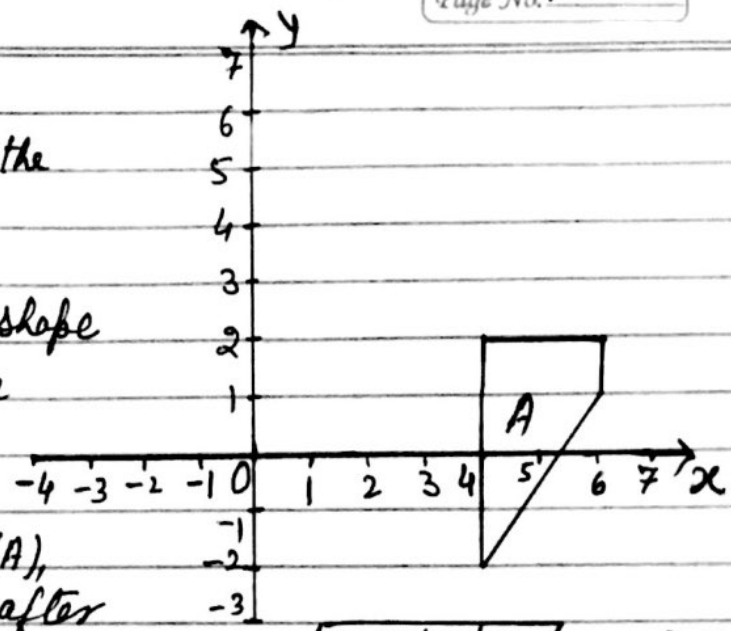


IG - Maths  
0580

Transformation - Exercise (Paper - 2)

Q1,  $T(X)$  is the image of the shape X after translation by the vector  $\begin{pmatrix} -1 \\ 3 \end{pmatrix}$

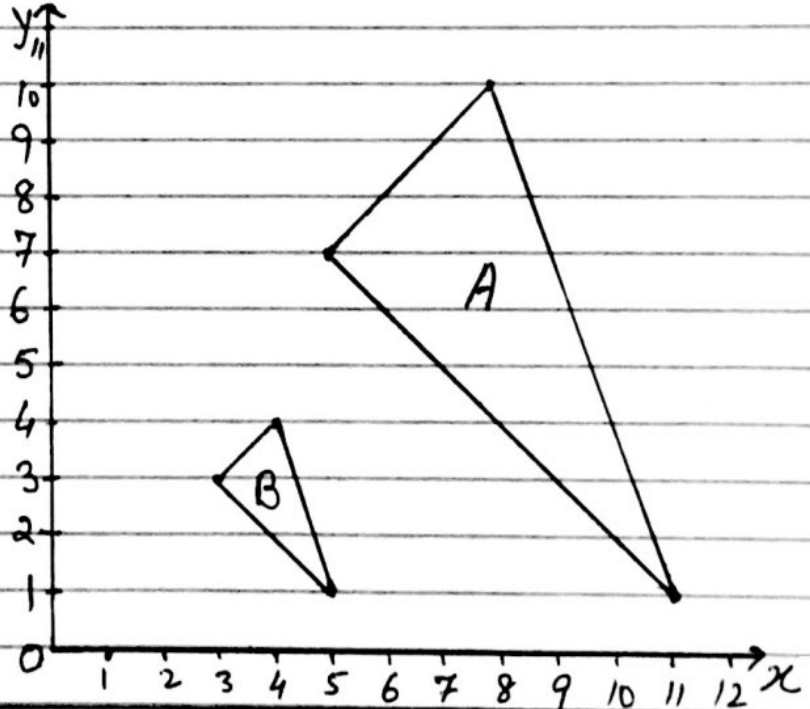
$M(Y)$  is the image of the shape Y after reflection in the line  $x = 2$



On the grid, draw  $MT(A)$ , the image of shape A after the transformation  $MT$ .

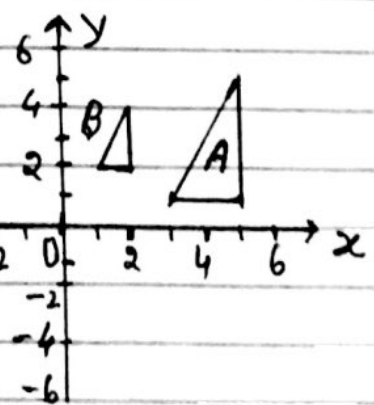
M-17/22/Q11/ --- [3]

Q2 describe fully the single transformation that maps triangle A onto triangle B. --- [3]



W-17/21/Q16

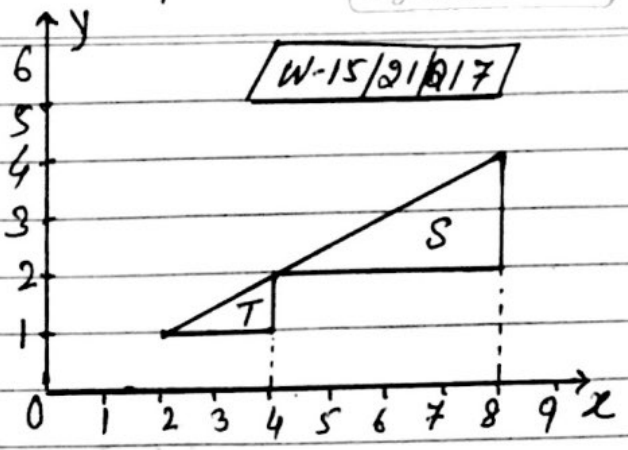
Q3 (a) describe fully the single transformation that maps triangle A onto triangle B. --- [3]



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

W-16/22/Q18/

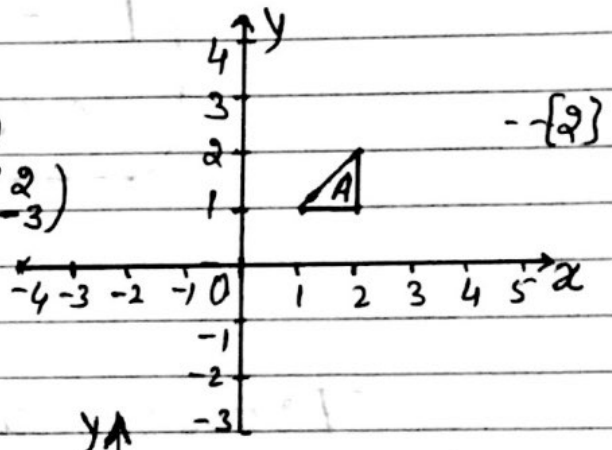
Q4 (a) Describe fully the single transformation that maps triangle S onto triangle T. --- [3]



W-15/21/Q17

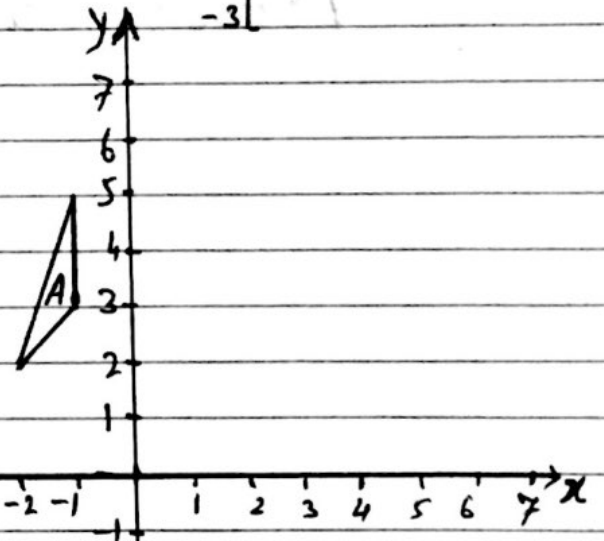
(b) Find the matrix which represents the transformation that maps triangle S onto triangle T. --- [2]

Q5 Draw the image of shape A after a translation by vector  $\begin{pmatrix} 2 \\ -3 \end{pmatrix}$



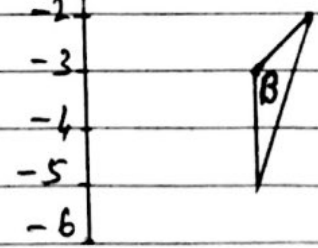
W-15/21/Q3

Q6 (a) Draw the image of triangle A after a translation by the vector  $\begin{pmatrix} 3 \\ -4 \end{pmatrix}$  --- [2]



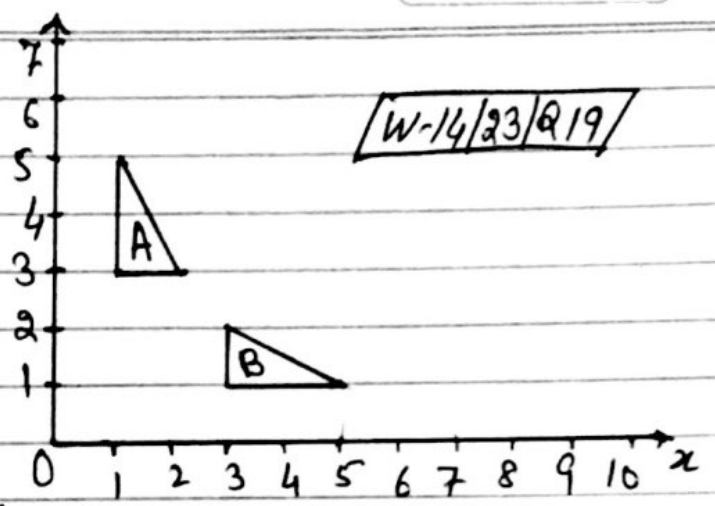
(b) Describe fully the single transformation which maps triangle A onto triangle B. --- [3]

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



S-14/23/Q22

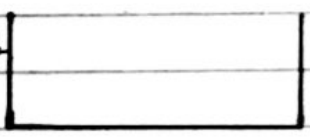
Q7 (a)  $N = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$   
Describe fully the single transformation represented by  $N$ . ---[3]



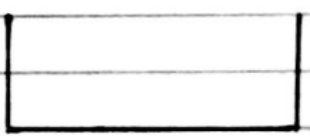
W-14/23/Q19/

(b) Find the matrix which represents the single transformation that maps triangle A onto triangle B. ---[2]

Q8 (a) Add one line to the diagram so that it has two lines of symmetry. ---[1]



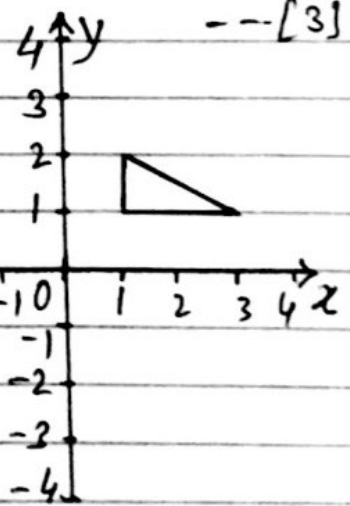
(b) Add two lines to the diagram so that it has rotational symmetry of order 2. ---[1]



W-13/22/Q5

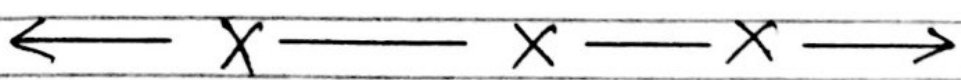
Q9  $(p, q)$  is the image of the point  $(x, y)$  under this combined transformation.  $\begin{pmatrix} p \\ q \end{pmatrix} = \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} + \begin{pmatrix} 3 \\ 2 \end{pmatrix}$

(a) Draw the image of the triangle under the combined transformation. ---[3]



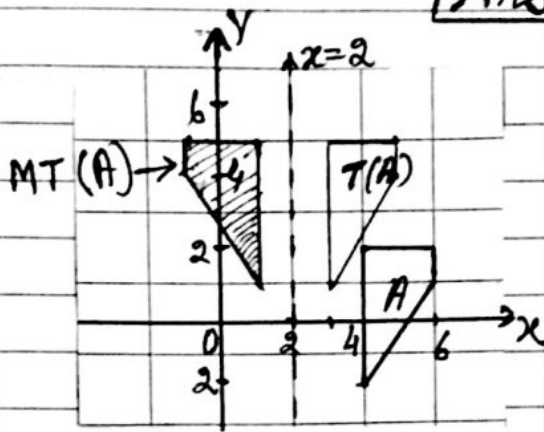
(b) Describe fully the single transformation represented by  $\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$  ---[2]

W-13/23/Q17/

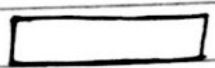


Answers

Q1

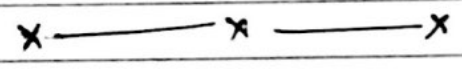


Q8(a)



Q9(a) Triangle at (0,3), (2,3) and (2,4).

(b) Reflection in y-axis.



Q2. Enlargement,  
with centre at (2,1) and  
scale factor of enlargement =  $\frac{1}{3}$

Q3(a) Enlargement, with centre (-1,3)  
scale factor  $\frac{1}{2}$ .  
(b) Triangle at (3,-1), (5,-1), (5,-5)  
reflection in x-axis.

Q4(a) Enlargement - scale factor  $\frac{1}{2}$   
centre - origin.  
(b)  $\begin{pmatrix} \frac{1}{2} & 0 \\ 0 & \frac{1}{2} \end{pmatrix}$

Q5. Triangle (3,-2), (4,-2), (4,-1)

Q6(a) Triangle at (2,-1), (2,1), (1,-2).  
(b) Rotation, centre (1,0),  $180^\circ$   
(c) Triangle at (2,3), (4,2), (2,5).

Q7(a) Rotation,  $90^\circ$  Clockwise,  
about origin.  
(b)  $\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$