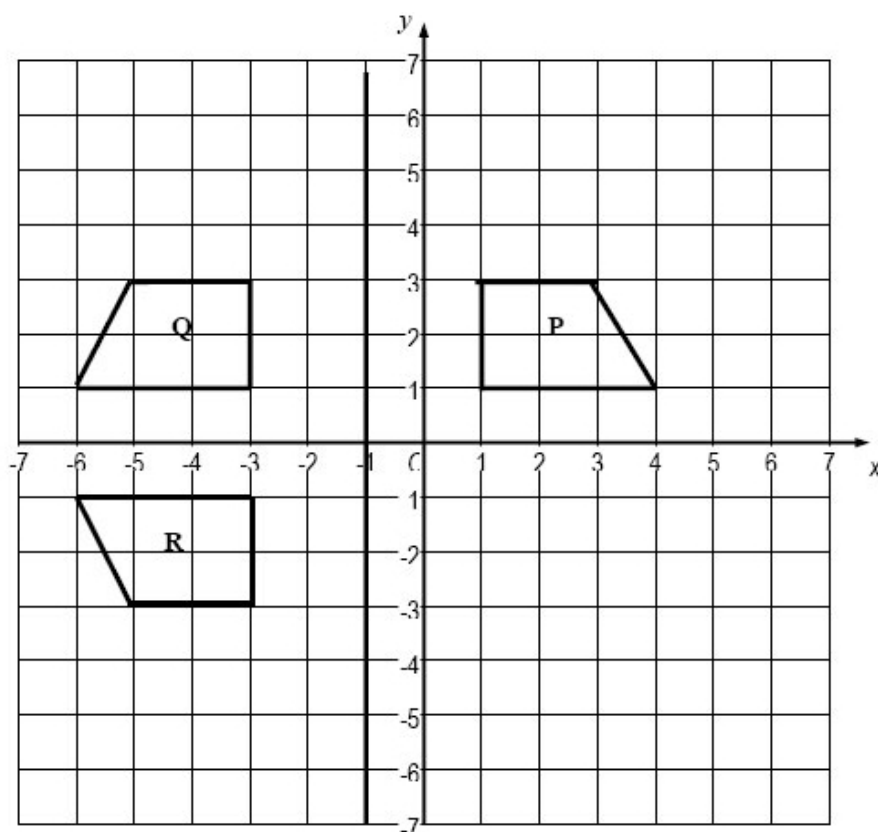
| PAPER: 1MA0 2H |         |  |      |  |
|----------------|---------|--|------|--|
| Question       | Working | Answer   | Mark | Notes  |
| (a)            |         | Correct shape  | 2    | B2 cao<br>(B1 for shape in the correct orientation below the line $y = x$ or for 2 vertices correct) with vertices at (2, 1), (4, 1), (4, 0), (3, 0) |
| (b)            |         | Translation by $\begin{pmatrix} 4 \\ -1 \end{pmatrix}$ | 2    | B1 for translation<br>B1 for $\begin{pmatrix} 4 \\ -1 \end{pmatrix}$<br>NB: B0 if more than one transformation given                                 |

Q6.

| Question | Working | Answer   | Mark | Notes  |
|----------|---------|--|------|--|
| (a)      |         | Triangle with vertices (2, -1) (4, -1) (4, -4) | 2    | B2 for triangle with vertices (2, -1) (4, -1) (4, -4) (B1 for triangle in correct orientation <b>or</b> rotated 90° anticlockwise centre $O$ )   |
| (b)      |         | Triangle with vertices (7, 2) (13, 2) (7, 11)  | 3    | B3 for triangle with vertices (7, 2) (13, 2) (7, 11) (B2 for 2 vertices correct or enlargement scale factor 3 in wrong position or enlargement, centre (1,2), with different scale factor)<br>(B1 for 1 vertex correct or enlargement, not from (1,2), different scale factor) |

Q7.

| Working  | Answer                      | Mark | Notes   |
|--|-----------------------------|------|---|
| <p><b>Q</b> at (-3, 1), (-6, 1) (-5, 3) (-3, 3)</p> <p><b>R</b> at (-3, -1), (-6, -1), (-5, -3) (-3, -3)</p> | Rotation 180° about (-1, 0) | 3    | <p>M1 for showing <b>R</b> correctly on the grid without showing <b>Q</b> <b>or</b> for showing <b>Q</b> and <b>R</b> correctly on the grid</p> <p>A1 for rotation of 180°</p> <p>A1 for (centre) (-1, 0)</p> <p><b>Or</b></p> <p>M1 for showing <b>R</b> correctly on the grid without showing <b>Q</b> <b>or</b> for showing <b>Q</b> and <b>R</b> correctly on the grid</p> <p>A1 for Enlargement Scale Factor -1</p> <p>A1 for centre (-1, 0)</p> <p><b>NB</b> Award no marks for any correct answer from an incorrect diagram or any Accuracy marks if more than one transformation is given</p> |



Q8.

| PAPER: 1MA0/1H |  |   |      |   |
|----------------|--|---|------|---|
| Question       | Working  | Answer  | Mark | Notes   |
|                | B at (1, 0), (1, -1), (3, -2)<br>C at (-2, -1), (-2, -2), (0, -3)<br>Rotation $90^\circ$ clockwise (or $270^\circ$ anti-clockwise) about (-2, 2) | Rotation $90^\circ$ clockwise<br>centre (-2, 2) | 3    | M2 for stating rotation $90^\circ$ clockwise (or $270^\circ$ anti-clockwise) or centre (-2, 2)<br>(M1 for showing B and C correctly on the grid)<br>A1 for a fully correct description<br><br>NB Award a maximum of M1 if more than one transformation is given |