

Name: _____

GCSE (1 – 9)

Negative Enlargement and Combined Transformations

Instructions

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

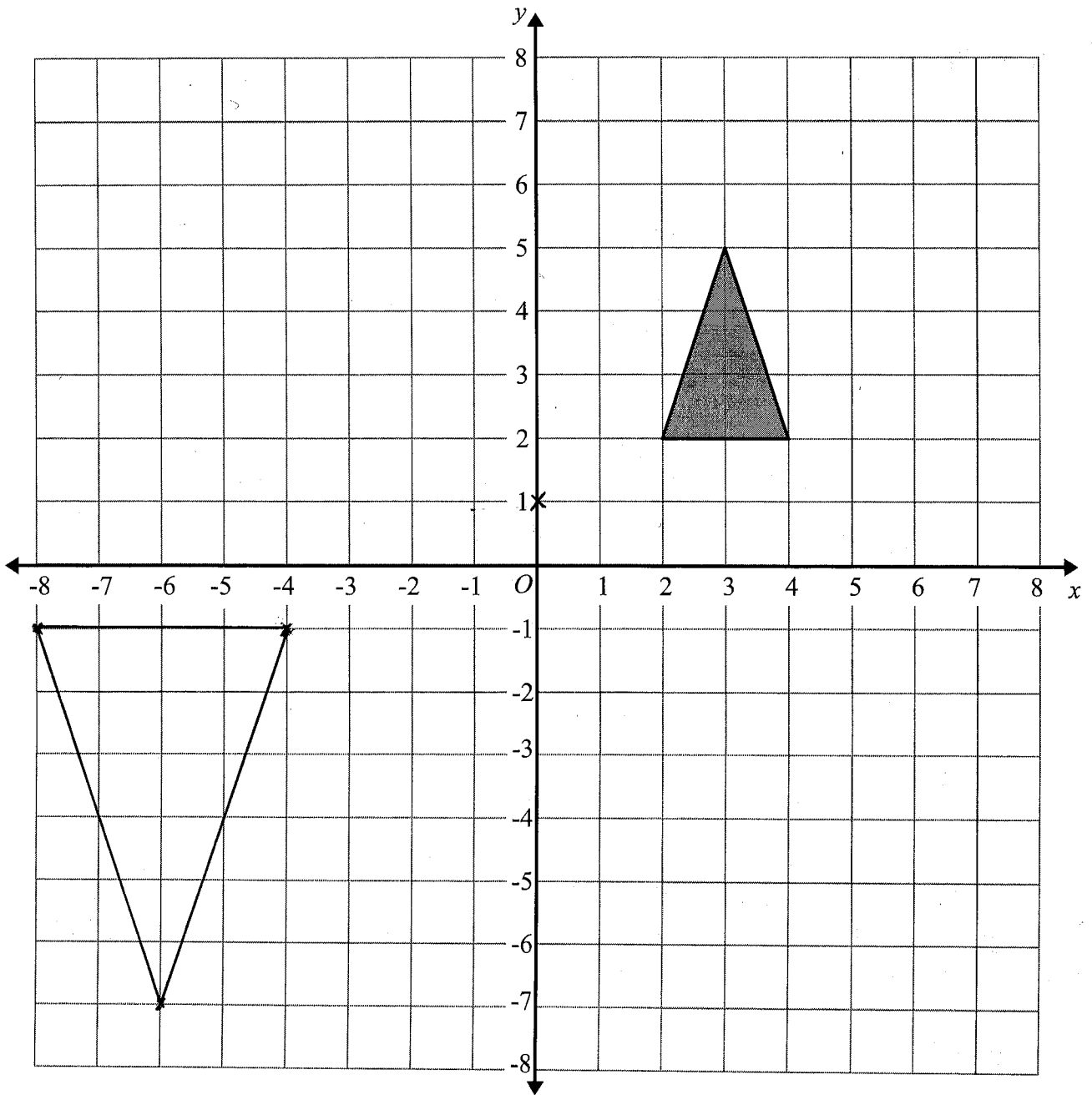
Information

- The marks for each question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end

1



On the grid, enlarge the triangle by scale factor -2, centre (0,1)

(Total for Question 1 is 2 marks)

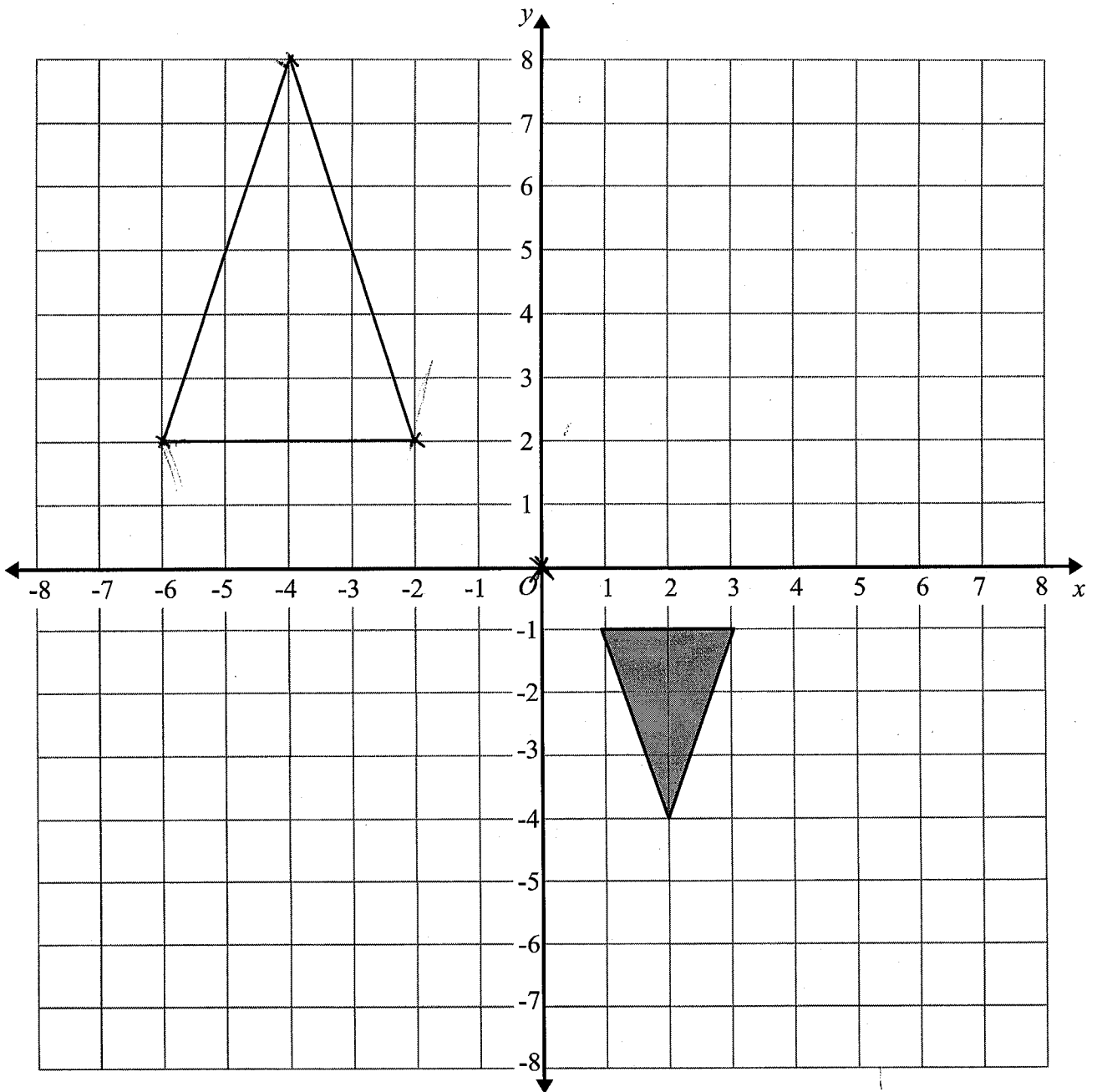
$$\begin{pmatrix} 2 \\ 1 \end{pmatrix} \times -2 = \begin{pmatrix} -4 \\ -2 \end{pmatrix}$$

From the centre

$$\begin{pmatrix} 4 \\ 1 \end{pmatrix} \times -2 = \begin{pmatrix} -8 \\ -2 \end{pmatrix}$$

$$\begin{pmatrix} 3 \\ 4 \end{pmatrix} \times -2 = \begin{pmatrix} -6 \\ -8 \end{pmatrix}$$

2



On the grid, enlarge the triangle by scale factor -2 , centre O

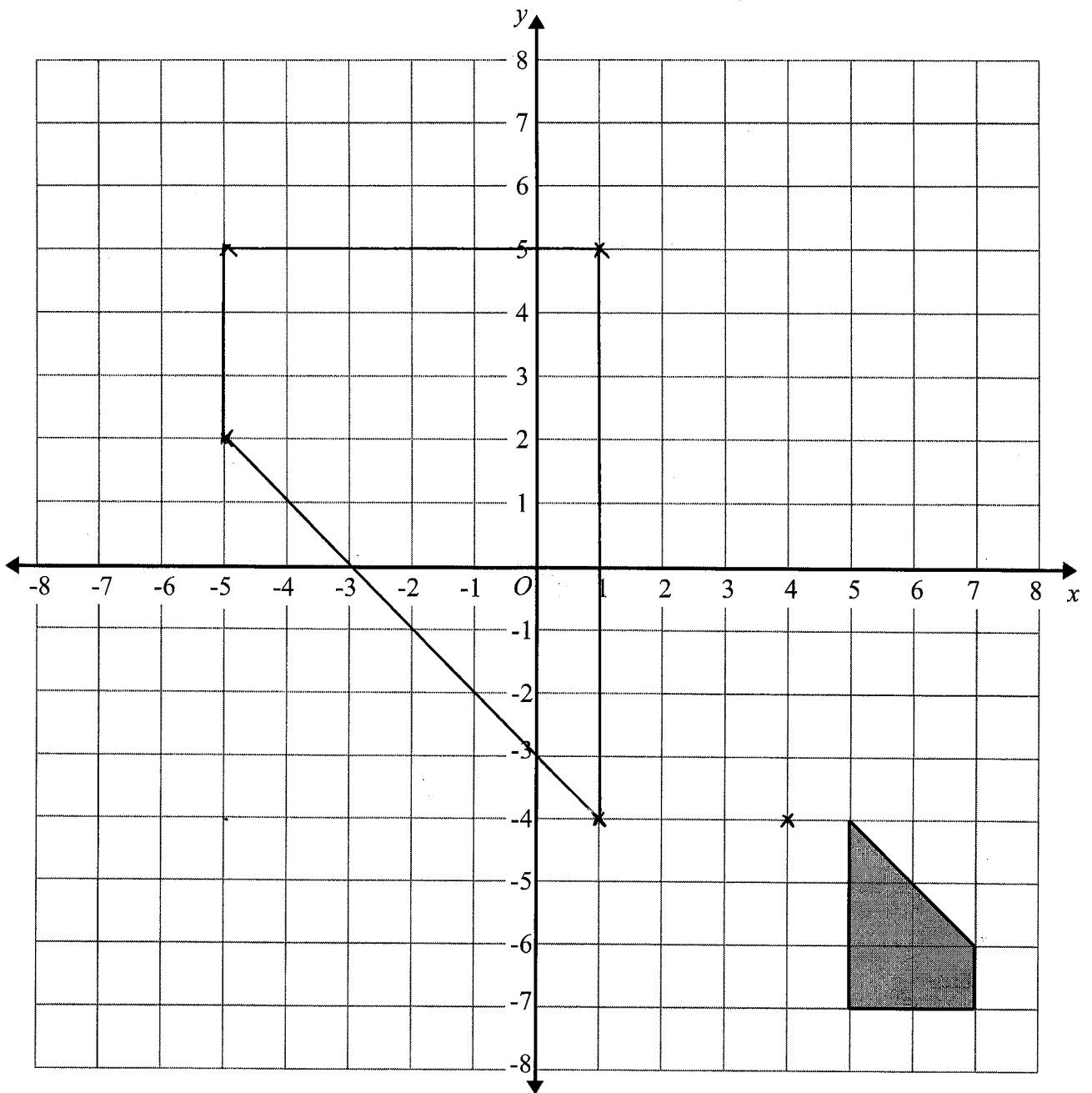
(Total for Question 2 is 2 marks)

$$\begin{pmatrix} 1 \\ -1 \end{pmatrix} \times -2 = \begin{pmatrix} -2 \\ 2 \end{pmatrix}$$

$$\begin{pmatrix} 3 \\ -1 \end{pmatrix} \times -2 = \begin{pmatrix} -6 \\ 2 \end{pmatrix}$$

$$\begin{pmatrix} 2 \\ -4 \end{pmatrix} \times -2 = \begin{pmatrix} -4 \\ 8 \end{pmatrix}$$

3



On the grid, enlarge the shape by scale factor -3 , centre $(4, -4)$.

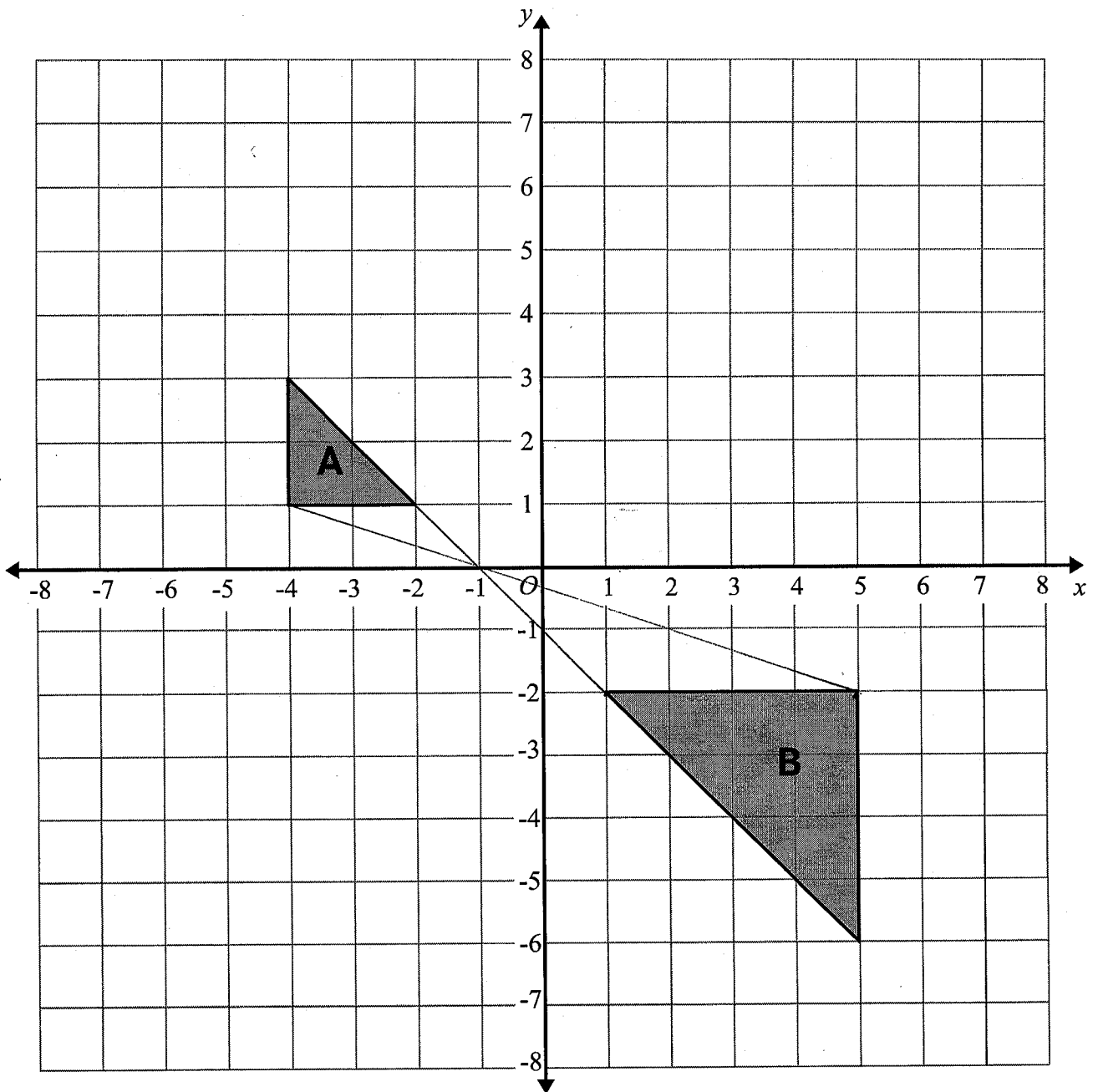
(Total for Question 3 is 2 marks)

$$\begin{pmatrix} 1 \\ 0 \end{pmatrix} \times -3 = \begin{pmatrix} -3 \\ 0 \end{pmatrix}$$

$$\begin{pmatrix} 1 \\ -3 \end{pmatrix} \times -3 = \begin{pmatrix} -3 \\ 9 \end{pmatrix}$$

$$\begin{pmatrix} 3 \\ -2 \end{pmatrix} \times -3 = \begin{pmatrix} -9 \\ 6 \end{pmatrix}$$

$$\begin{pmatrix} 3 \\ -3 \end{pmatrix} \times -3 = \begin{pmatrix} -9 \\ 9 \end{pmatrix}$$

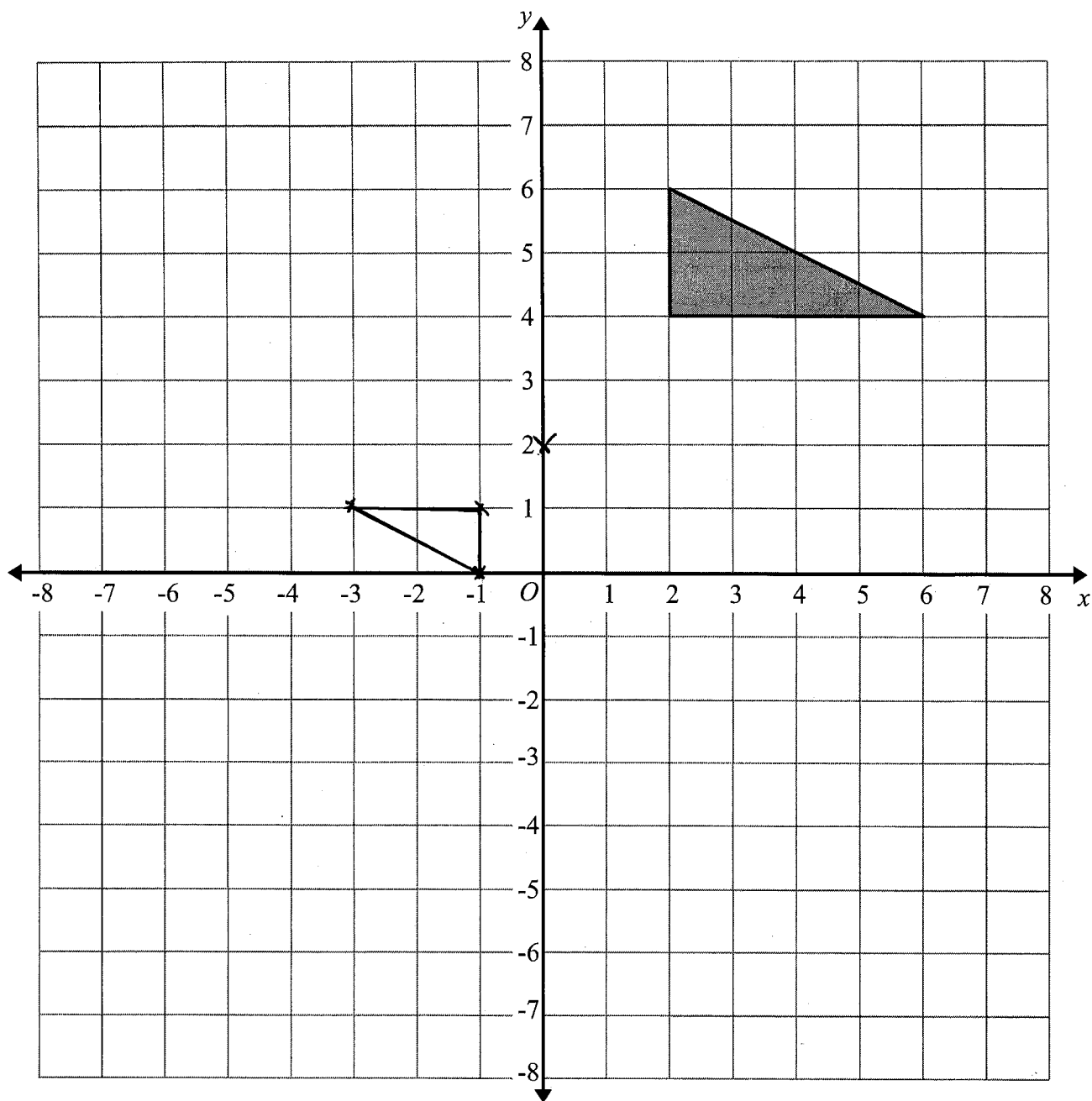


Describe fully the single transformation which maps triangle A onto triangle B.

..... Enlargement, Scale Factor -2
..... Centre (-1, 0)
.....

(Total for Question 4 is 2 marks)

5



On the grid, enlarge the triangle by scale factor -0.5 , centre $(0, 2)$.

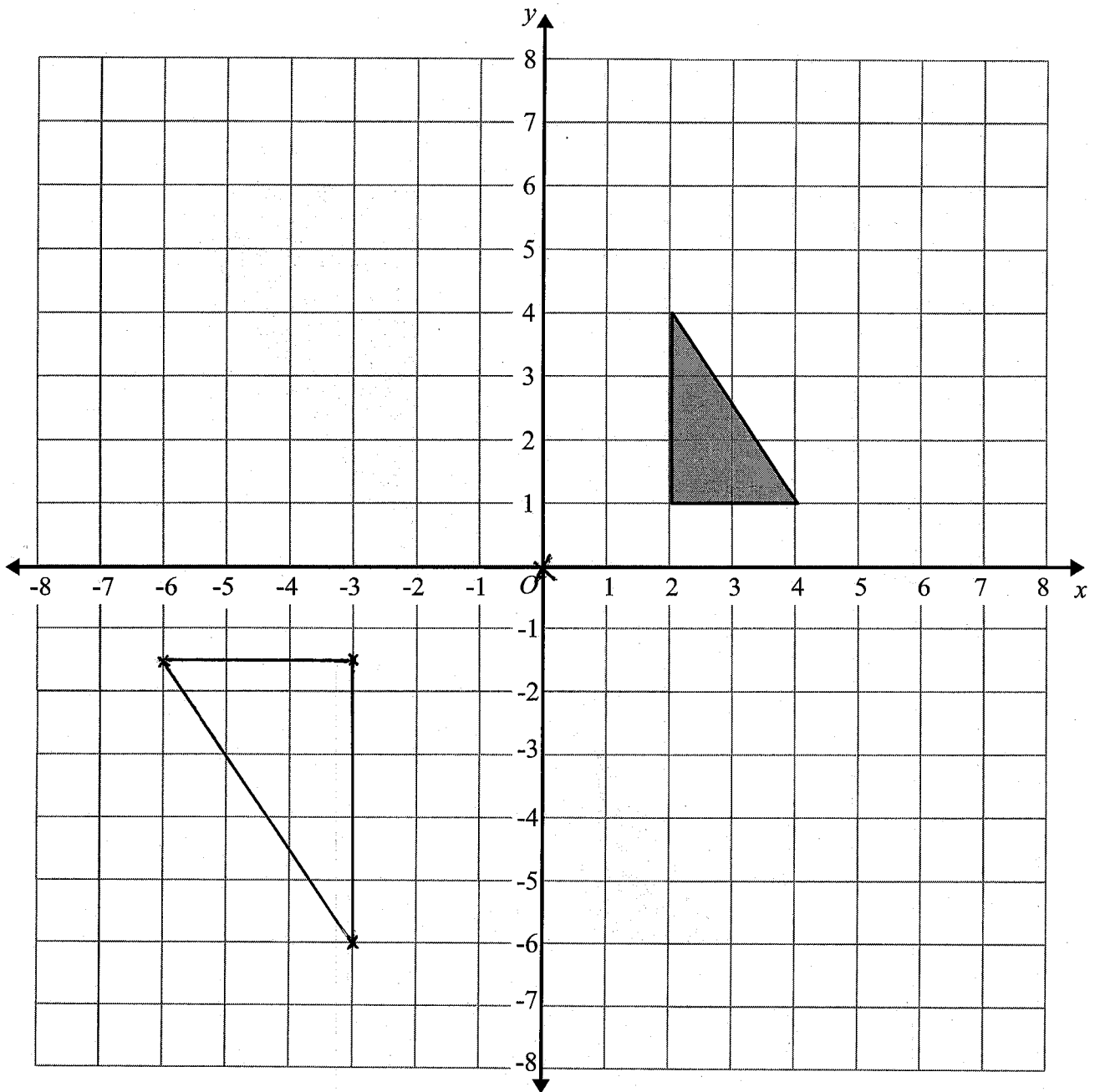
(Total for Question 5 is 2 marks)

$$\begin{pmatrix} 2 \\ 2 \end{pmatrix} \times -0.5 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$

$$\begin{pmatrix} 2 \\ 4 \end{pmatrix} \times -0.5 = \begin{pmatrix} -1 \\ -2 \end{pmatrix}$$

$$\begin{pmatrix} 6 \\ 2 \end{pmatrix} \times -0.5 = \begin{pmatrix} -3 \\ -1 \end{pmatrix}$$

6



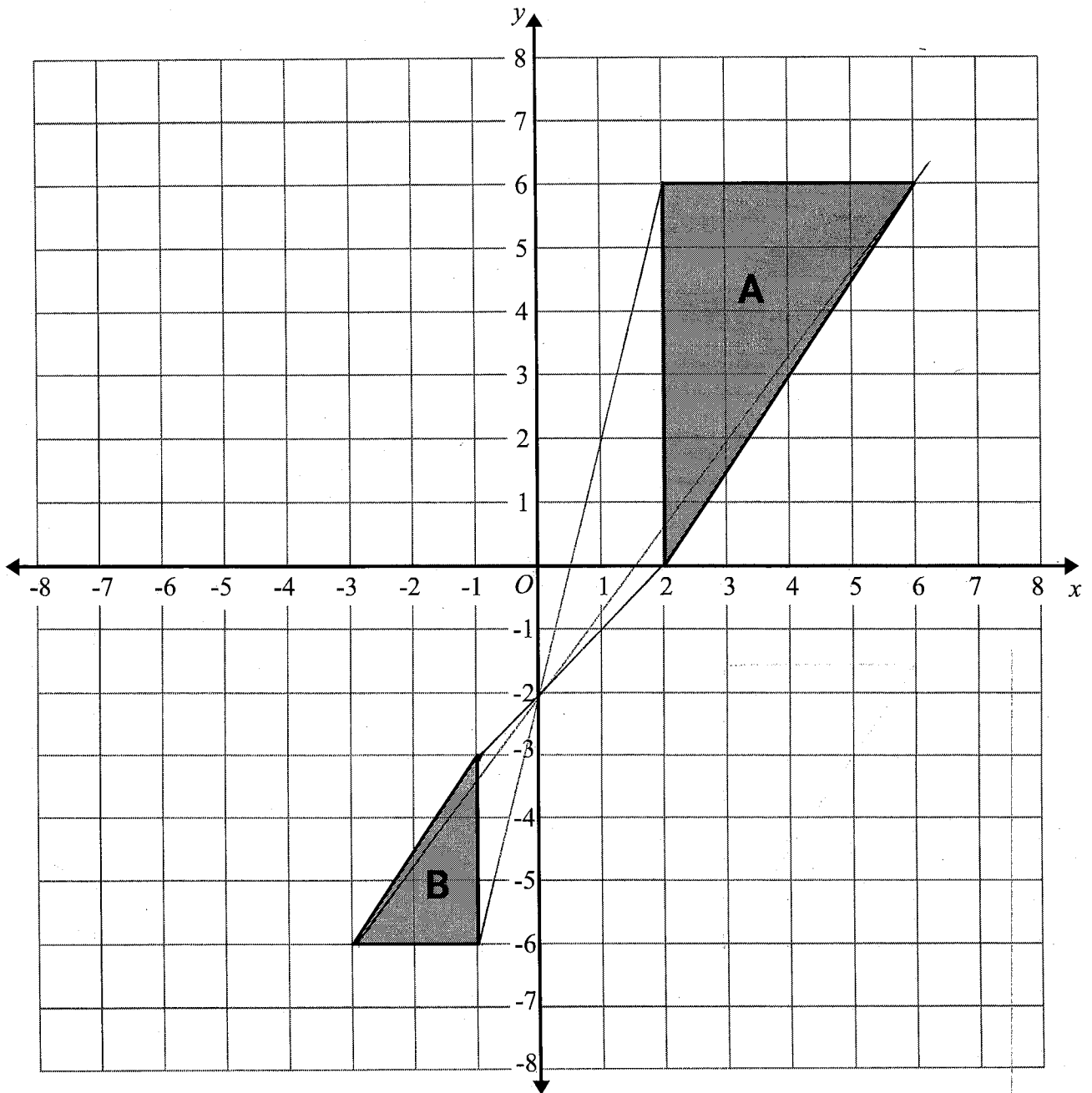
On the grid, enlarge the triangle by scale factor -1.5 , centre O .

(Total for Question 6 is 2 marks)

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

$$\begin{pmatrix} 4 \\ 1 \end{pmatrix} \times -1.5 = \begin{pmatrix} -6 \\ -1.5 \end{pmatrix}$$

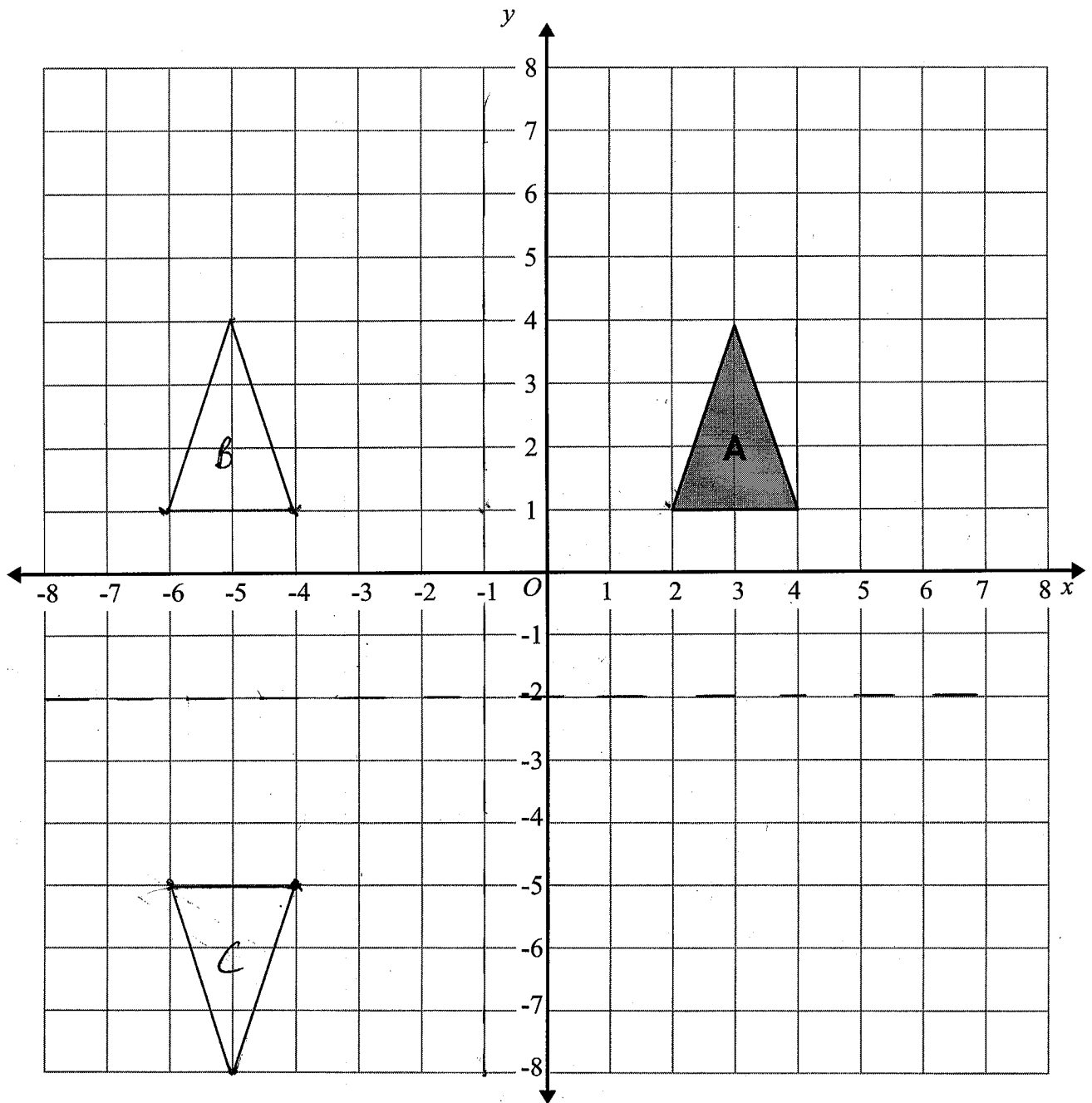
$$\begin{pmatrix} 2 \\ 4 \end{pmatrix} \times -1.5 = \begin{pmatrix} -3 \\ -6 \end{pmatrix}$$



Describe fully the single transformation which maps triangle A onto triangle B.

Enlargement, Scale Factor -0.5
Centre $(0, -2)$

(Total for Question 7 is 2 marks)



Shape A is reflected in the line $x = -1$ to give shape B.

Shape B is reflected in the line $y = -2$ to give shape C.

Describe the **single** transformation that will map shape A to shape C.

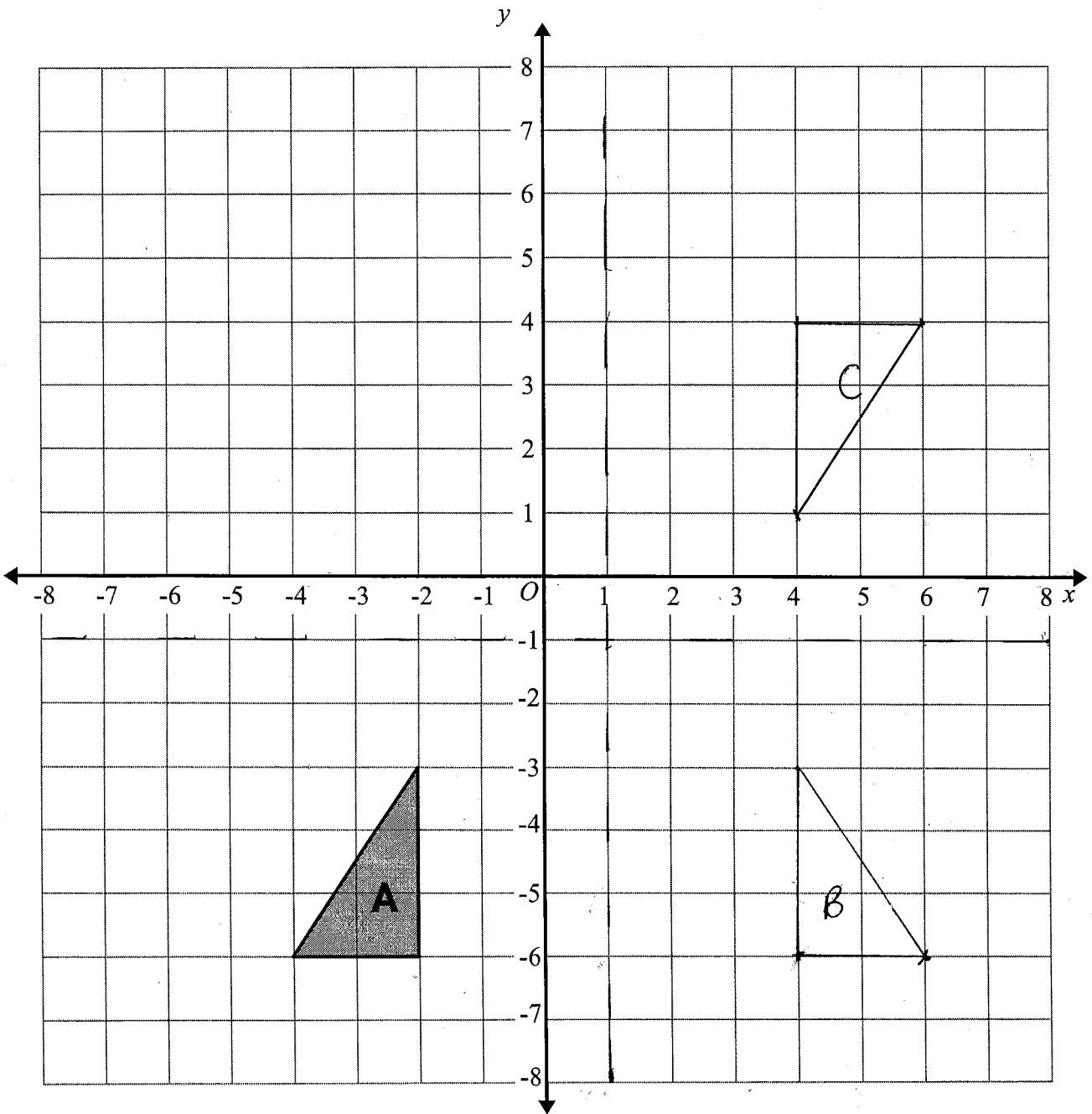
Rotation, 180° , centre $(-1, -2)$

.....

.....

.....

(Total for Question 8 is 2 marks)



Shape A is reflected in the line $x = 1$ to give shape B.
 Shape B is reflected in the line $y = -1$ to give shape C.

Describe the **single** transformation that will map shape A to shape C.

Rotation, 180° , centre $(1, -1)$

.....

.....

(Total for Question 9 is 2 marks)