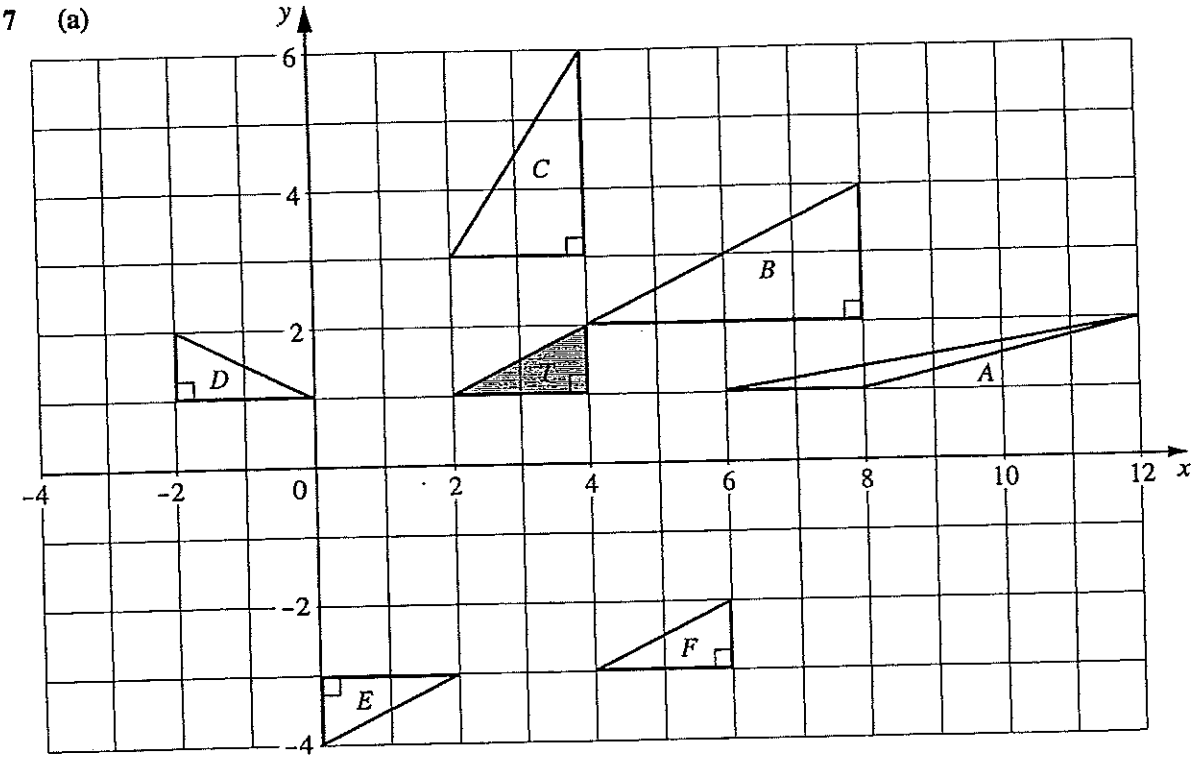
IGCSE Transformations – 4

Oct 03 Paper 4

7 (a)



Use one of the letters A, B, C, D, E or F to answer the following questions.

(i) Which triangle is T mapped onto by a **translation**? Write down the translation vector. [2]

(ii) Which triangle is T mapped onto by a **reflection**? Write down the equation of the mirror line. [2]

(iii) Which triangle is T mapped onto by a **rotation**? Write down the coordinates of the centre of rotation. [2]

(iv) Which triangle is T mapped onto by a **stretch** with the x-axis invariant? Write down the scale factor of the stretch. [2]

(v) $\mathbf{M} = \begin{pmatrix} 1 & 4 \\ 0 & 1 \end{pmatrix}$. Which triangle is T mapped onto by $\mathbf{M}$?

Write down the name of this transformation. [2]

(b) $\mathbf{P} = \begin{pmatrix} 1 & 3 \\ 5 & 7 \end{pmatrix}$, $\mathbf{Q} = (-1 \quad -2)$, $\mathbf{R} = (1 \quad 2 \quad 3)$, $\mathbf{S} = \begin{pmatrix} -1 \\ 2 \\ 3 \end{pmatrix}$.

Only some of the following matrix operations are possible with matrices **P**, **Q**, **R** and **S** above.

PQ, **QP**, **P + Q**, **PR**, **RS**

Write down and calculate each matrix operation that is possible. [6]