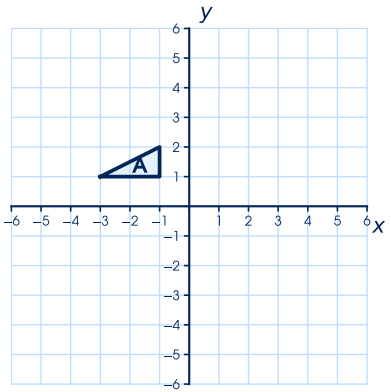
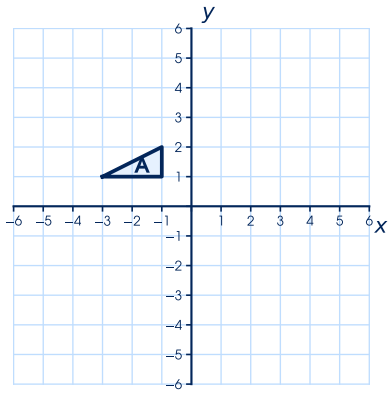
GCSE HIGHER · REVISION MAT 4

Combining transformations

1 Reflect A in the x-axis, then translate the image by (4, 0).

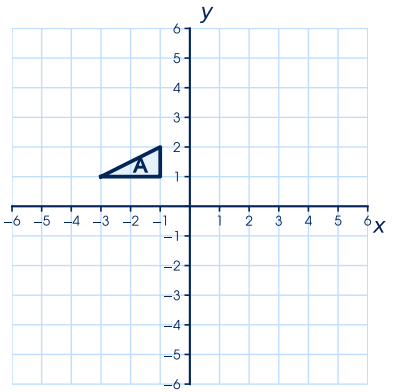


2 Rotate A 90° anticlockwise about O, then reflect the image in the y-axis.



3 Show that a rotation of 90° anticlockwise about O followed by a reflection in the y-axis is a single reflection in $y = x$.

4 A is reflected in $x = -2$, then in $x = 1$.

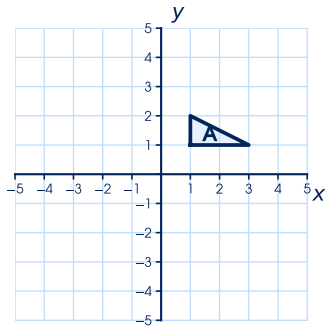


Describe the single transformation.

5 Explain why reflecting in two parallel lines 3 units apart gives a translation of 6 units.

6 A shape is rotated 90° clockwise about O, and then rotated 90° clockwise about O again.

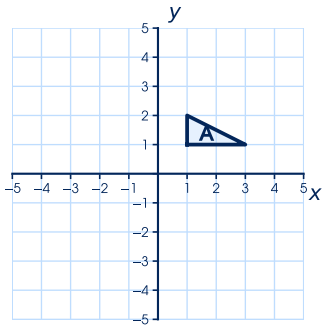
Describe the single transformation.



7 Show that a translation by (a, b) followed by $(-a, -b)$ returns a shape to its start.

8 A shape is reflected in the y-axis and then rotated 90° clockwise about O.

Find the invariant points.



Mr&Mrs MATHS

ANSWERS · REVISION MAT 4

Combining transformations

1 Reflect: (−3, −1), (−1, −1), (−1, −2)

(1, −1), (3, −1), (3, −2)

2 Rotate: (−1, −3), (−1, −1), (−2, −1)

(1, −3), (1, −1), (2, −1)

3 $(x, y) \rightarrow (-y, x) \rightarrow (y, x)$

Reflection in $y = x$

4 **Translation by (6, 0)**

5 **Each point moves twice the gap between the lines, at right angles to them.**

6 **Rotation of 180° about O**

7 $(a, b) + (-a, -b) = (0, 0)$

8 $(x, y) \rightarrow (-x, y) \rightarrow (y, x)$: reflection in $y = x$

All points on the line $y = x$

Mr&Mrs MATHS