

Transformations

Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Vectors and transformations
Sub-Topic	Transformations
Paper	Paper 2
Difficulty	Hard
Booklet	Question Paper 1

Time allowed: 31 minutes

Score: /24

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

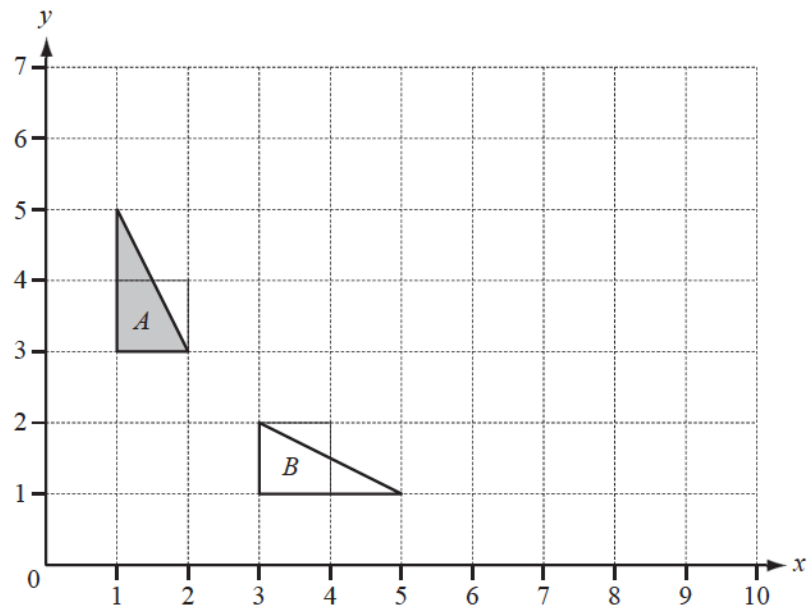
Question 1

(a)
$$N = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$$

Describe fully the **single** transformation represented by N .

[3]

(b) Find the matrix which represents the **single** transformation that maps triangle A onto triangle B .

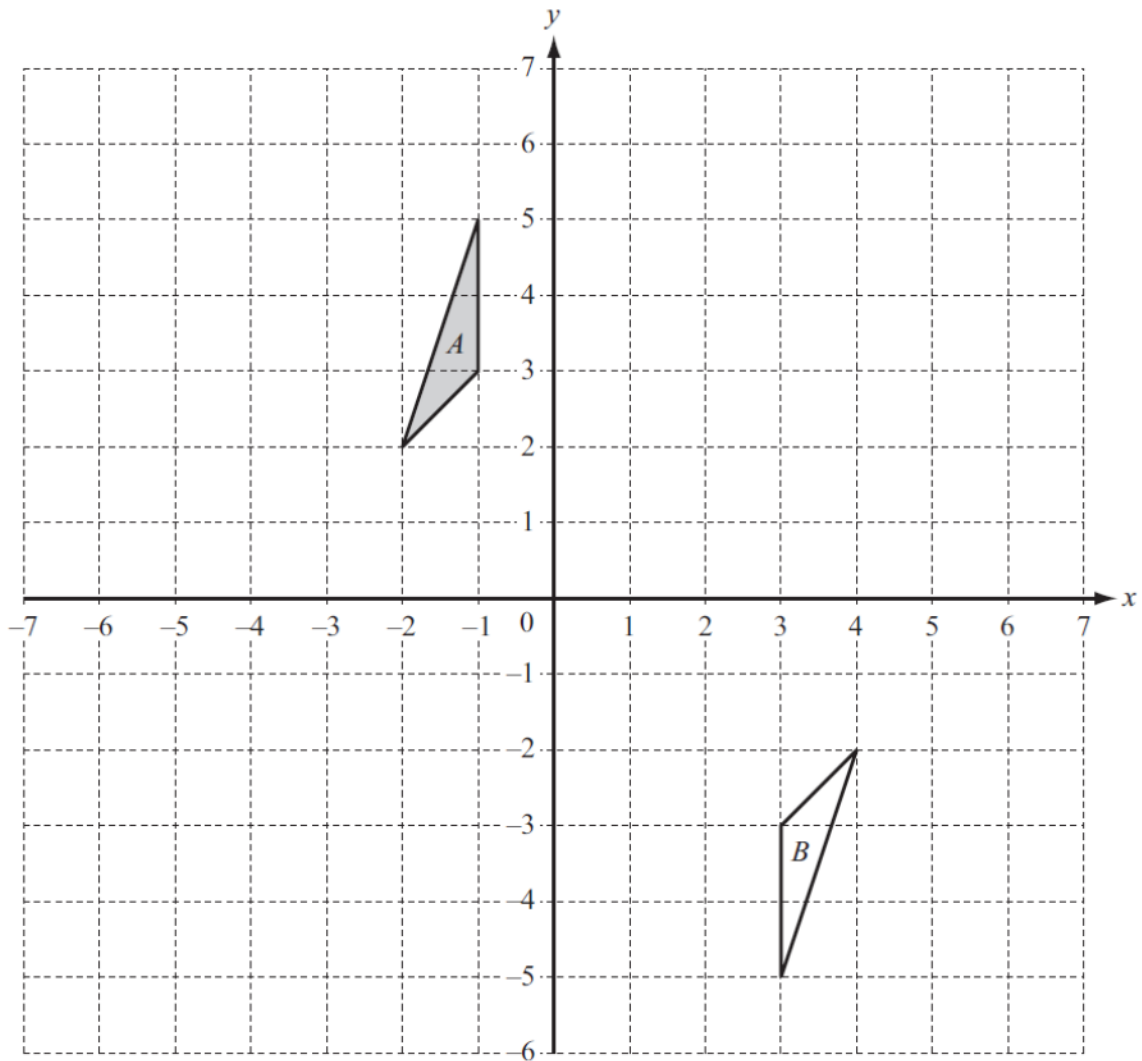


[2]

(c) On the grid, draw the image of triangle A under a stretch, factor 3, with the y -axis invariant.

[2]

Question 2



(a) Draw the image of triangle A after a translation by the vector $\begin{pmatrix} 3 \\ -4 \end{pmatrix}$. [2]

(b) Describe fully the **single** transformation which maps triangle A onto triangle B . [3]

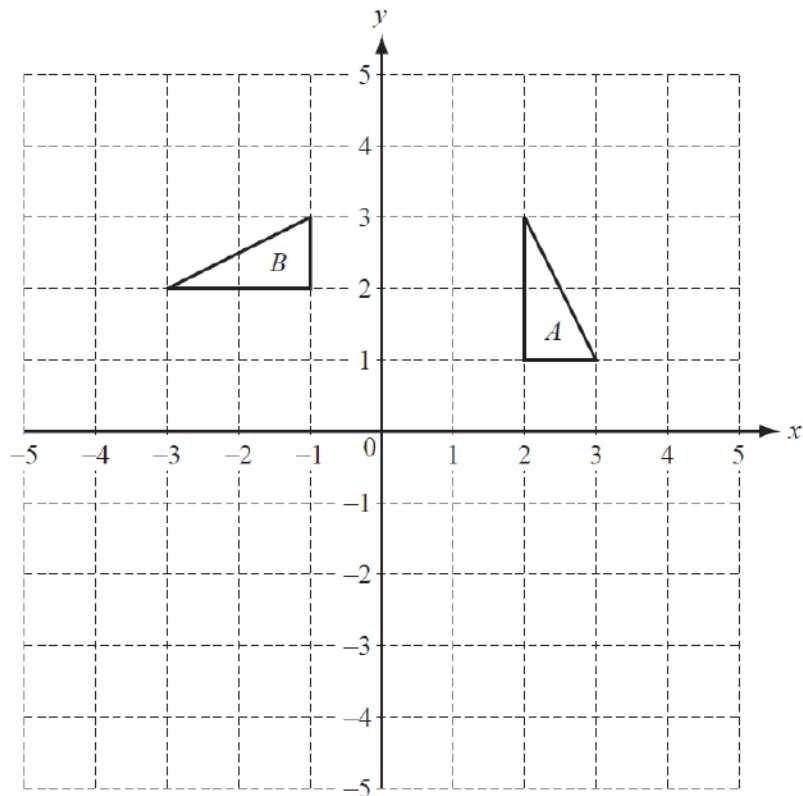
(c) Draw the image of triangle A after the transformation represented by the matrix $\begin{pmatrix} -2 & 0 \\ 0 & 1 \end{pmatrix}$. [3]

Question 3

Find the matrix which represents the combined transformation of a reflection in the x axis **followed** by a reflection in the line $y = x$.

[3]

Question 4



(a) A transformation is represented by the matrix $\begin{pmatrix} 0 & -1 \\ -1 & 0 \end{pmatrix}$.

(i) On the grid above, draw the image of triangle A after this transformation. [2]

(ii) Describe fully this transformation. [2]

(b) Find the 2 by 2 matrix representing the transformation which maps triangle A onto triangle B .

[2]