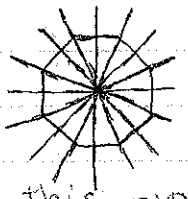
Exercise 9.4

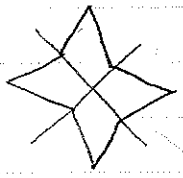
2. a) A regular octagon has 8 rotation symmetries. You would have to rotate it 8 times to get it to coincide with its original outline.

b) The smallest rotation is equal to 45°. I found this by dividing 360° (the total degrees after the full 8 rotations) by 8 (the number of rotation symmetries).

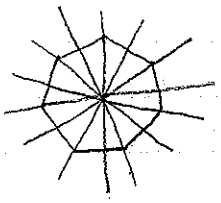
c) A regular octagon has 8 lines of symmetry. I found this by drawing a regular octagon and its lines of symmetry.



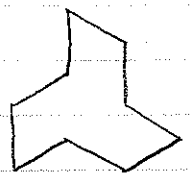
I did this problem by referring to the symmetry worksheet we did in class.

6. a) 

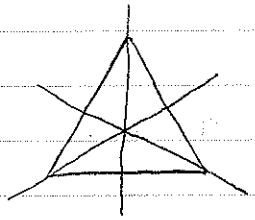
This polygon has 2 lines of symmetry. It has 2 rotation symmetries, so one rotation is 180°.

b) 

This polygon has 7 lines of symmetry. It has 7 rotation symmetries, so each rotation is 51.4°.

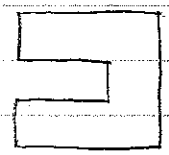
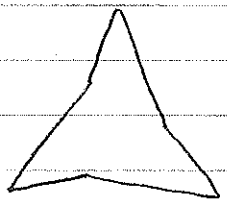
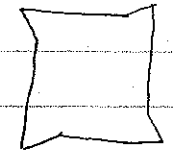
c) 

This polygon has 0 lines of symmetry. It has 3 rotation symmetries, so each rotation is 120°.

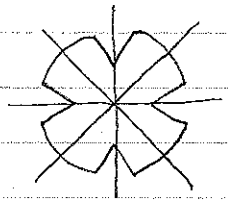
d) 

This polygon has 3 lines of symmetry. It has 3 rotation symmetries, so each rotation is 120°.

I did this problem by drawing the lines of symmetry. Then I found the rotation symmetry by picturing how many times the polygon could rotate inside itself before being back to its original position.

10. a)  b)  c) 

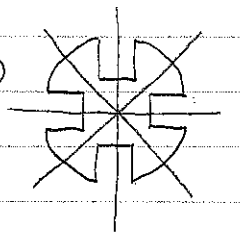
Figures b and c cannot be used with the Mira and reflect the same image on the plexiglas that coincides with the figure image. This is because these images have no lines of symmetry.

14. a) 

This object has 4 lines of symmetry.
It has 4 rotation symmetries.
Each symmetry is 90°

b) 

This object has 0 lines of symmetry.
It has 3 rotation symmetries.
Each rotation is 120°.

c) 

This object has 4 lines of symmetry.
It has 4 rotation symmetries.
Each rotation is 90°.

d) 

This object 0 lines of symmetry.
It has 2 rotation symmetries.
Each rotation is 180°.

I did this problem by drawing the lines of symmetry. Then I found the rotation symmetries. I found the measure of each rotation by dividing the total number of rotation symmetries into 360°.