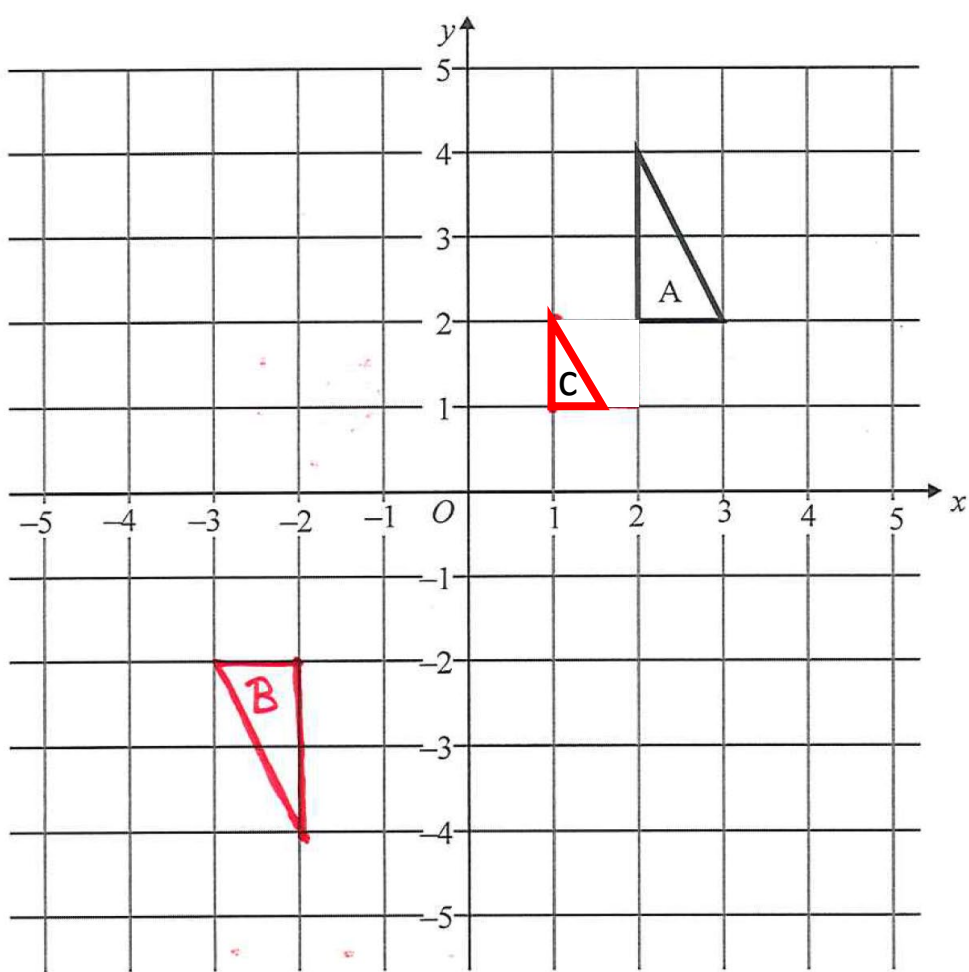




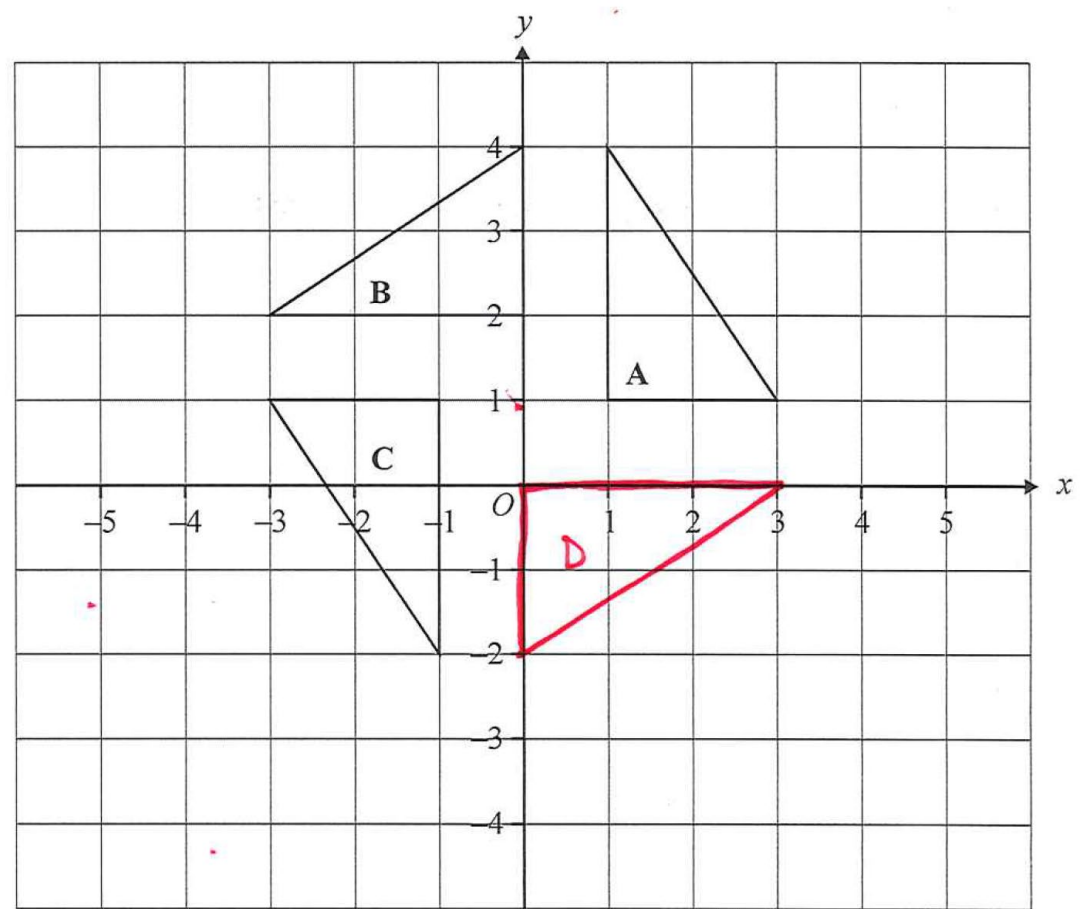
- (a) On the grid, rotate triangle A 180° about O .
Label your new triangle B.

(2)

- (b) On the grid, enlarge triangle A by scale factor $\frac{1}{2}$, centre O .
Label your new triangle C.

(3)

(Total 5 marks)



Shape A is rotated 90° anticlockwise, centre $(0, 1)$, to shape B

Shape B is rotated 90° anticlockwise, centre $(0, 1)$, to shape C

Shape C is rotated 90° anticlockwise, centre $(0, 1)$, to shape D

- (a) Mark the position of Shape D

(2)

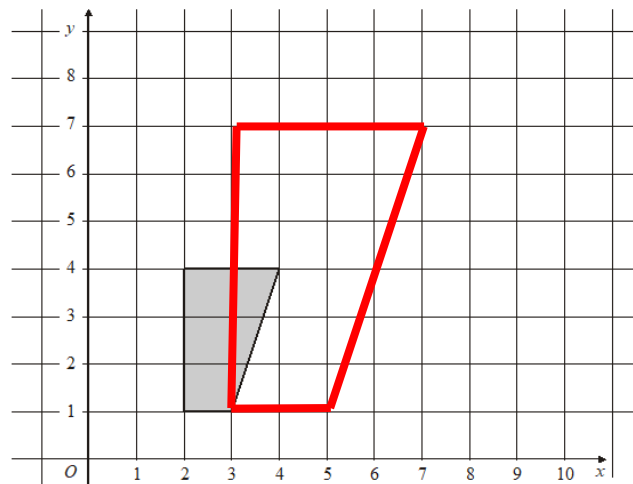
- (b) Describe the single transformation that takes shape C to shape A.

Rotation 180°

(2)

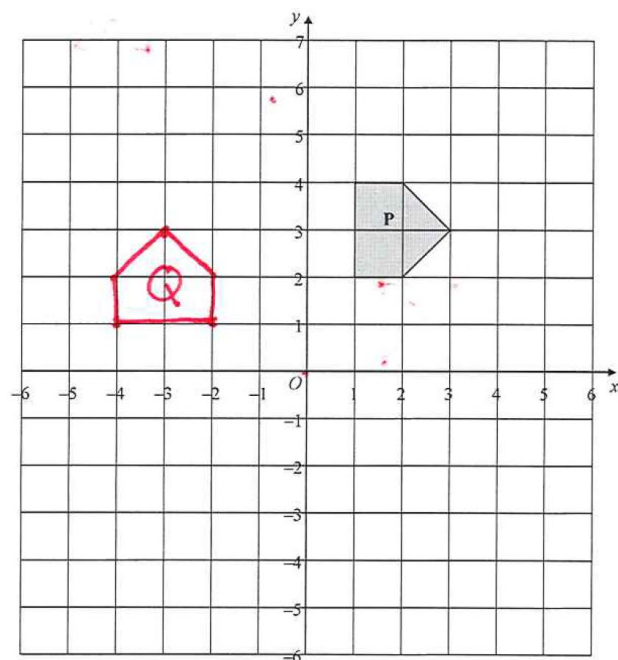
(Total 4 marks)

3.



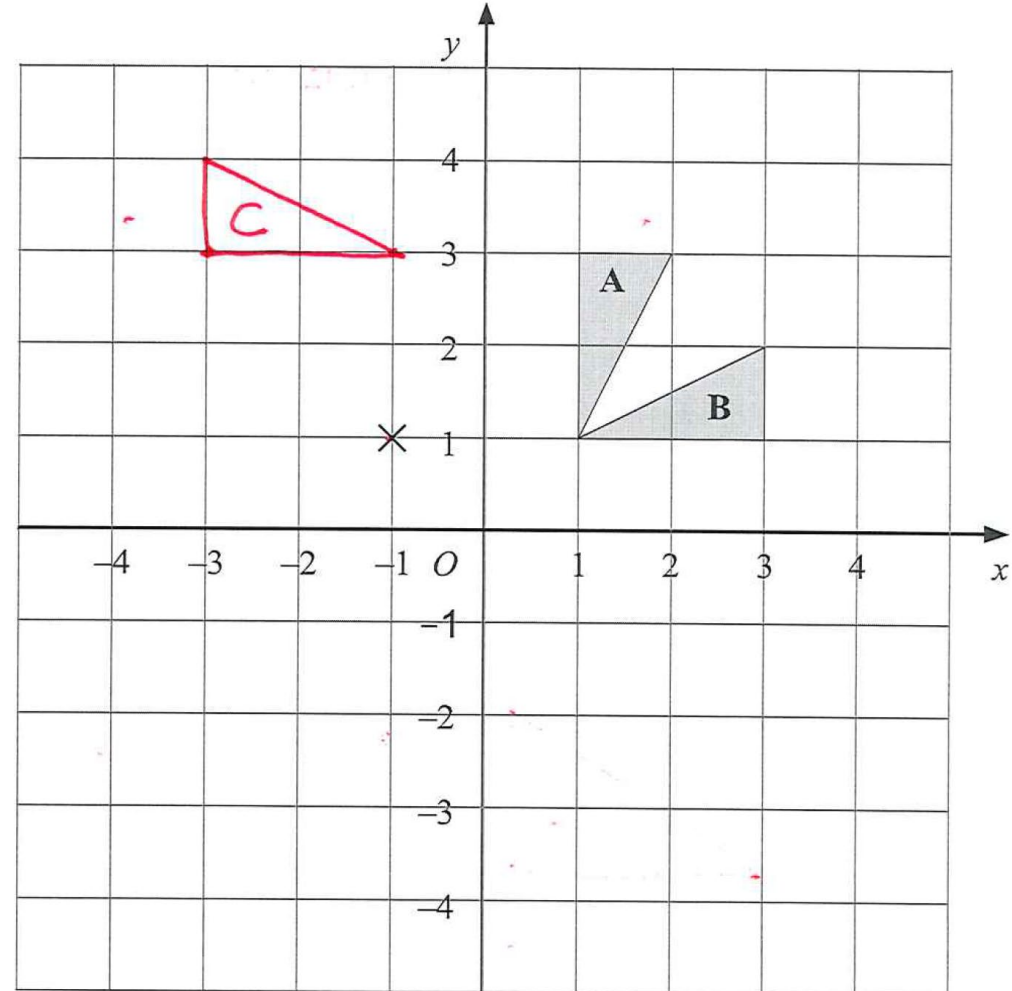
On the grid, enlarge the shaded shape by scale factor of 2, centre (1,1).

(Total 3 marks)



On the grid, rotate the shaded shape P one quarter turn anticlockwise about O.

Label the new shape Q.



(a) Describe fully the single transformation that maps triangle A onto triangle B.

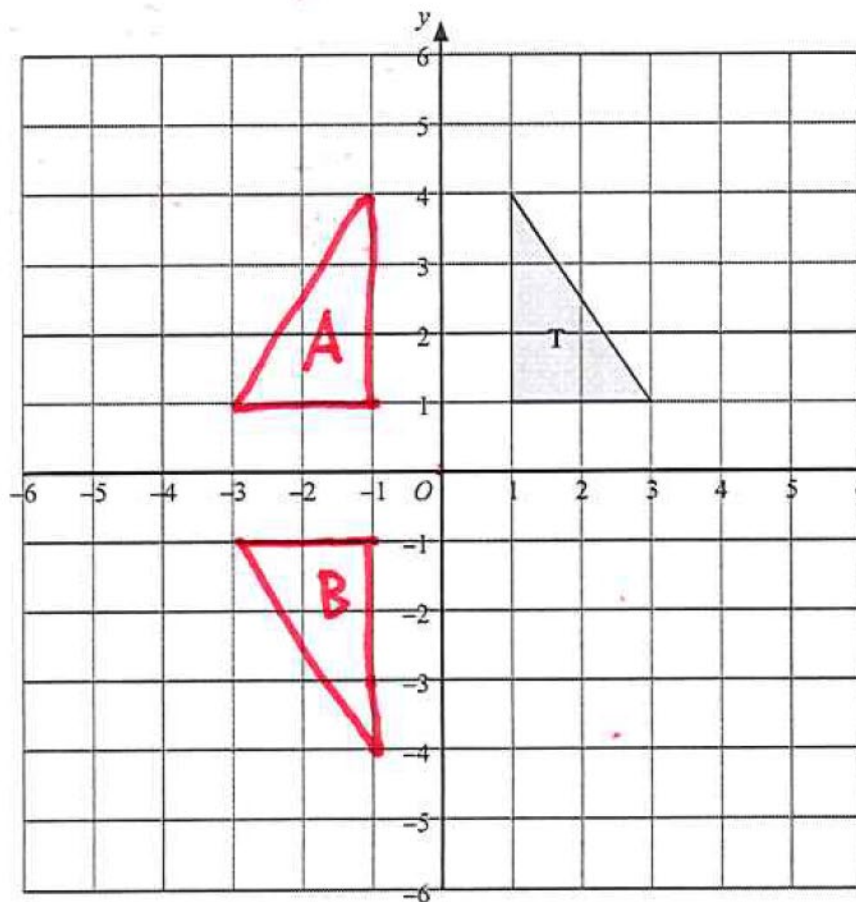
Reflection in $y = x$

(2)

(b) On the grid, rotate triangle A 90° anticlockwise about the point $(-1, 1)$

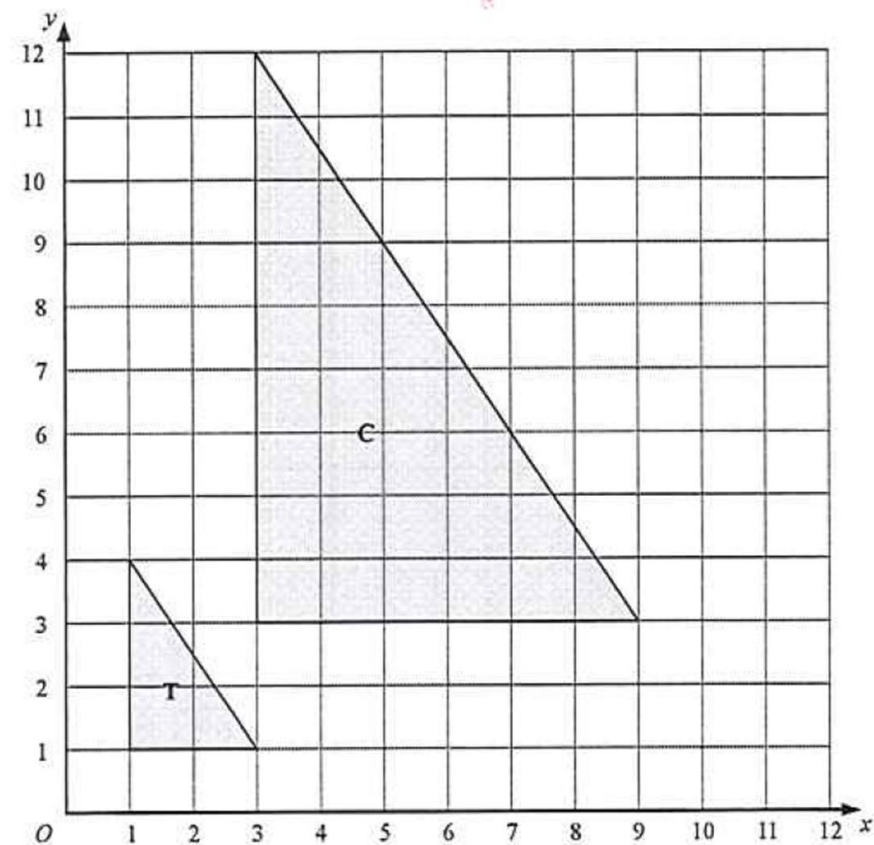
Label your new triangle C.

(2)
(Total 4 marks)



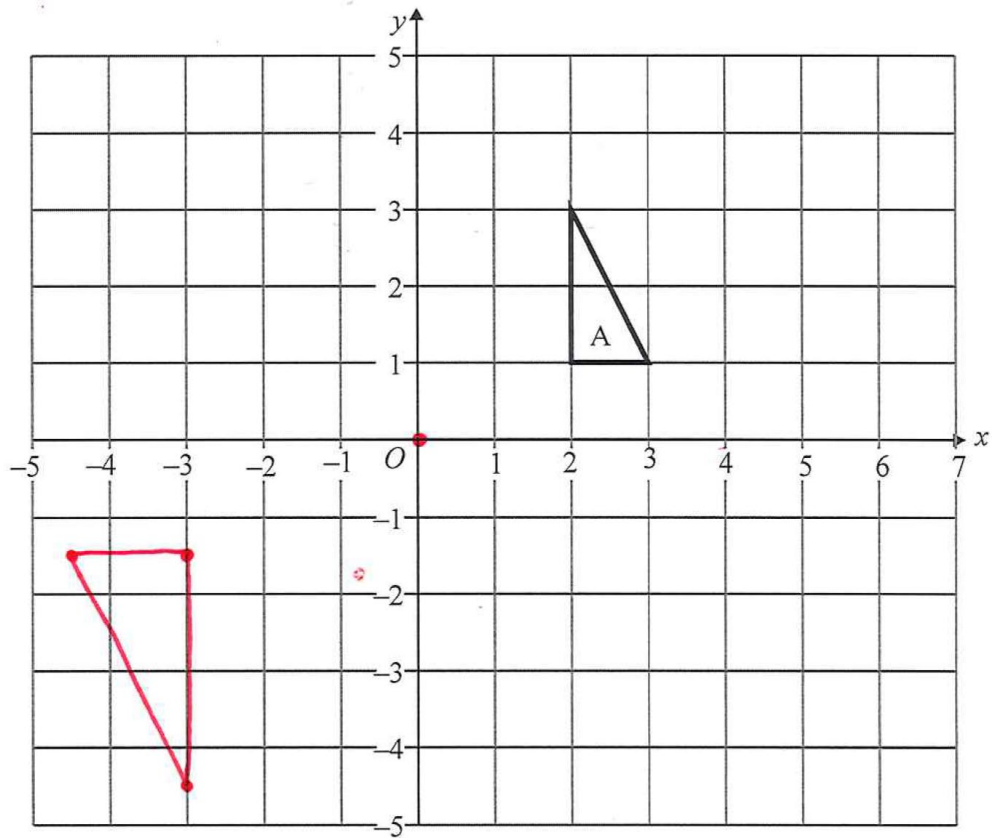
Triangle **T** has been drawn on the grid.

- Reflect triangle **T** in the y -axis.
Label the new triangle **A**.
- Rotate triangle **T** by a half turn, centre O .
Label the new triangle **B**.



- Describe fully the single transformation which maps triangle **T** onto triangle

Scale Factor 3 Centre (0,0)
Enlargement



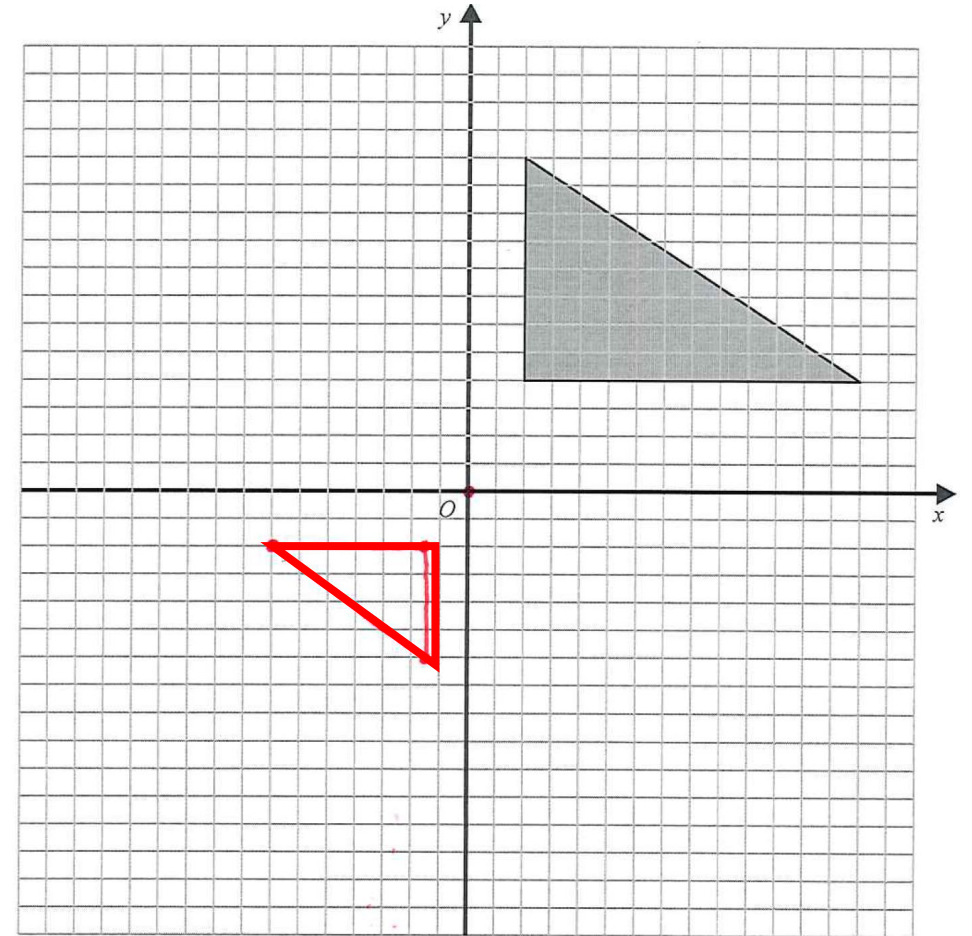
Enlarge triangle A by scale factor $-1\frac{1}{2}$, centre O.

(Total 3 marks)

$$\begin{pmatrix} 2 \\ 1 \end{pmatrix} \rightarrow \begin{pmatrix} -3 \\ -1.5 \end{pmatrix}$$

$$\begin{pmatrix} 3 \\ 1 \end{pmatrix} \rightarrow \begin{pmatrix} -4.5 \\ -1.5 \end{pmatrix}$$

$$\begin{pmatrix} 2 \\ 3 \end{pmatrix} \rightarrow \begin{pmatrix} -3 \\ -4.5 \end{pmatrix}$$



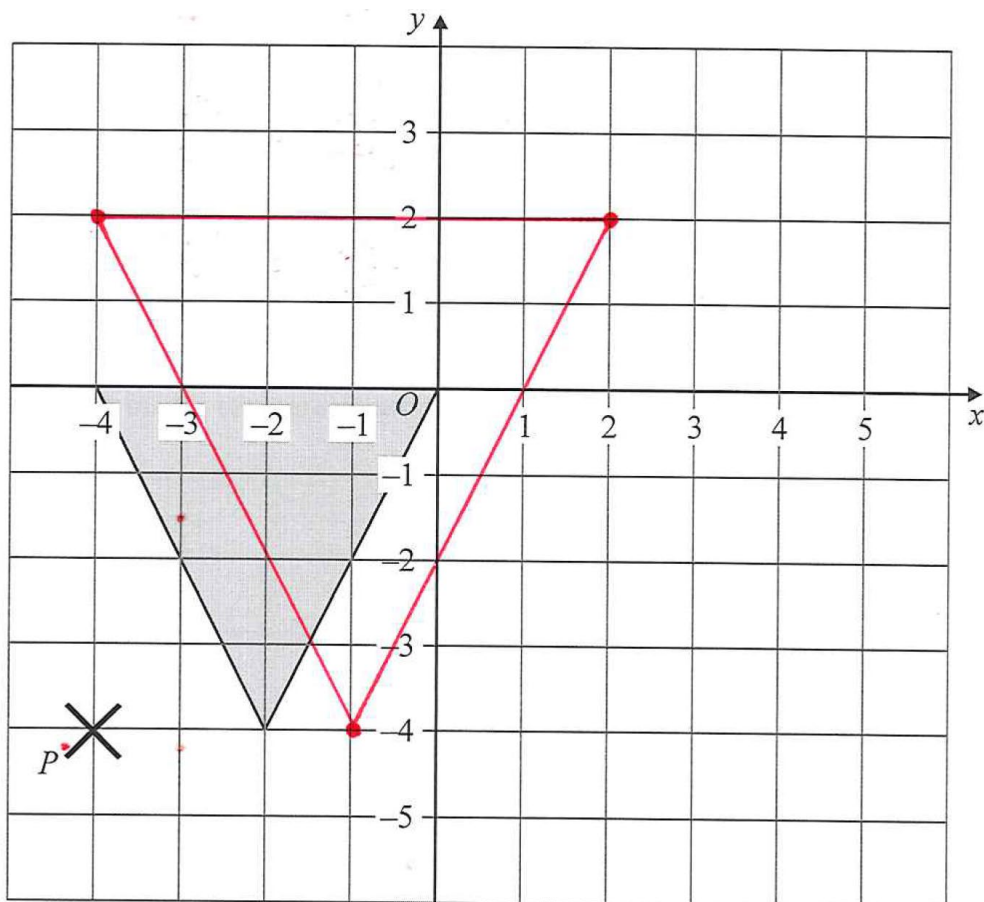
Enlarge the triangle by a scale factor of $-\frac{1}{2}$, centre O

(Total 2 marks)

$$\begin{pmatrix} 2 \\ 1 \end{pmatrix} \rightarrow \begin{pmatrix} 1 \\ 0.5 \end{pmatrix}$$

$$\begin{pmatrix} 3 \\ 1 \end{pmatrix} \rightarrow \begin{pmatrix} 1.5 \\ 0.5 \end{pmatrix}$$

$$\begin{pmatrix} 2 \\ 2 \end{pmatrix} \rightarrow \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$



Enlarge the shaded triangle by a scale factor $1\frac{1}{2}$, centre P .

(Total 3 marks)

$$\begin{pmatrix} 2 \\ 0 \end{pmatrix} \rightarrow \begin{pmatrix} 3 \\ 0 \end{pmatrix}$$

$$\begin{pmatrix} 0 \\ 4 \end{pmatrix} \rightarrow \begin{pmatrix} 0 \\ 6 \end{pmatrix}$$

$$\begin{pmatrix} 4 \\ 4 \end{pmatrix} \rightarrow \begin{pmatrix} 6 \\ 6 \end{pmatrix}$$