4 Trapeziums P and Q are drawn on the grid opposite.

(a) Describe fully the single transformation that maps trapezium P onto trapezium Q

(3)

Trapezium P is transformed to trapezium A under the translation $\begin{pmatrix} 2 \\ -3 \end{pmatrix}$

(b) On the grid, draw and label trapezium A

(2)

Trapezium P is transformed to trapezium B by a rotation of 90° clockwise about the point (5, 2)

(c) On the grid, draw and label trapezium B

(2)

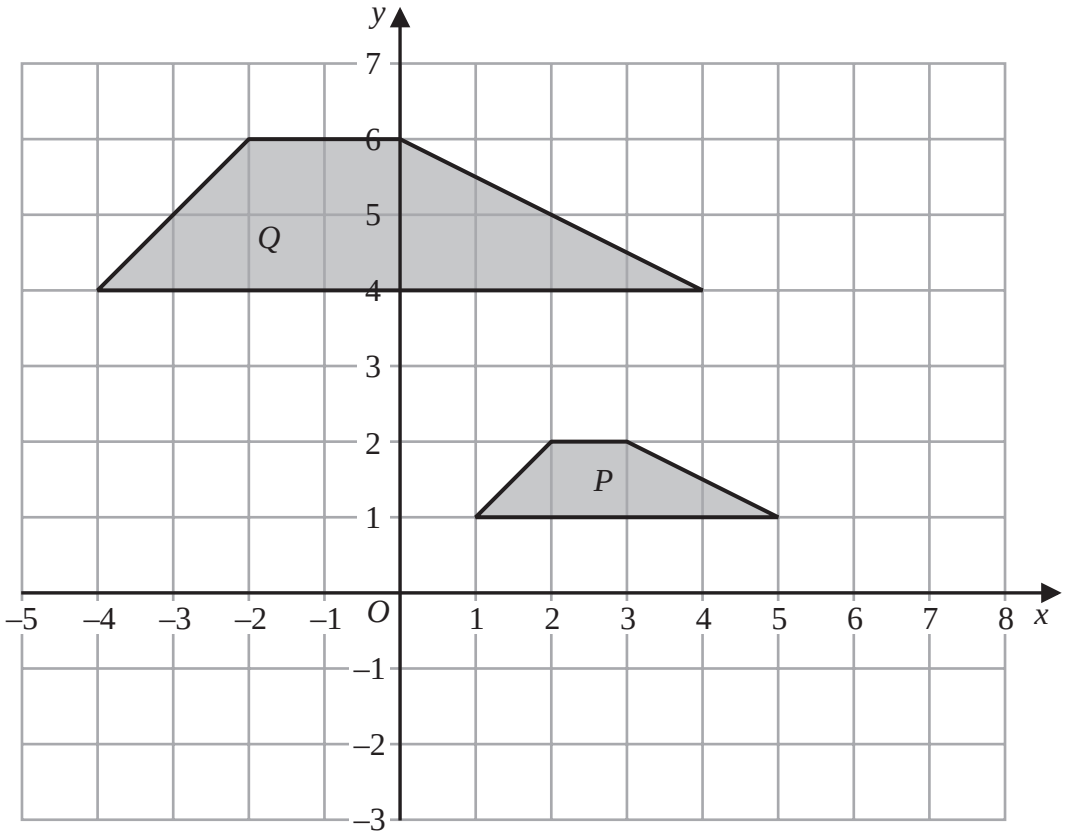
Trapezium C is the image of trapezium Q under the transformation with matrix **M** where

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

(d) On the grid, draw and label trapezium C

(3)

Question 4 continued

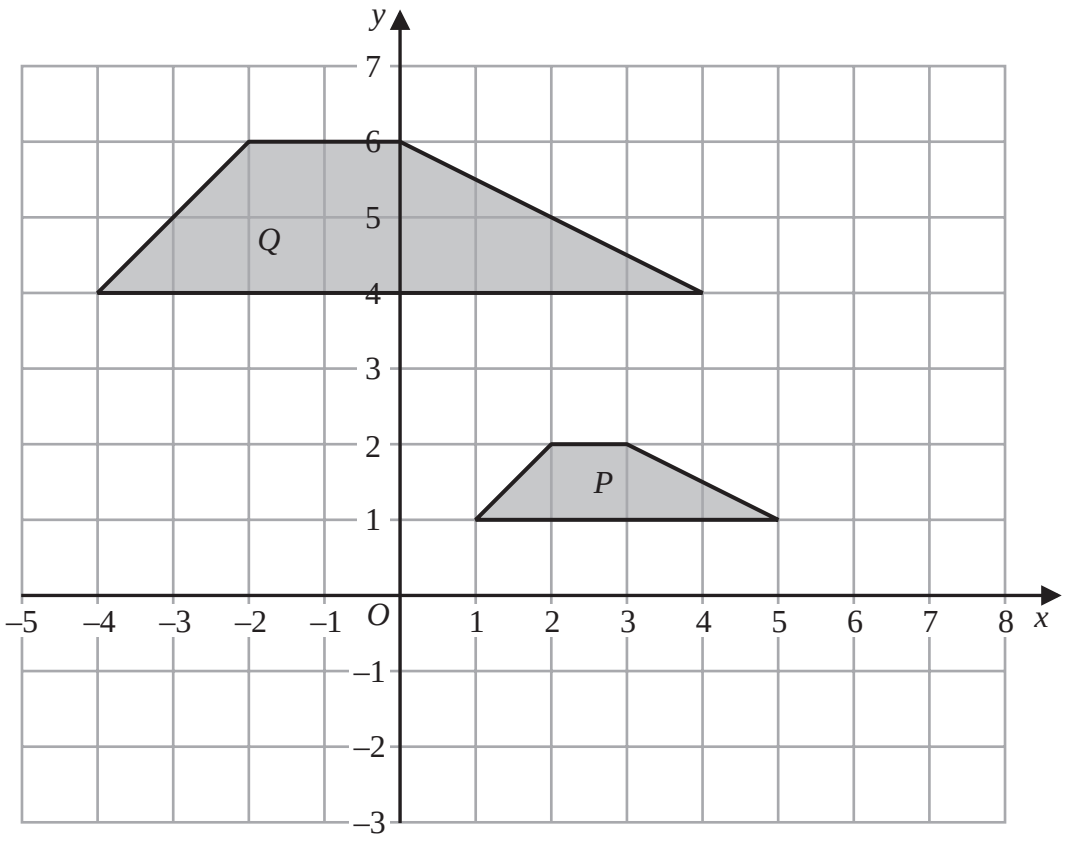


Turn over for a spare grid if you need to redraw your trapeziums.

Question 4 continued

Question 4 continued

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



(Total for Question 4 is 10 marks)