5 On the grid opposite, trapezium B is the image of trapezium A under a single transformation.

(a) Describe fully the single transformation.

(3)

Trapezium C is the image of trapezium A under a reflection in the line with equation $x = -1$

(b) On the grid opposite, draw and label trapezium C.

(2)

Trapezium A is transformed to trapezium D under the transformation with matrix $\mathbf{M}$ where

$$\mathbf{M} = \begin{pmatrix} -2 & 0 \\ 0 & -1 \end{pmatrix}$$

(c) On the grid opposite, draw and label trapezium D.

(3)

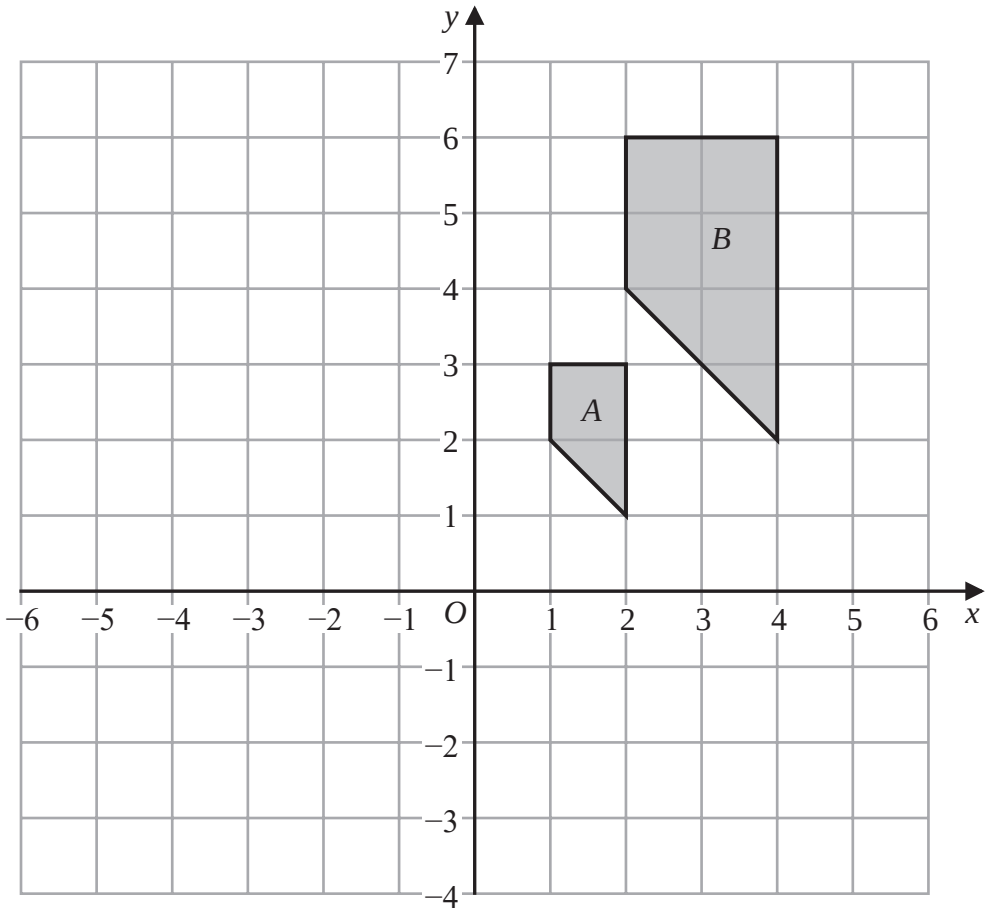
Trapezium D is transformed to trapezium B under the transformation with matrix $\mathbf{N}$.

(d) Find matrix $\mathbf{N}$.

(3)

$$\left[\text{The inverse of matrix } \begin{pmatrix} a & b \\ c & d \end{pmatrix} \text{ is } \frac{1}{ad-bc}\begin{pmatrix} d & -b \\ -c & a \end{pmatrix}\right]$$

Question 5 continued

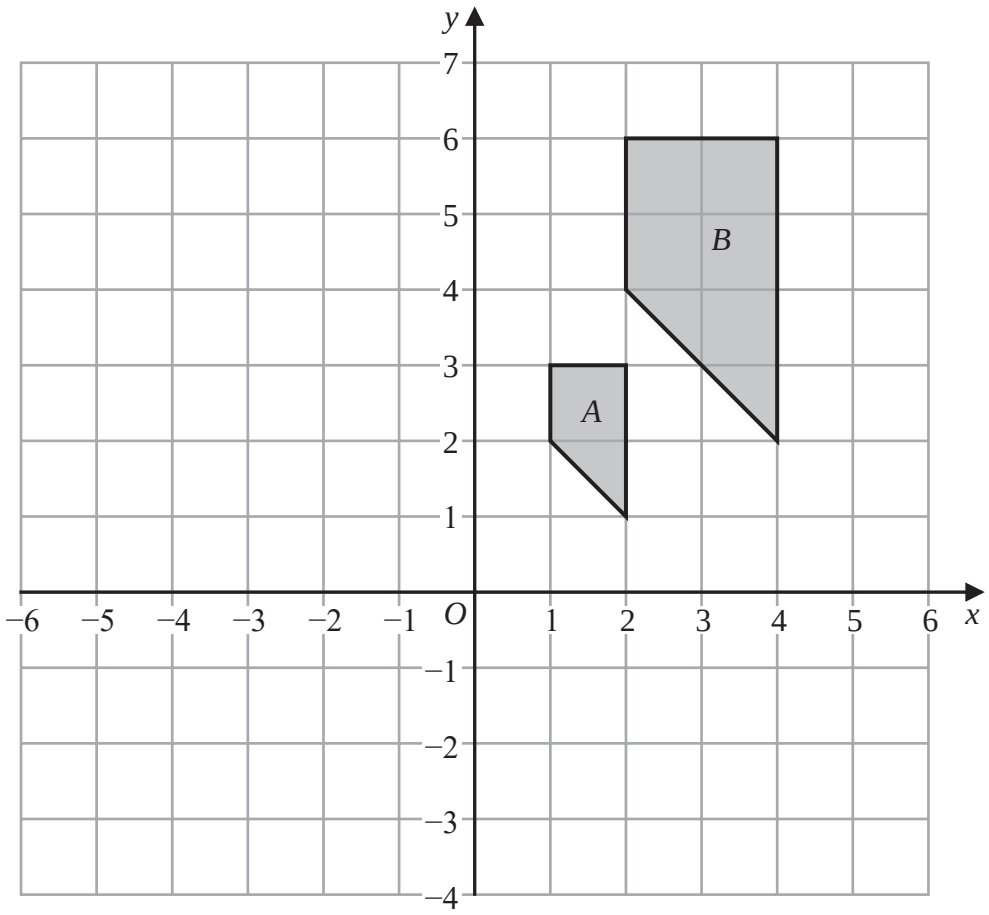


Turn over for a spare grid if you need to redraw your trapeziums.

Question 5 continued

Question 5 continued

Only use this grid if you need to redraw your trapeziums.



(Total for Question 5 is 11 marks)