

Transformations - Rotations

Question Paper

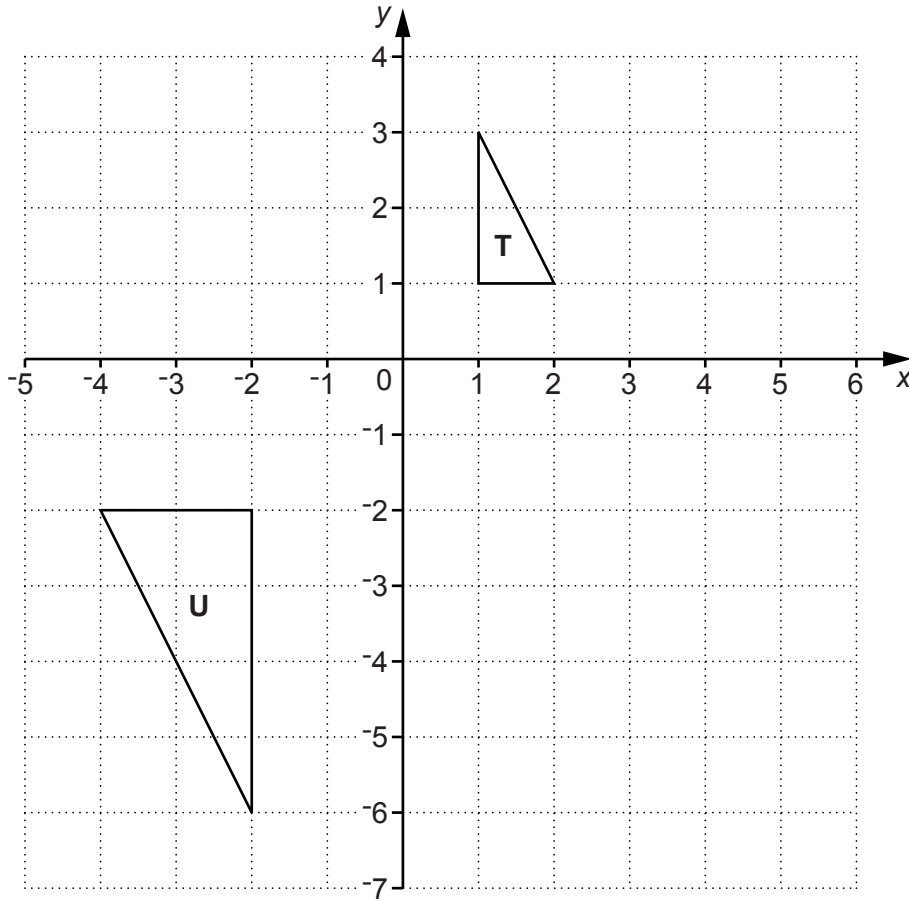
Level	OCR
Subject	Maths
Exam Board	GCSE (9-1)
Topic	Graphs of Equations and Functions
Sub Topic	Transformations - Rotations
Grade Level	Grade 3
Booklet	Question Paper

Time Allowed: 44 minutes

Score: /36

Percentage: /100

1



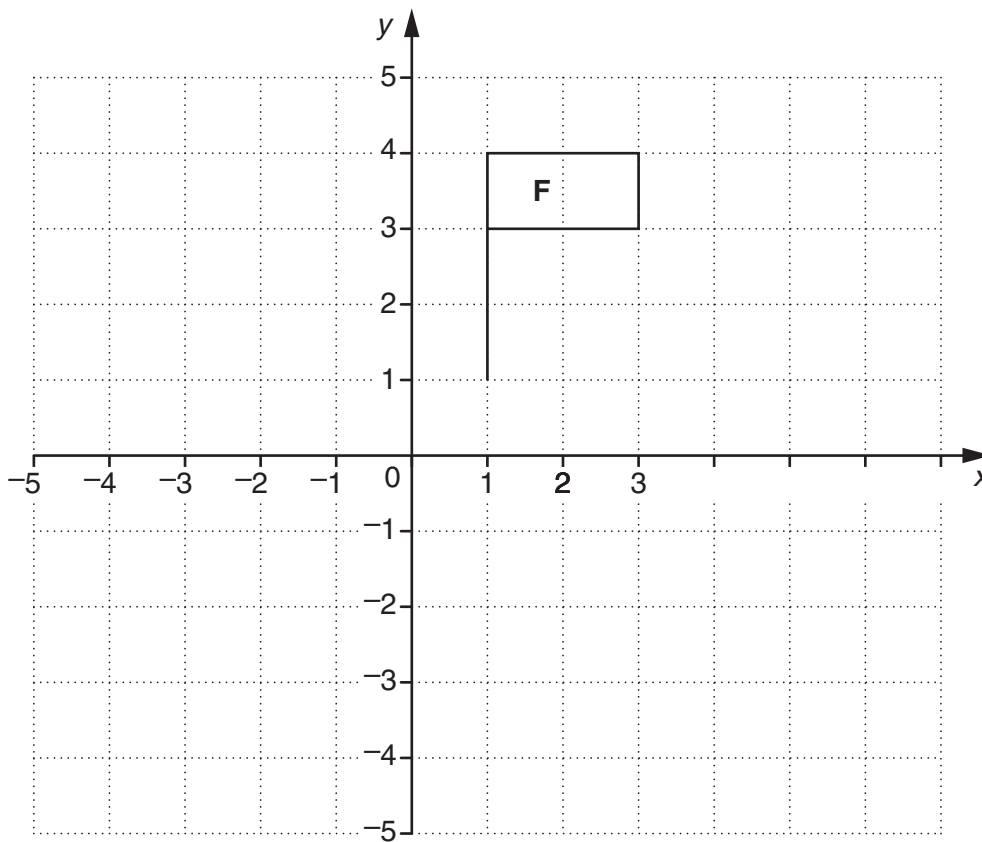
(a) Rotate triangle **T** 90° clockwise about the origin.
Label your image **A**. [3]

(b) Reflect triangle **T** in the line $y = -1$.
Label your image **B**. [2]

(c) Describe fully the enlargement that maps triangle **T** onto triangle **U**.

_____ [2]

2



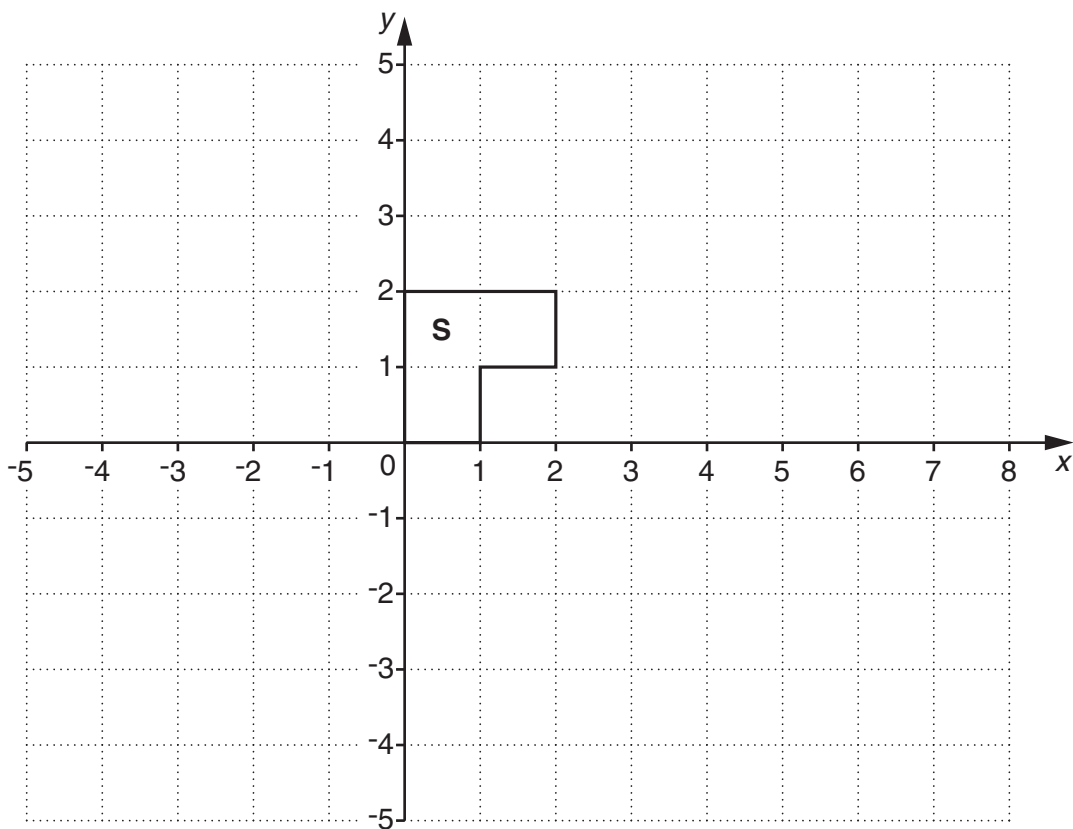
- (a) Rotate shape **F** 90° anticlockwise about the point $(1, 1)$.
Label the image **G**.

[3]

- (b) Translate shape **F** using the vector $\begin{pmatrix} 1 \\ -3 \end{pmatrix}$.
Label the image **H**.

[2]

3 Shape **S** is shown on the grid.



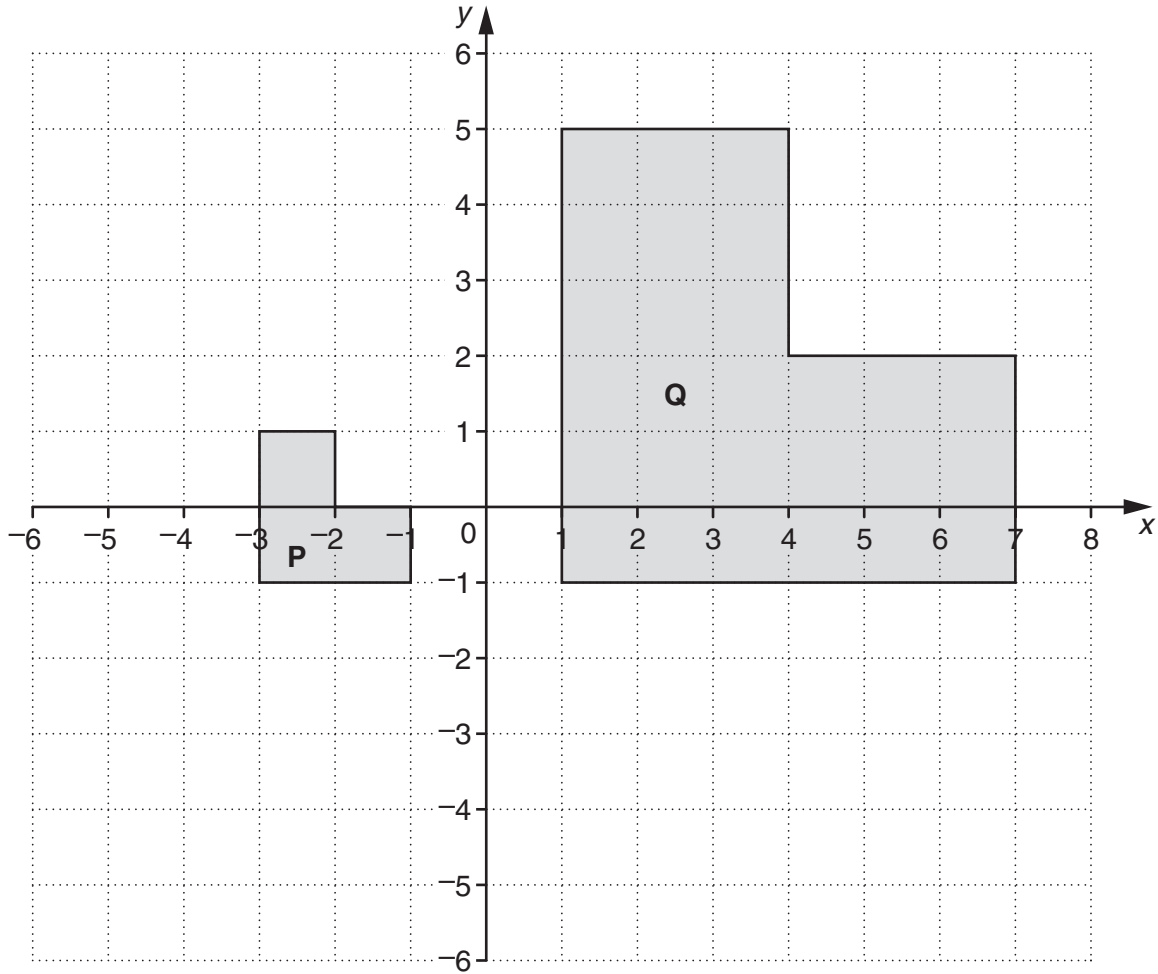
(a) Rotate shape **S** through 90° clockwise about $(2, 0)$.
Label your image **R**.

[3]

(b) Enlarge shape **S** with scale factor -2 and centre $(0, 0)$.
Label your image **E**.

[2]

4



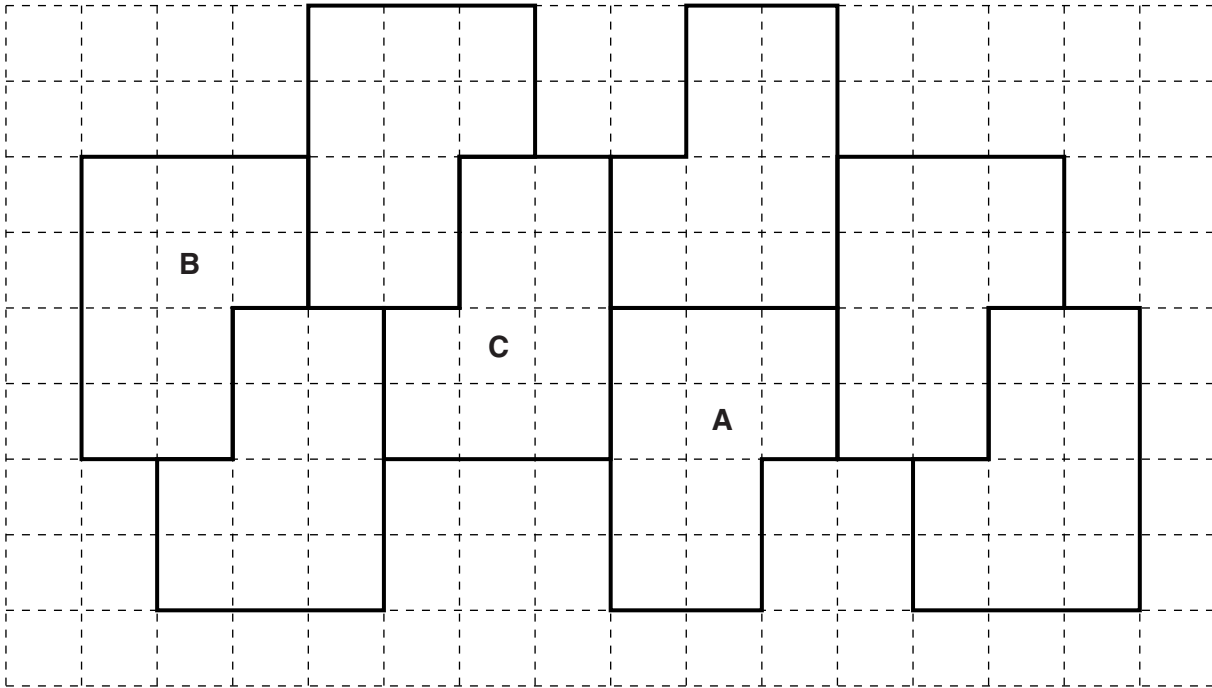
(a) Describe fully the **single** transformation that maps shape **P** onto shape **Q**.

[3]

(b) Rotate shape **P** 180° about the point $(-2, -2)$.
Label the image **R**.

[2]

5 Part of a wallpaper design is shown below.



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

[3]

(b) Shape **C** is a rotation of shape **B**.

(i) Through what angle has the shape been rotated?

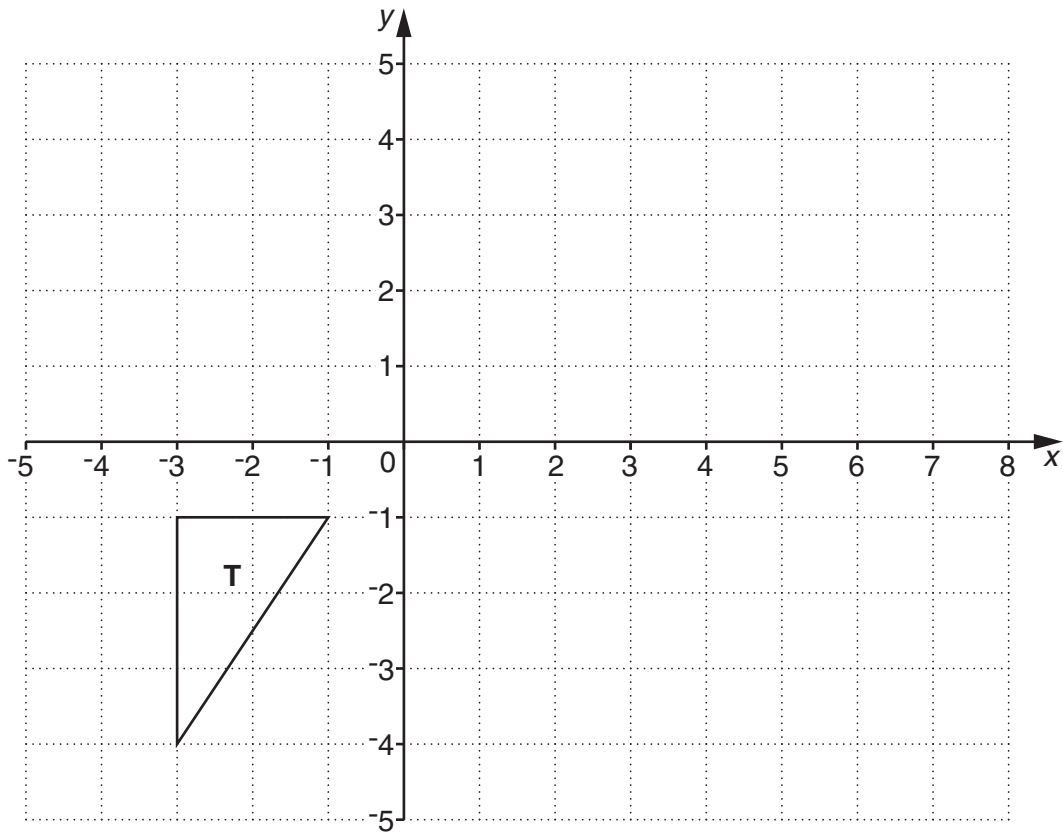
(b)(i) _____ ° [1]

(ii) Mark the centre of rotation with a cross (X). [1]

(c) Describe a single transformation that would **decrease** the **area** of shape **A**.

[2]

6 The grid shows triangle **T**.



(a) Reflect triangle **T** in the line $y = -1$.
Label the image **A**.

[2]

(b) Rotate triangle **T** 180° about the point $(0, 0)$.
Label the image **B**.

[2]

(c) Triangle **T** is transformed by four translations given by the following vectors.

$$\begin{pmatrix} 15 \\ -6 \end{pmatrix} \text{ then } \begin{pmatrix} 22 \\ 9 \end{pmatrix} \text{ then } \begin{pmatrix} -15 \\ 6 \end{pmatrix} \text{ then } \begin{pmatrix} -17 \\ -9 \end{pmatrix}$$

Draw the image of triangle **T** after these four translations.
Label the image **C**.

[3]