Q.n 8

Object - A(4,9) B(4,2) C(12,2)

Image A'(-3,7)

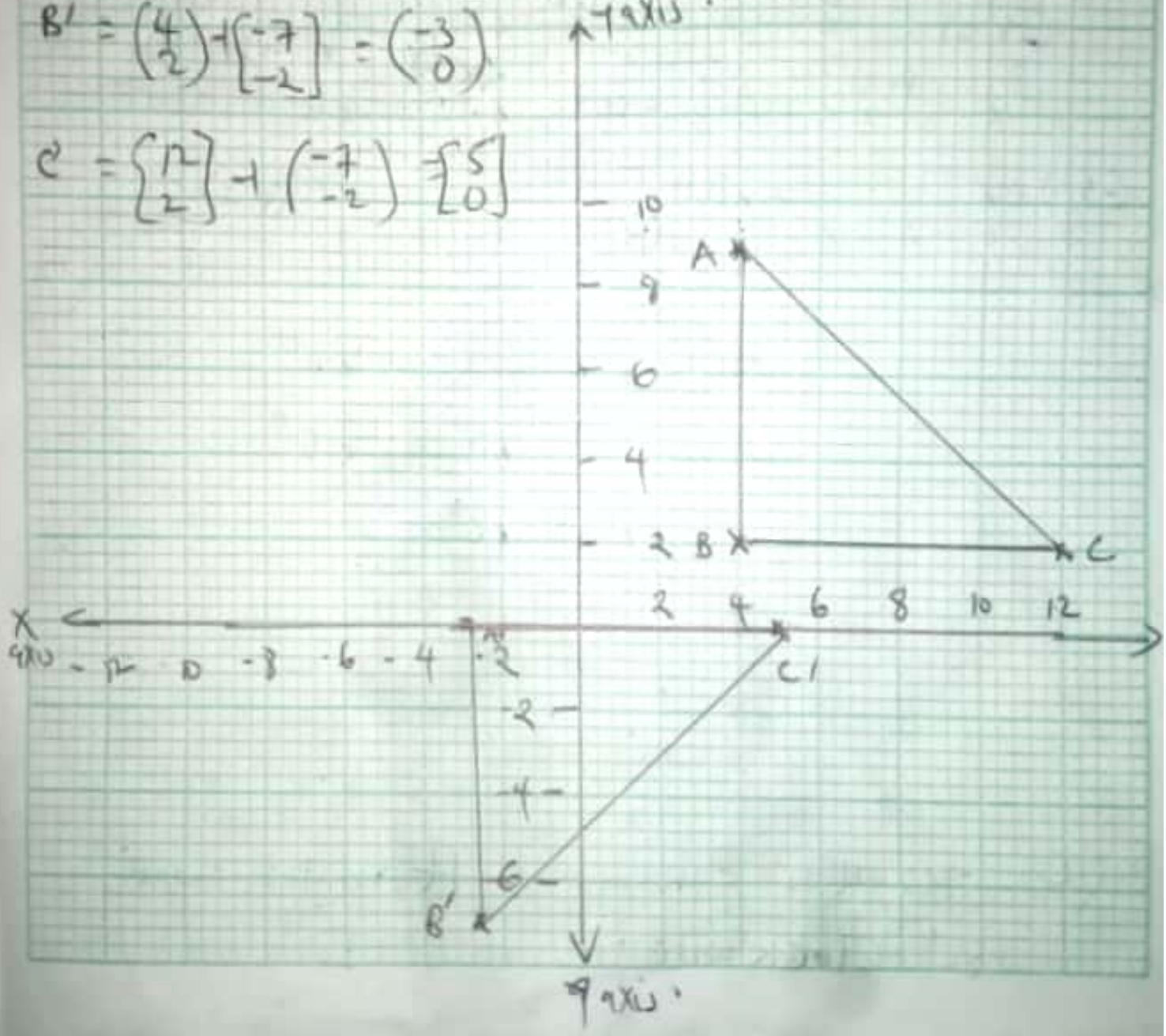
Object + translation = Image

Translation = Image + object

$\begin{pmatrix}-3\\7\end{pmatrix} + \begin{pmatrix}4\\9\end{pmatrix} = \begin{pmatrix}-7\\-2\end{pmatrix}$

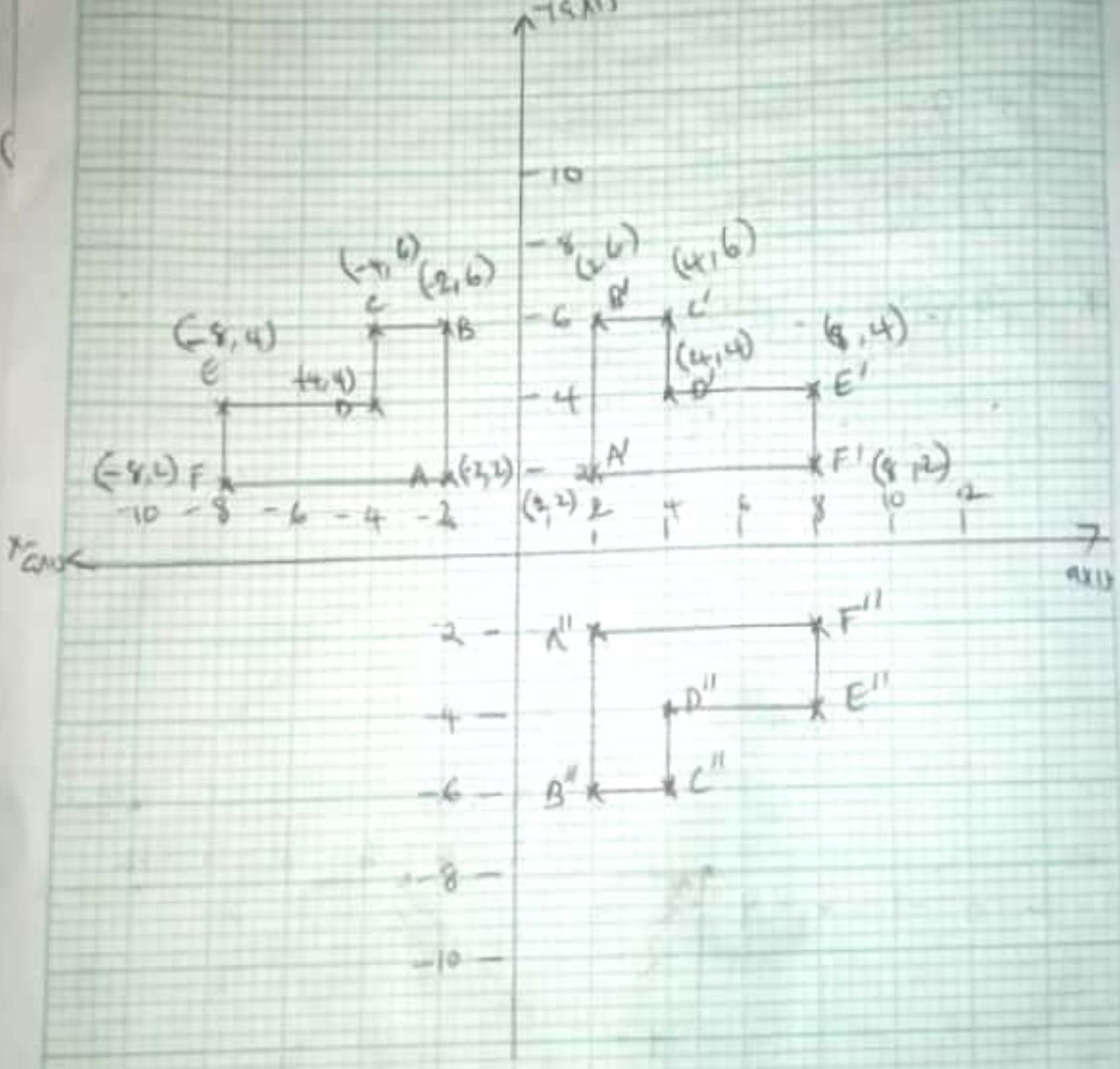
$B' = \begin{pmatrix}4\\2\end{pmatrix} + \begin{bmatrix}-7\\-2\end{bmatrix} = \begin{pmatrix}-3\\0\end{pmatrix}$

$C' = \begin{bmatrix}12\\2\end{bmatrix} + \begin{pmatrix}-7\\-2\end{pmatrix} = \begin{bmatrix}5\\0\end{bmatrix}$



Qn 9 A(2,5) B(2,2) C(7,2) D(7,6)

(a) Reflect the shape over y-axis



(c) Yes it is a rotation; it rotates about 180° Clockwise.

90° = (5, -9) ; 180° (-9, -5) ; 270° = (-5, 9)

360° = (9 5).

(d) A(5, -2) B(2, -2) C(2, 7) D(5, -7).

A'(-9, 4).

Solu.

Object + Translation = Image.

Translation = Image - object.

$$T = \begin{pmatrix} -9 \\ 4 \end{pmatrix} + \begin{pmatrix} 5 \\ -2 \end{pmatrix} = \begin{bmatrix} -4 \\ 2 \end{bmatrix}$$

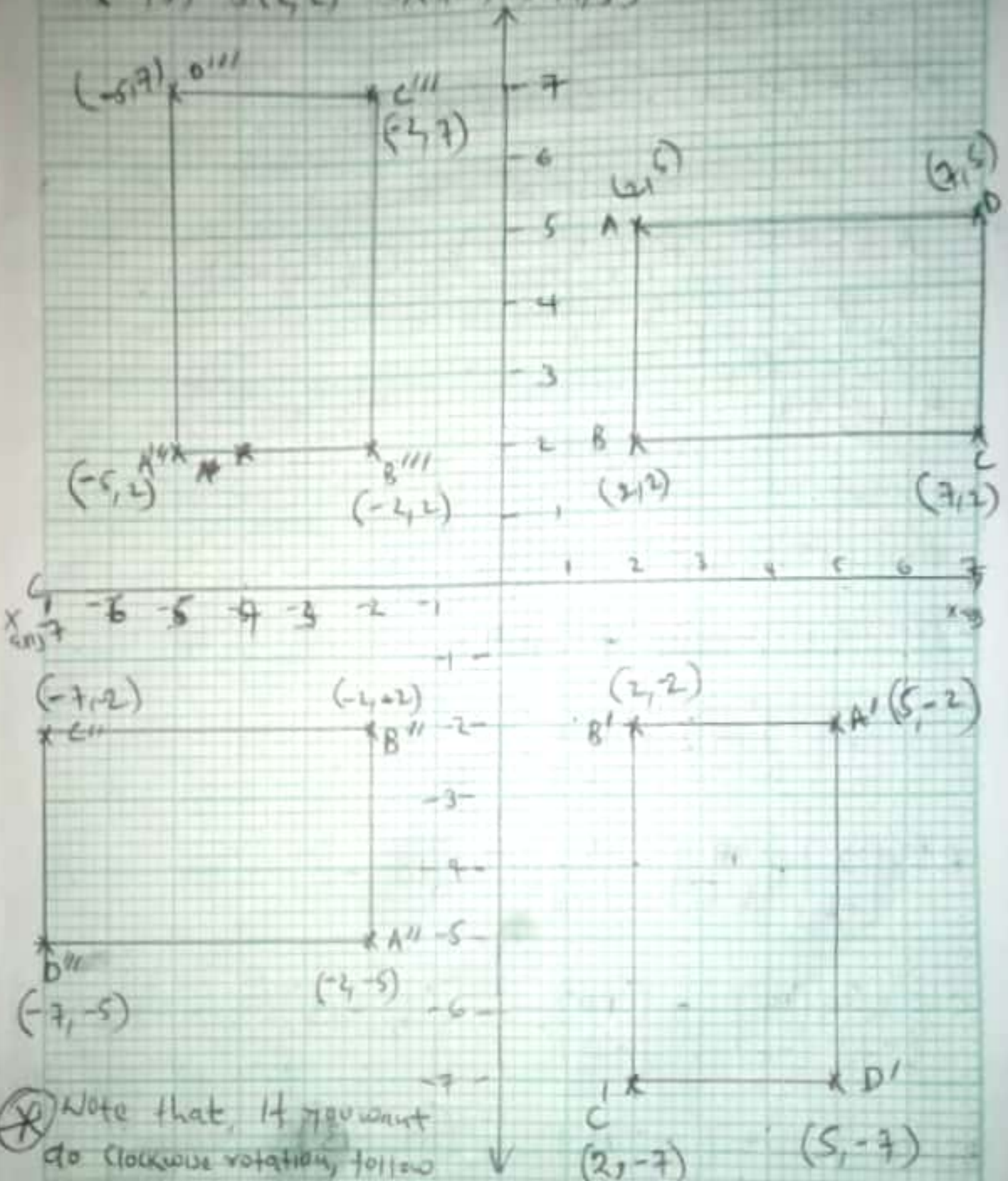
$$B' \begin{bmatrix} 2 \\ -2 \end{bmatrix} + \begin{bmatrix} -4 \\ 2 \end{bmatrix} = \begin{bmatrix} -2 \\ 0 \end{bmatrix} = B'(-2, 0).$$

$$(c) \begin{pmatrix} 2 \\ -7 \end{pmatrix} + \begin{bmatrix} -4 \\ 2 \end{bmatrix} = \begin{bmatrix} -2 \\ -5 \end{bmatrix} = C'(-2, -5).$$

$$D \begin{bmatrix} 5 \\ -7 \end{bmatrix} + \begin{bmatrix} -4 \\ 2 \end{bmatrix} = \begin{pmatrix} 1 \\ -5 \end{pmatrix} = D'(1, -5)$$

Qn 10

A(2,5) B(2,2) C(7,2) D(7,5).



(*) Note that, if you want to do clockwise rotation, follow the formulas in the next

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Q no 11

A (-2, -2) B(-1, 2) C, (3, 1)

(A) Enlargement by factor $(5/2)$

$$A\begin{bmatrix}-2\\-2\end{bmatrix}\ 5/2 = A'\begin{bmatrix}-5\\-5\end{bmatrix} = A'(-5, -5).$$

(B) $$\begin{bmatrix}-1\\2\end{bmatrix}\ 5/2 = B'\begin{pmatrix}-2.5\\5\end{pmatrix} = (-2.5, 5)$$

$$C\begin{pmatrix}3\\1\end{pmatrix}\ 5/2 = C'\begin{pmatrix}5\\2.5\end{pmatrix} = C'(5, 2.5)$$

(B) Reduce by factor $2/5$

$$A\begin{pmatrix}-2\\-2\end{pmatrix}\ \frac{2}{5} = A'\begin{bmatrix}-0.8\\-0.8\end{bmatrix} = A'(-0.8, -0.8)$$

$$B\begin{bmatrix}-1\\2\end{bmatrix}\ 2/5 = B'\begin{bmatrix}-0.4\\0.8\end{bmatrix} = B(-0.4, 0.8).$$

(C) $$\begin{bmatrix}3\\1\end{bmatrix}\ 2/5 = B'\begin{bmatrix}0.8\\0.4\end{bmatrix} = B = (0.8, 0.4).$$

Qn 12

(i) Yes; Yearbook Photo is a dilation of the original Photo ;

(ii) It is an enlargement dilation.

(iii) Enlargement with a scale factor of

5/3 ~~(stretch)~~ which is given by

$$\frac{\text{Image Coordinates}}{\text{Object Coordinates}}.$$