Write your name here

Surname	Other names

In the style of:

Edexcel GCSE

Centre Number	Candidate Number

Mathematics A

Transformations

Foundation Tier

Past Paper Style Questions
Arranged by Topic

Paper Reference
1MA0/1F

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators must not be used.**

Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed.

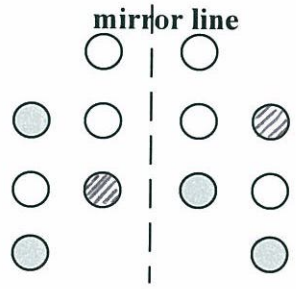
Advice

- 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.

Turn over ▶

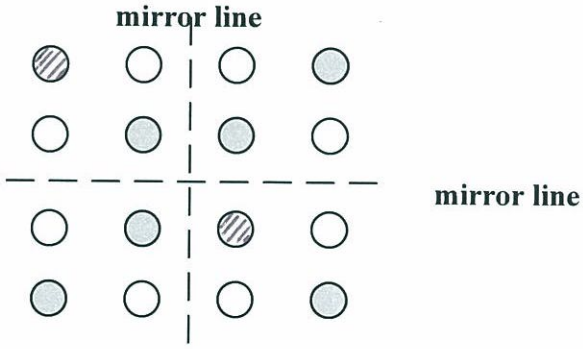
1. Here are some patterns of circles.

(a) Shade **two** more circles to give this pattern symmetry in the mirror line.



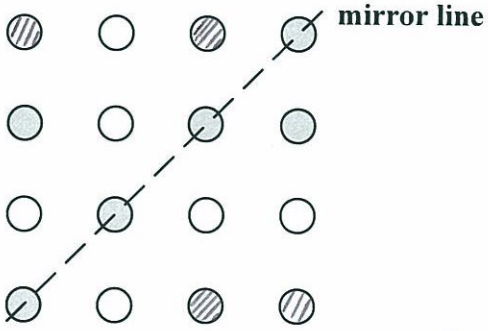
(2)

(b) Shade **two** more circles to give this pattern symmetry in both mirror lines.



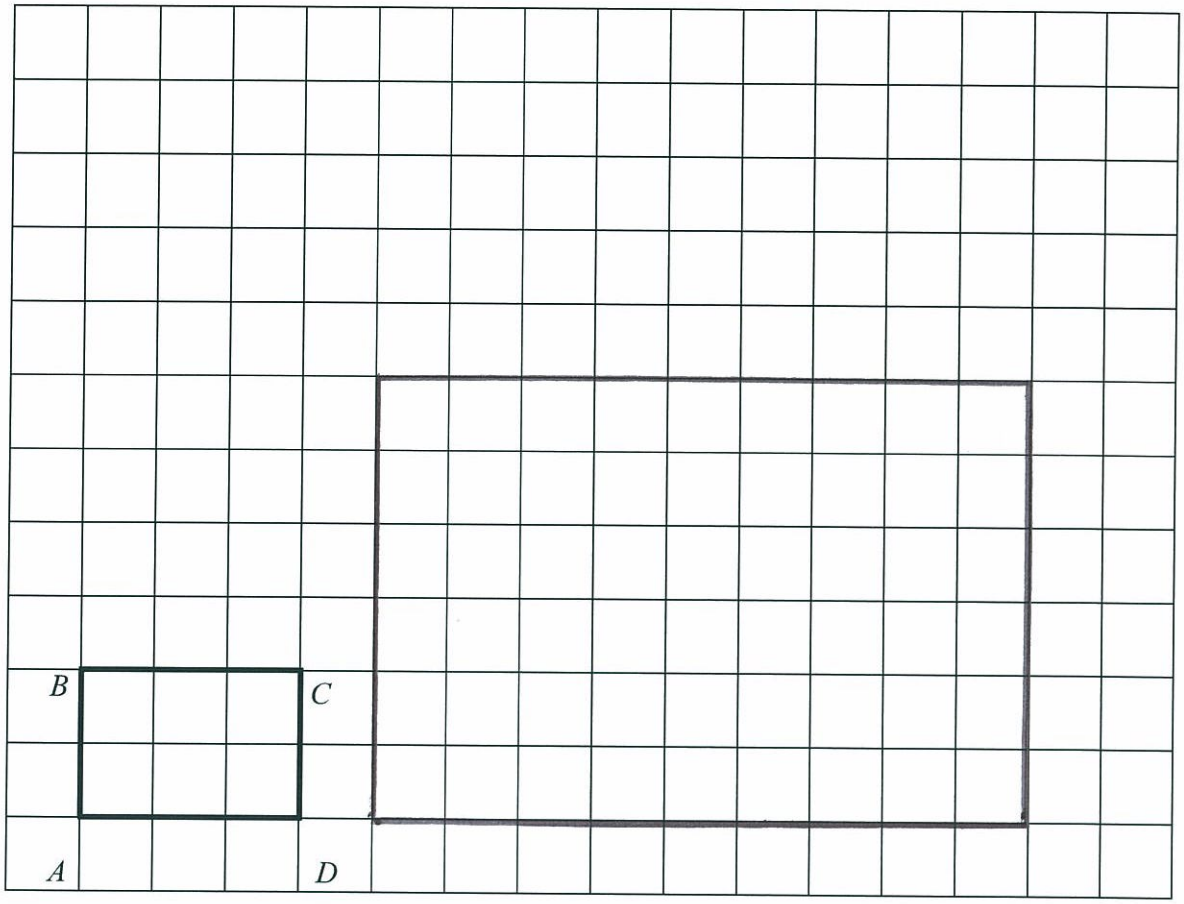
(2)

(c) Shade **four** more circles to give this pattern symmetry in the mirror line.



(2)

2. The shape *ABCD* is drawn on a grid.



(a) Enlarge *ABCD* by scale factor 3. **(2)**

(b) How many times bigger is the area of the enlarged shape than the area of *ABCD*?

$\frac{9 \times 6}{3 \times 2} = \frac{54}{6} = 9$ times bigger

9

(2)

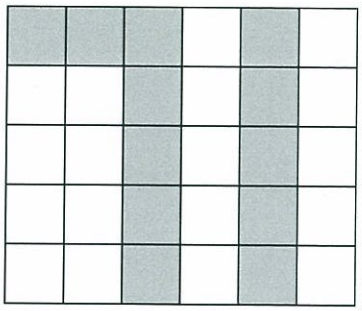
N.B: Area of larger = Area of smaller × (Scale factor)^2

i.e. $A_L = A_S \times 3^2$

$= A_S \times 9$

3.

The number 71 is shaded on the grid.



(a) What fraction of the grid is shaded?

Give your answer in its simplest form.

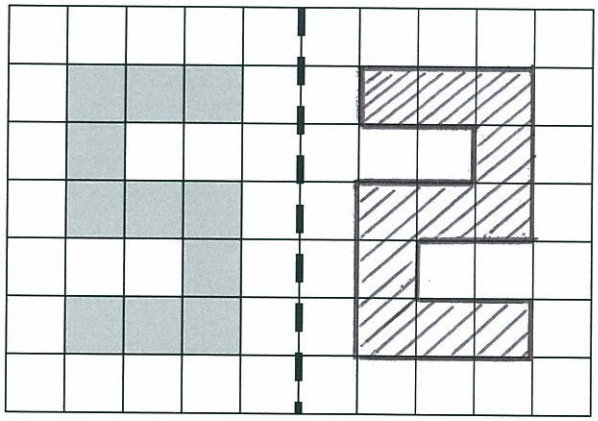
$\frac{12}{30} = \frac{2}{5}$

$\frac{2}{5}$

.....

(3)

(b) The letter S is shaded on this grid.

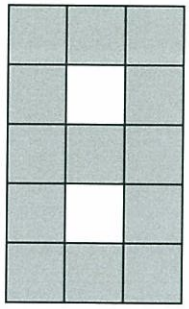


mirror line

Draw the reflection of the letter S in the mirror line.

(2)

3. (c) The number eight is drawn.



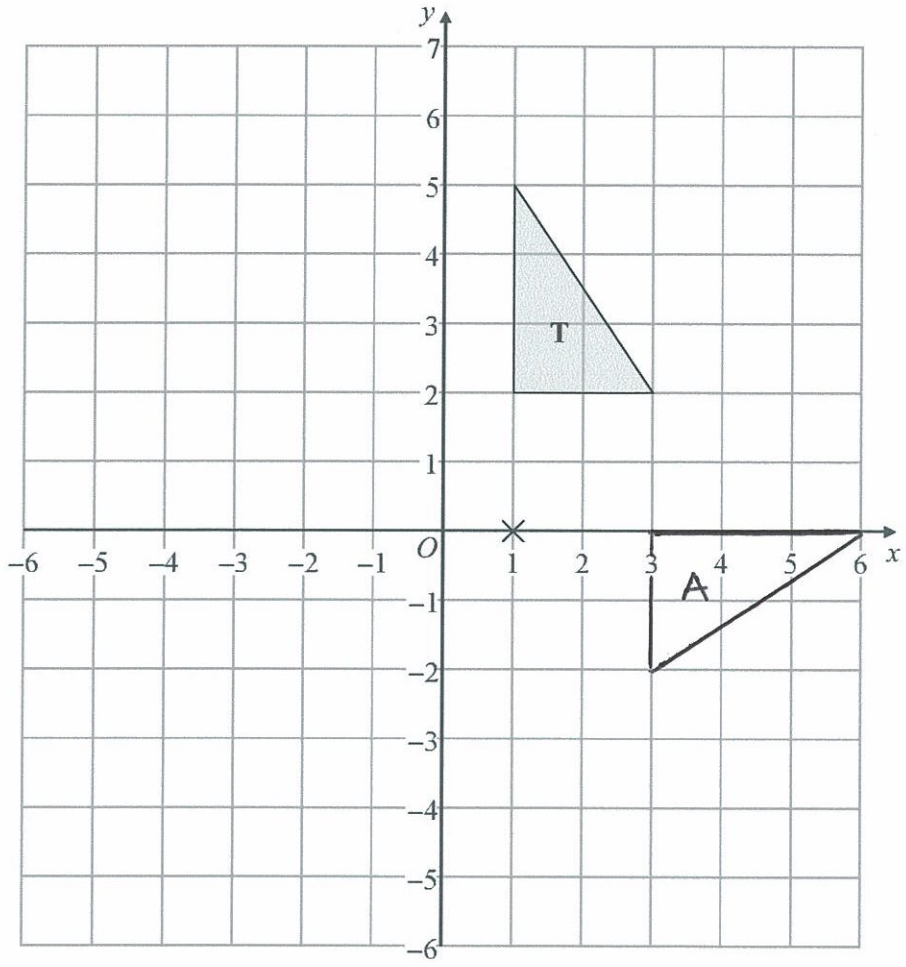
Write down the order of rotational symmetry.

2

.....

(1)

4.



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

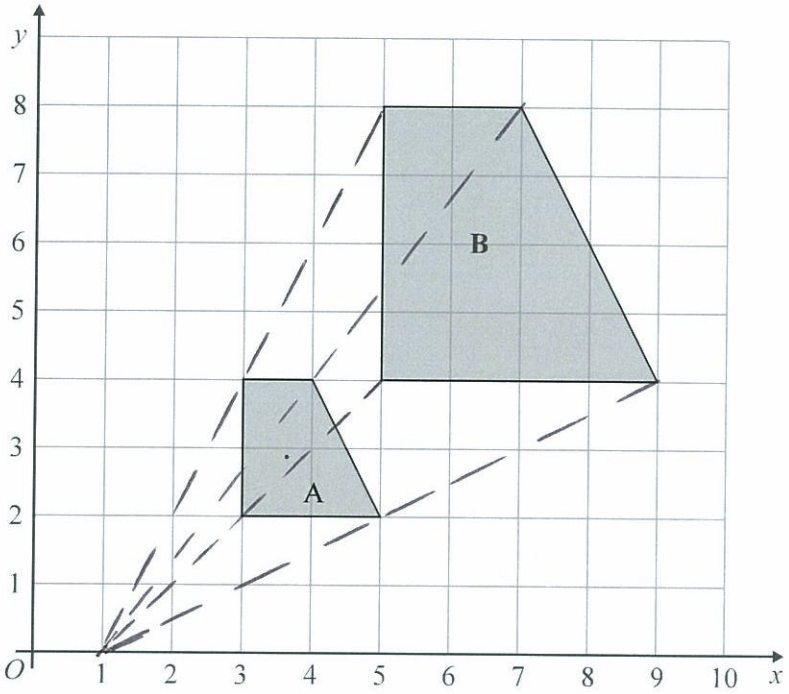
Rotate triangle **T** 90° about the point (1, 0).

Label the new triangle **A**.

clockwise

(Total 2 marks)

5.

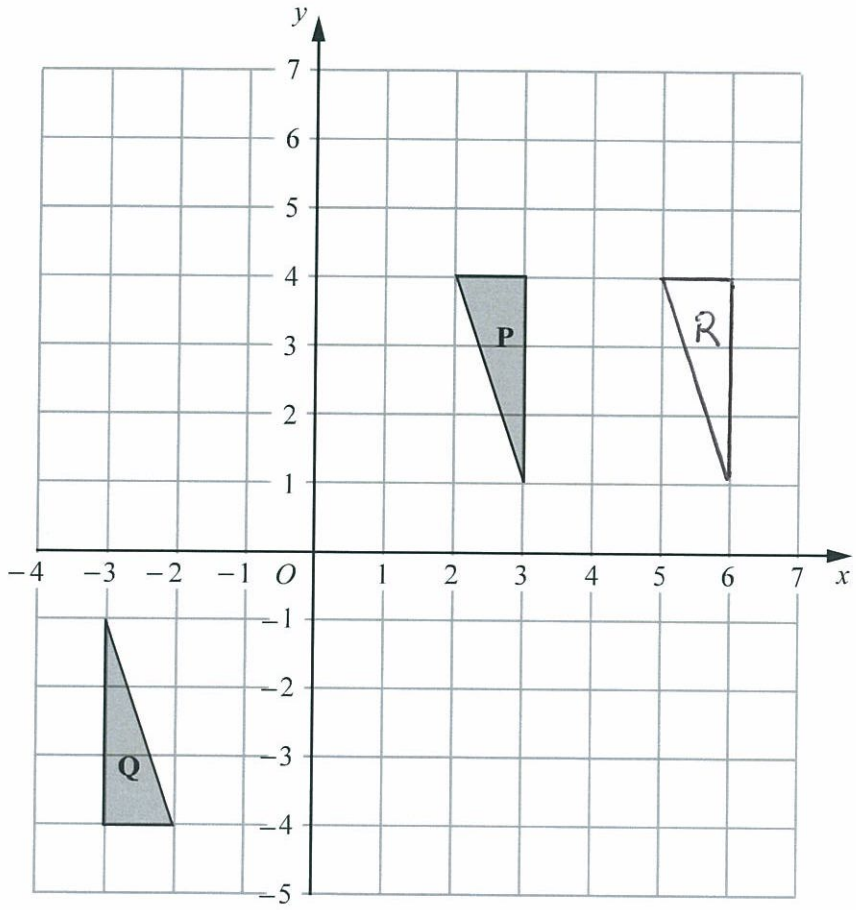


Describe fully the single transformation which maps shape **A** onto shape **B**.

An enlargement by factor 2 centred on (1,0)

(Total 3 marks)

6.



Triangle **P** and triangle **Q** are drawn on the grid.

(a) Describe fully the single transformation which maps triangle **P** onto triangle **Q**.

A rotation of 180° about the origin, i.e. the point (0, 0)

(3)

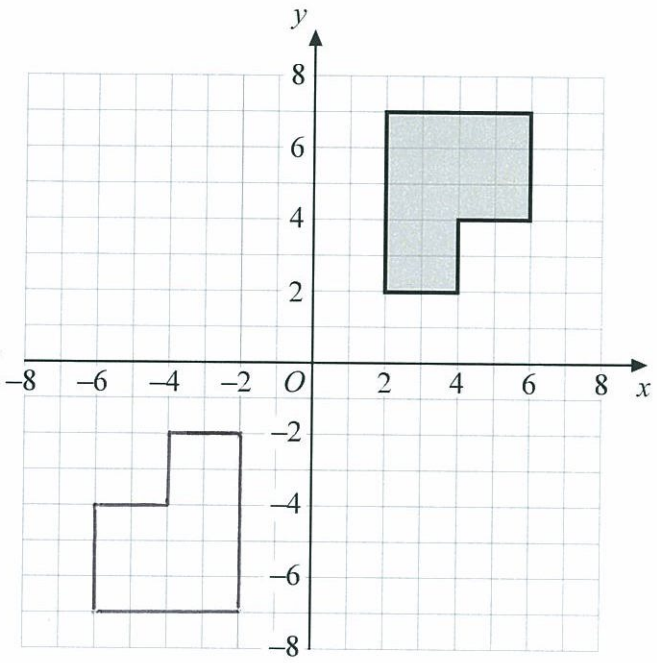
(b) Translate triangle **P** by the vector $\begin{pmatrix} 3 \\ 0 \end{pmatrix}$.

Label the new triangle **R**.

(1)

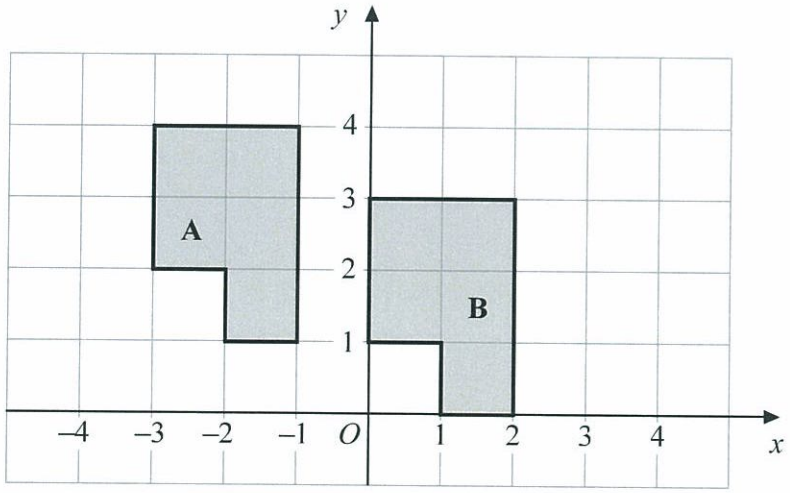
(Total 4 marks)

7.



(a) Rotate the shaded shape 180° clockwise about the point O.

(2)



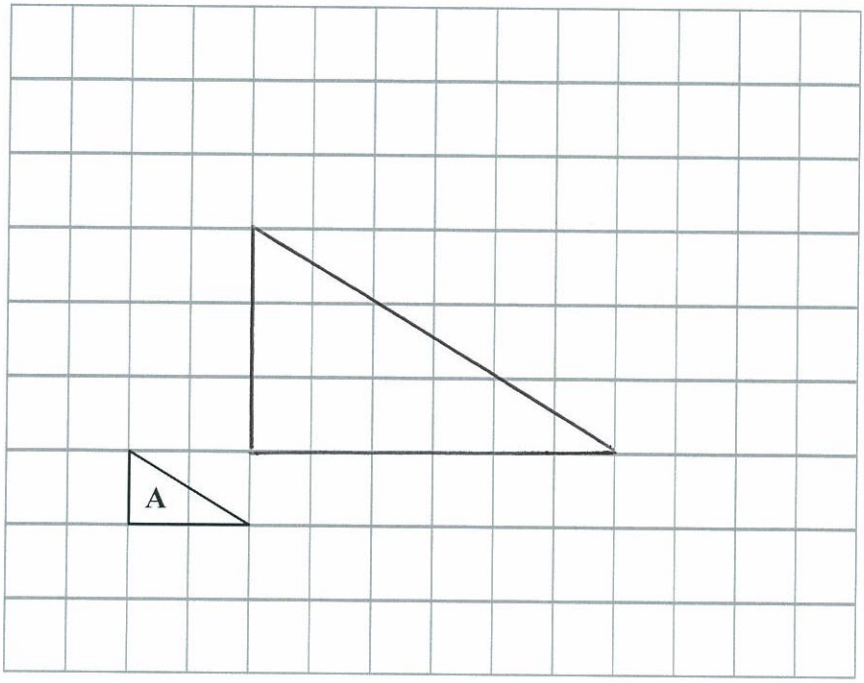
(b) Describe fully the single transformation that will map shape **A** onto shape **B**.

A translation by the vector $\begin{pmatrix} 3 \\ -1 \end{pmatrix}$

(2)

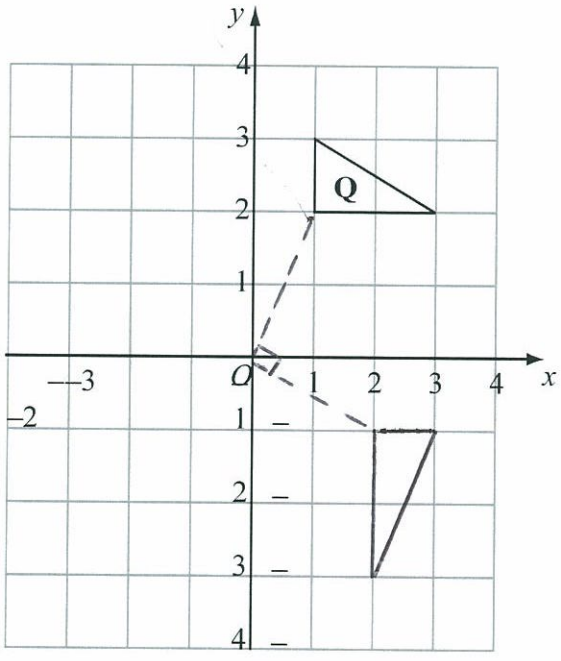
(Total 4 marks)

8.



Triangle **A** has been drawn ona grid.

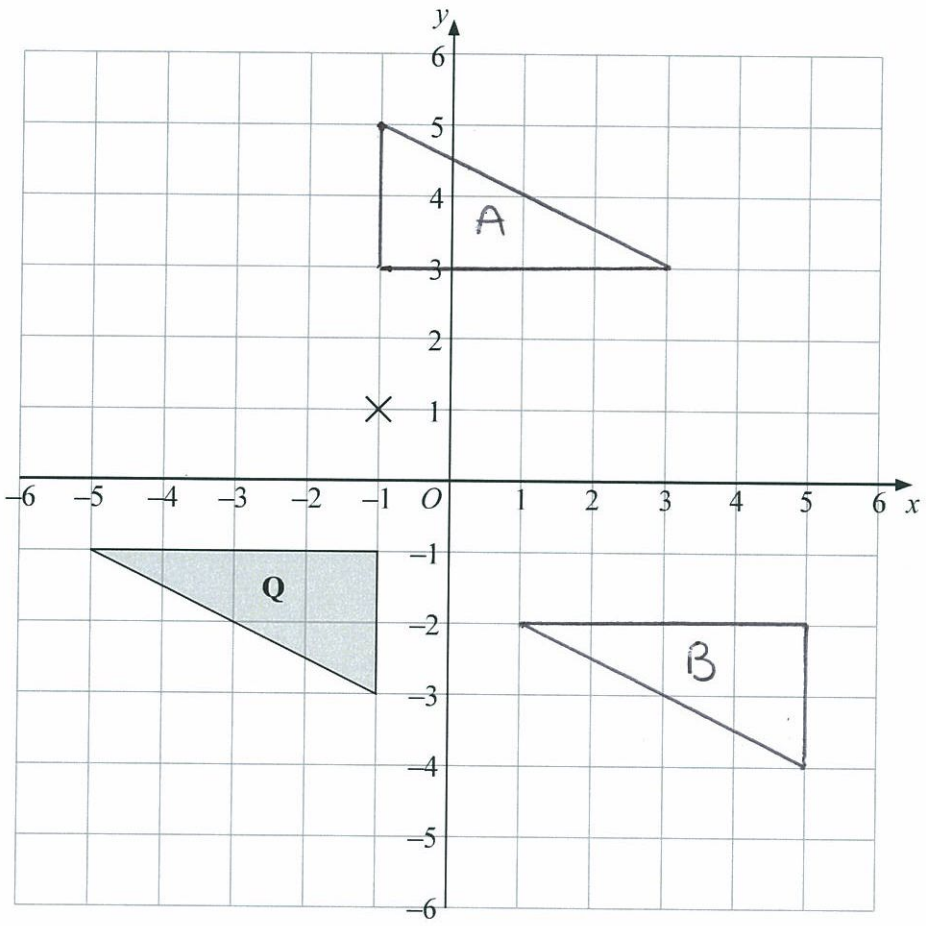
(a) On the grid, draw an enlargement of the triangle **A** with a scale factor 3.



Triangle **Q** has been drawn on a grid.

(b) On the grid, rotate triangle **Q** 90° clockwise, centre *O*.

9.



(a) Rotate triangle **Q** 180° about the point (–1, 1).

Label the new triangle **A**.

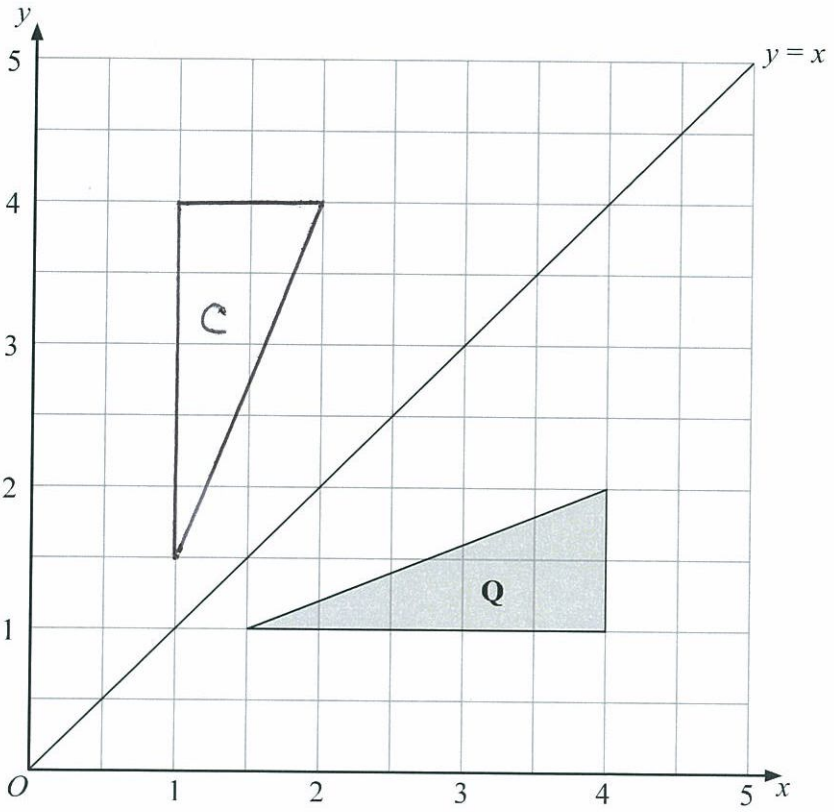
(2)

(b) Translate triangle **Q** by the vector $\begin{pmatrix} 6 \\ -1 \end{pmatrix}$.

Label the new triangle **B**.

(1)

10.



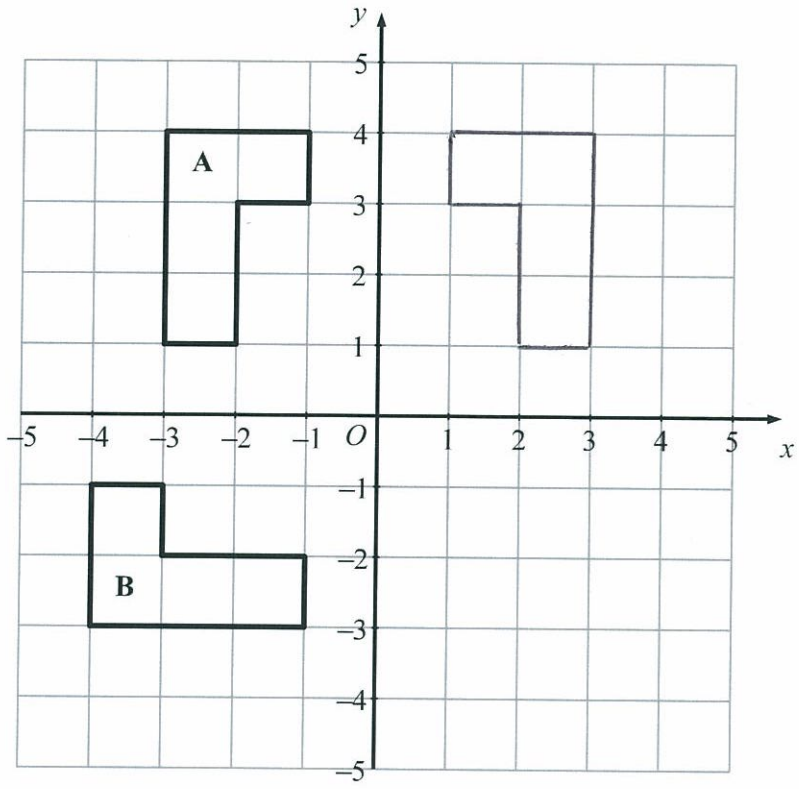
(c) Reflect triangle **Q** in the line $y = x$.

Label the new triangle **C**.

(2)

(Total 5 marks)

11.



(a) Reflect shape **A** in the y axis.

(2)

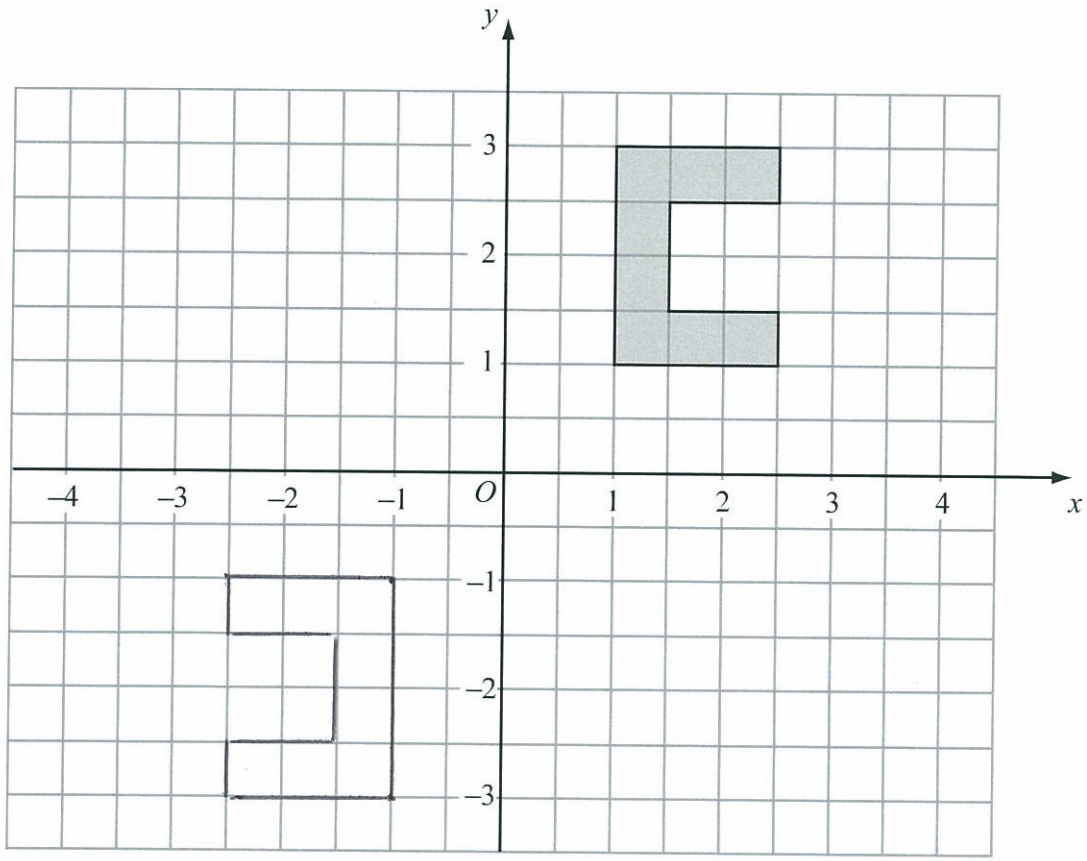
(b) Describe fully the **single** transformation which takes shape **A** to shape **B**.

A rotation 90° anti-clockwise about the point (0,0)

(3)

(Total 5 marks)

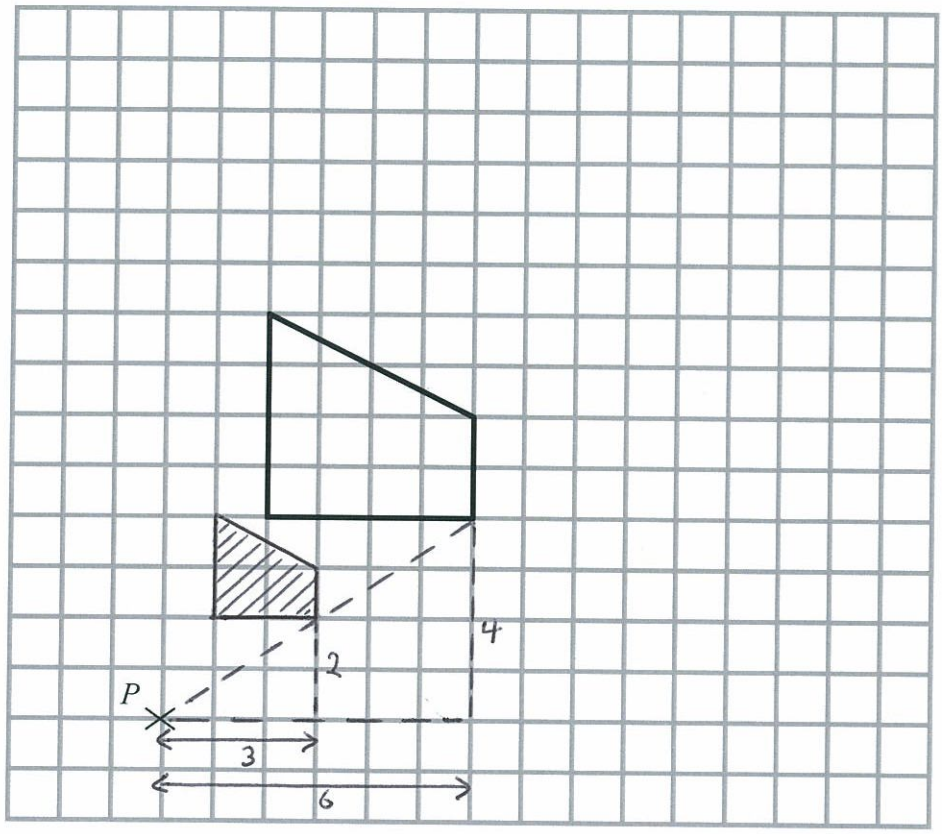
12.



Rotate the shape 180° centre O.

(Total 2 marks)

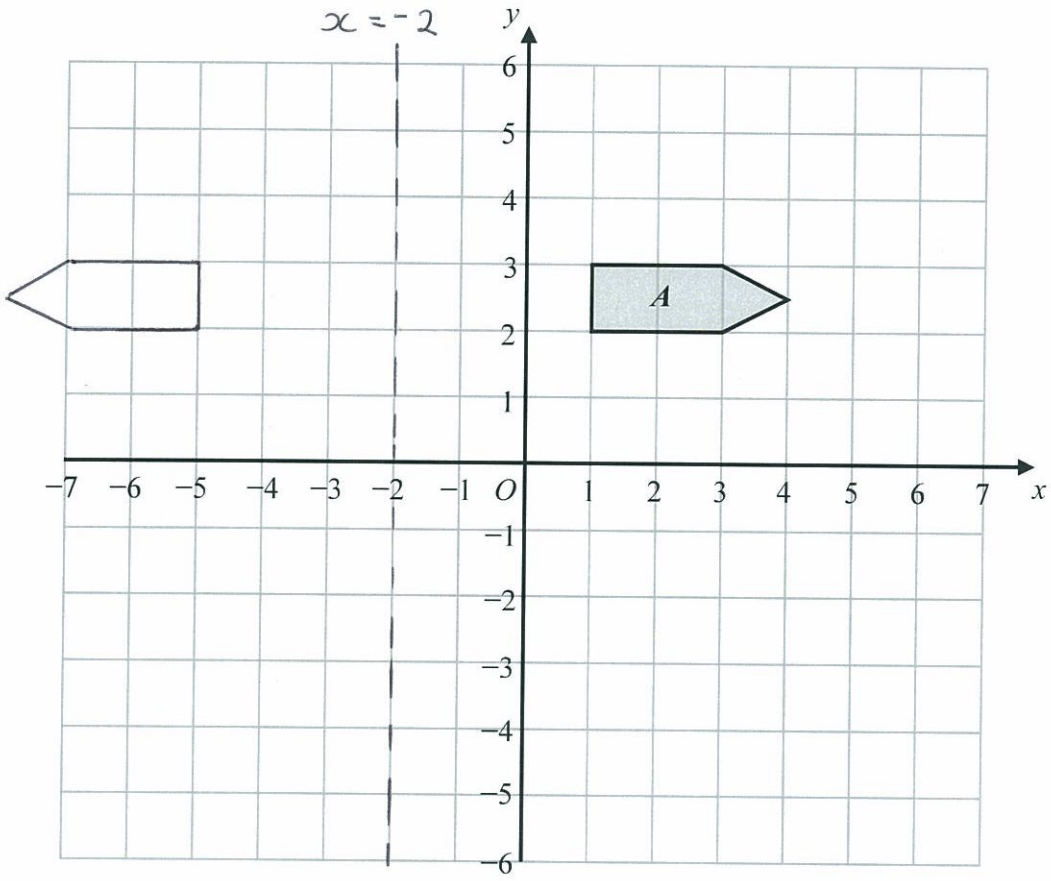
13.



On the grid, enlarge the shape with a scale factor of $\frac{1}{2}$, centre P.

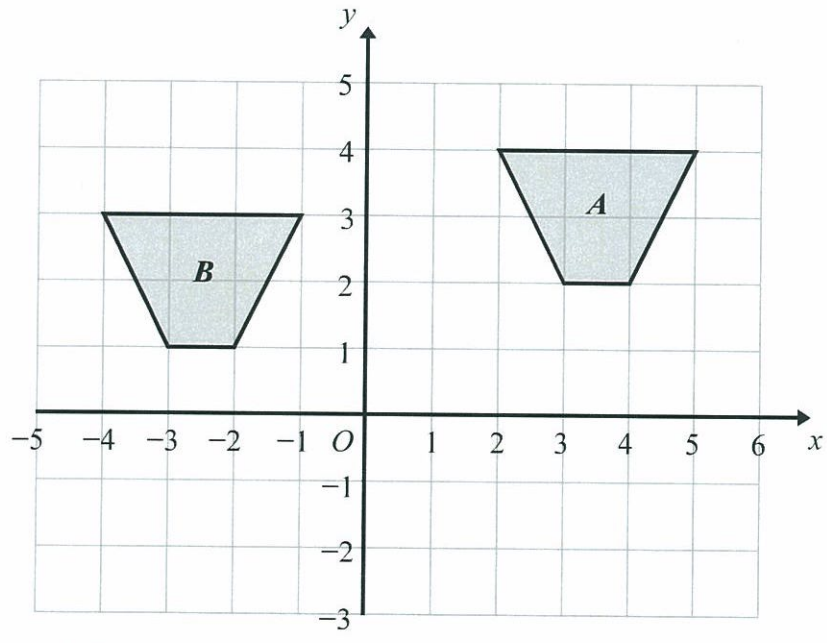
(Total 3 marks)

14.



(a) On the grid above, reflect shape ***A*** in the line $x = -2$

(2)



(b) Describe fully the single transformation that will map shape ***A*** onto shape ***B***.

A translation by the vector $\begin{pmatrix} -6 \\ -1 \end{pmatrix}$

(2)

(Total 4 marks)