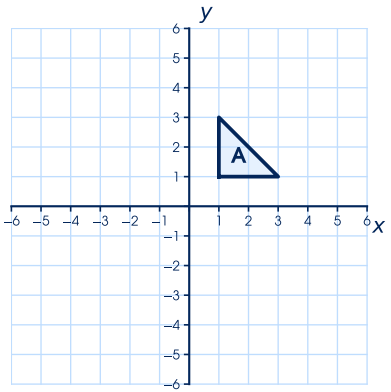
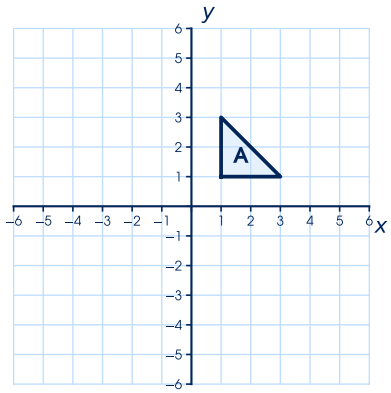
GCSE HIGHER · REVISION MAT 1

Combining transformations

1 Reflect A in the y-axis, then translate the image by $(0, -3)$.

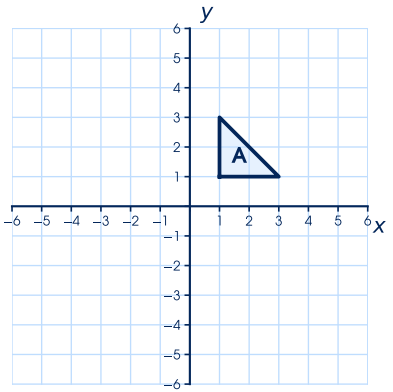


2 Rotate A 90° clockwise about the origin, then reflect the image in the x-axis.



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

4 A is reflected in $x = 1$ and then in $x = 4$.

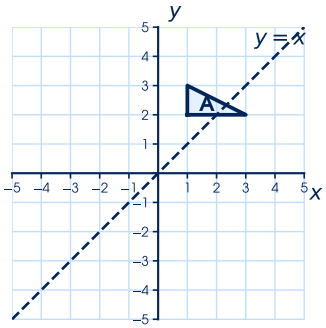


Describe the single transformation.

5 Explain why a rotation of 60° followed by a rotation of 90° about the same centre is a single rotation.

6 A shape is reflected in $y = x$ and then rotated 180° about O.

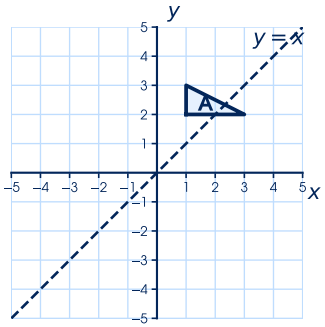
Describe the single transformation.



7 Show that a translation by $(2, 1)$ followed by $(-3, 4)$ is the same as $(-3, 4)$ followed by $(2, 1)$.

8 A shape is reflected in $y = x$ and then in the y-axis.

Which points are invariant?



Mr&Mrs MATHS

ANSWERS · REVISION MAT 1

Combining transformations

1 **(−1, −2), (−3, −2), (−1, 0)**

2 Rotate: (1, −1), (1, −3), (3, −1)

Reflect: (1, 1), (1, 3), (3, 1)

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

This is reflection in $y = x$.

4 **Translation by (6, 0): twice the distance between the lines.**

5 **Both turn about the same point, so the total turn is 150°.**

6 $(x, y) \rightarrow (y, x) \rightarrow (-y, -x)$

Reflection in $y = -x$

7 **Both give (−1, 5): adding vectors in either order gives the same result.**

8 $(x, y) \rightarrow (y, x) \rightarrow (-y, x)$:
rotation 90° anticlockwise about O

Only (0, 0)

Mr&Mrs MATHS