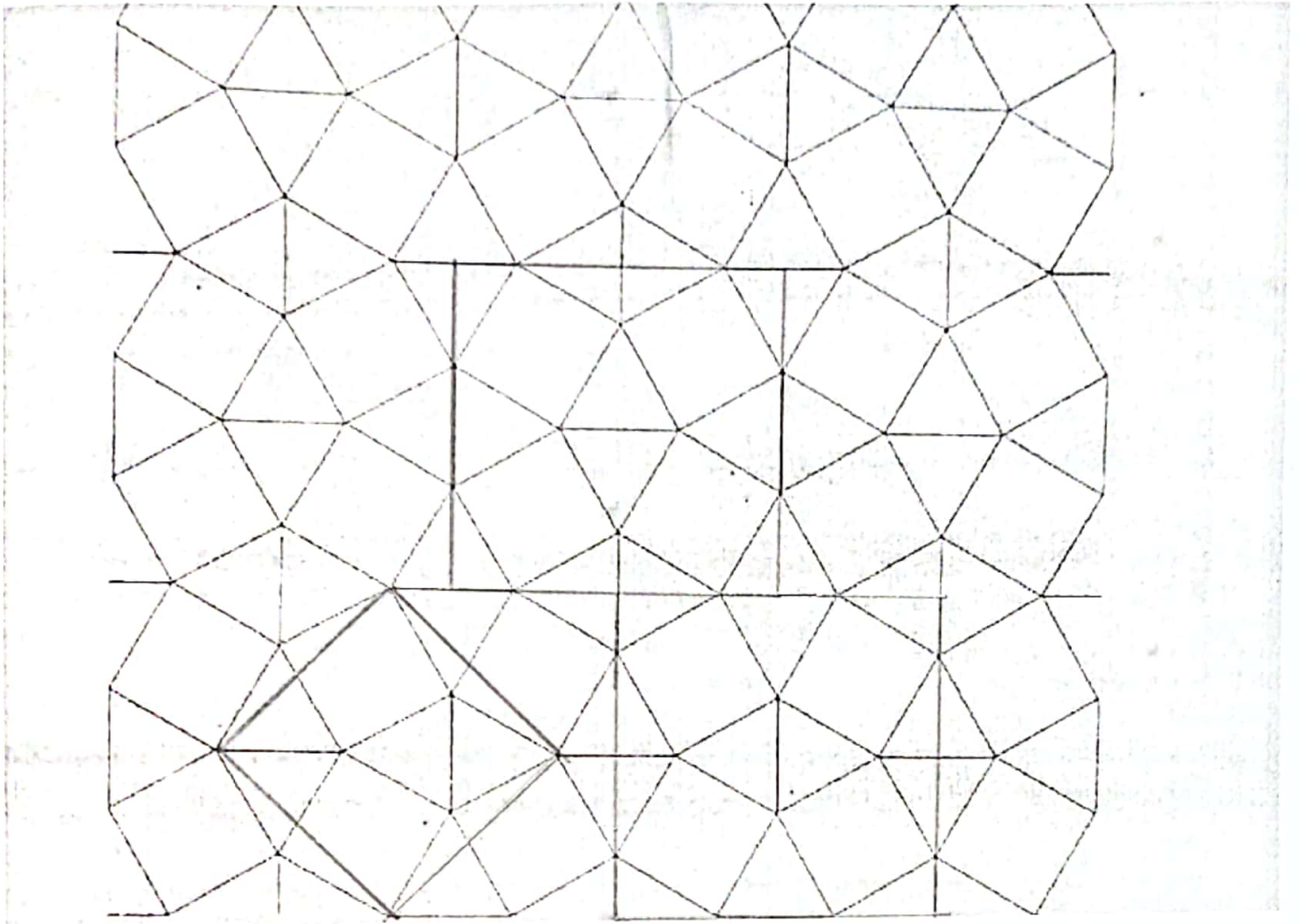
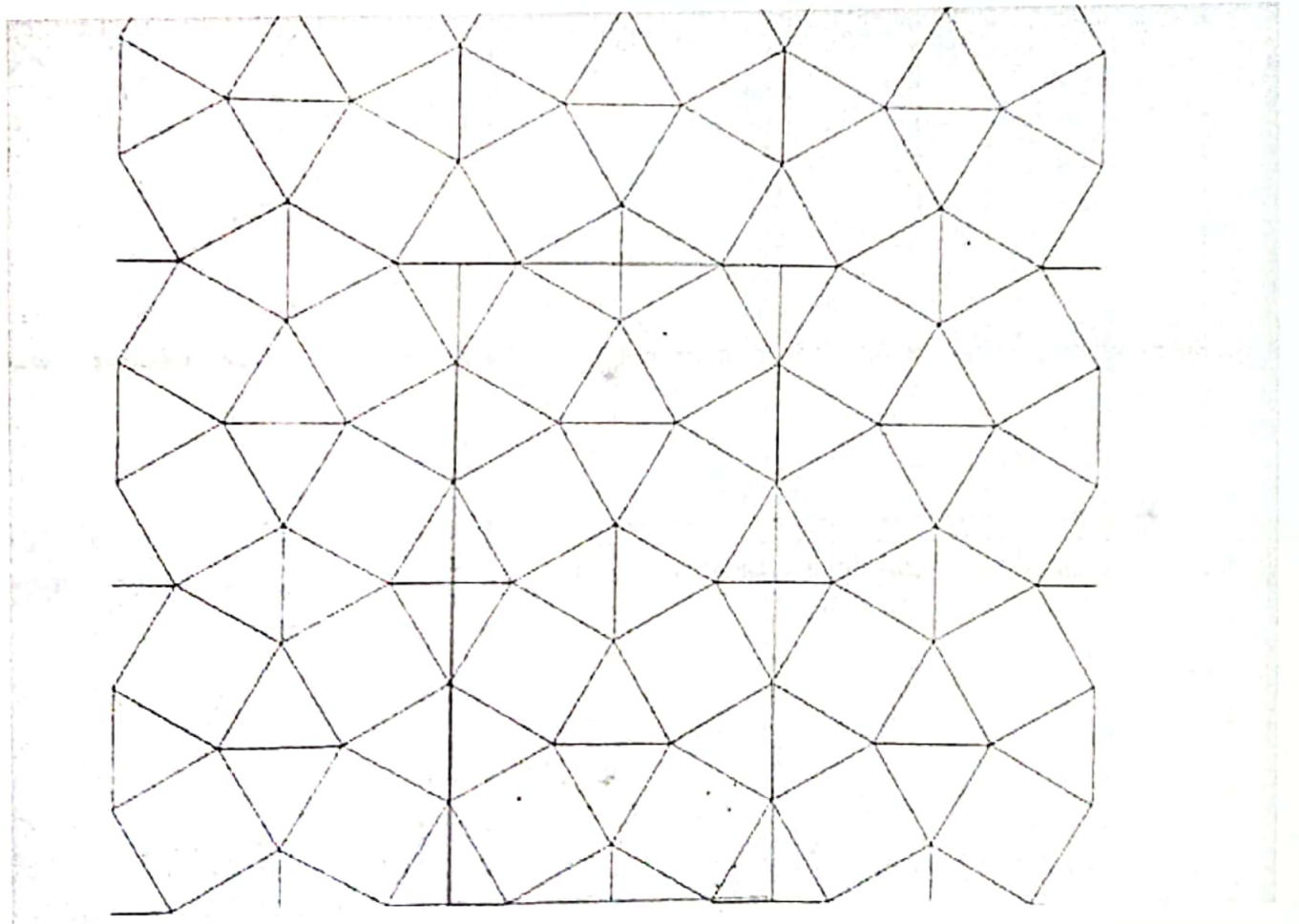
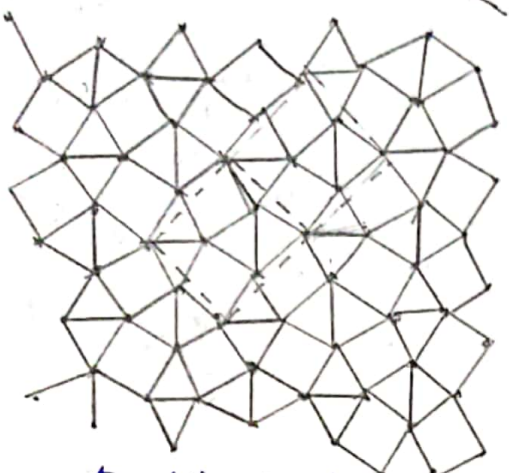


2  
a)



b)



- 21) a) The primitive cell is outlined by dashed lines (The square)
- 
- b) If we join two primitive cell, as in the sketch to form a rectangle, it is a non-primitive cell

c) Let length of a side of ~~sq~~<sup>solid</sup> lines be  $l$

$$a = b = 2l \cos 15^\circ \quad \left| \quad a = b = 2l \cos 30^\circ + l \right.$$

$\gamma = 90^\circ$  (For bigger squares)

$$\text{area} = ab = a^2 \text{ for primitive unit cell}$$

$$= 4l^2 \cos^2 15^\circ \quad \left| \quad (2l \cos 30^\circ + l)^2 \right.$$

For non primitive  $\Rightarrow$  area =  $2ab$

$$= 8l^2 \cos^2 15^\circ$$

- d) effective lattice points in primitive = 1
- which in non primitive = 2

- e) The different shapes that constitute the motif
- = triangle & square = (2)

We can also get a diamond by removing lines

- f) Plane group =  $c2mm$