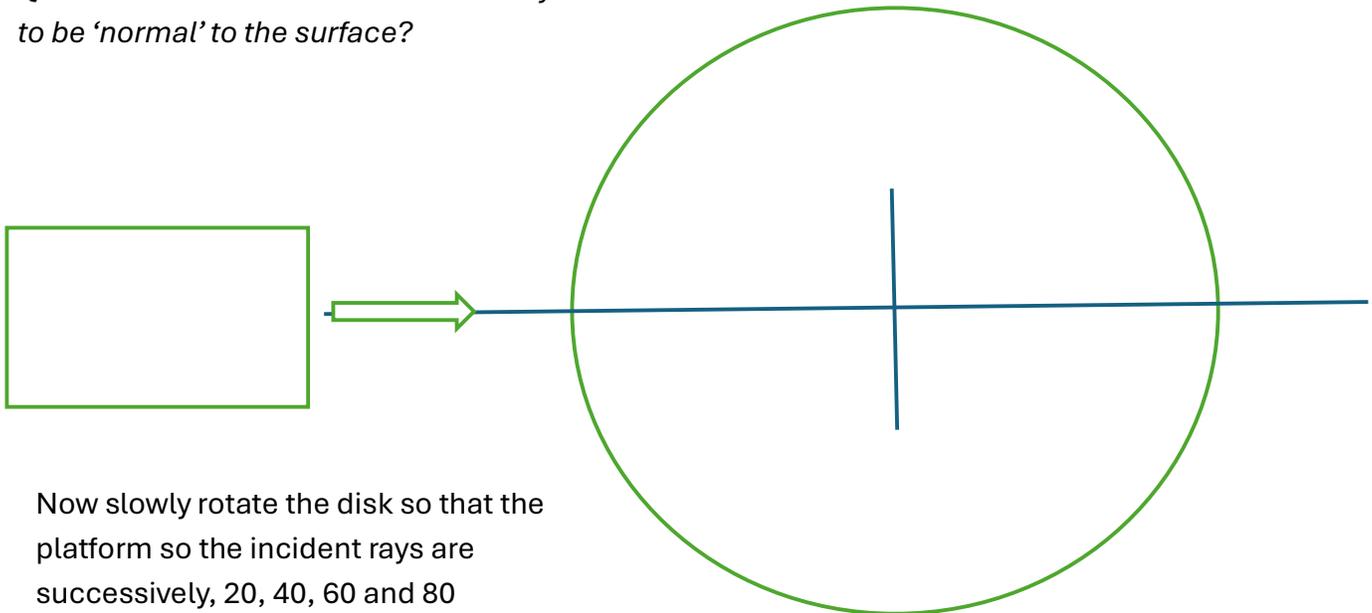


## Optics lab: Refraction.

Name \_\_\_\_\_

Use the space below to trace out the shape (a semi-circle) onto your paper placing the flat face on to the line with the curved side facing to the right. (this is where the light source is located). Note: Clark will demonstrate this. Set up the light/lens combination so that the ray of light is sitting right on top of the "Normal Lines" (write in normal on both sides).

*Question: What does it mean for the ray to be 'normal' to the surface?*



Now slowly rotate the disk so that the platform so the incident rays are successively, 20, 40, 60 and 80 degrees (to the Normal!).. and for each, record what the ***angle of refraction*** is.

Ray #	Incident angle	Refracted angle
1	0	
2	20	
3	40	
4	60	
5	80	

Using your compass, transfer each of the incident and refracted rays, to the circle above, labeling each and including the angles.

Now: Following Clark's example, label the Air next the flat side of the lens, and label Lucite inside the lens.

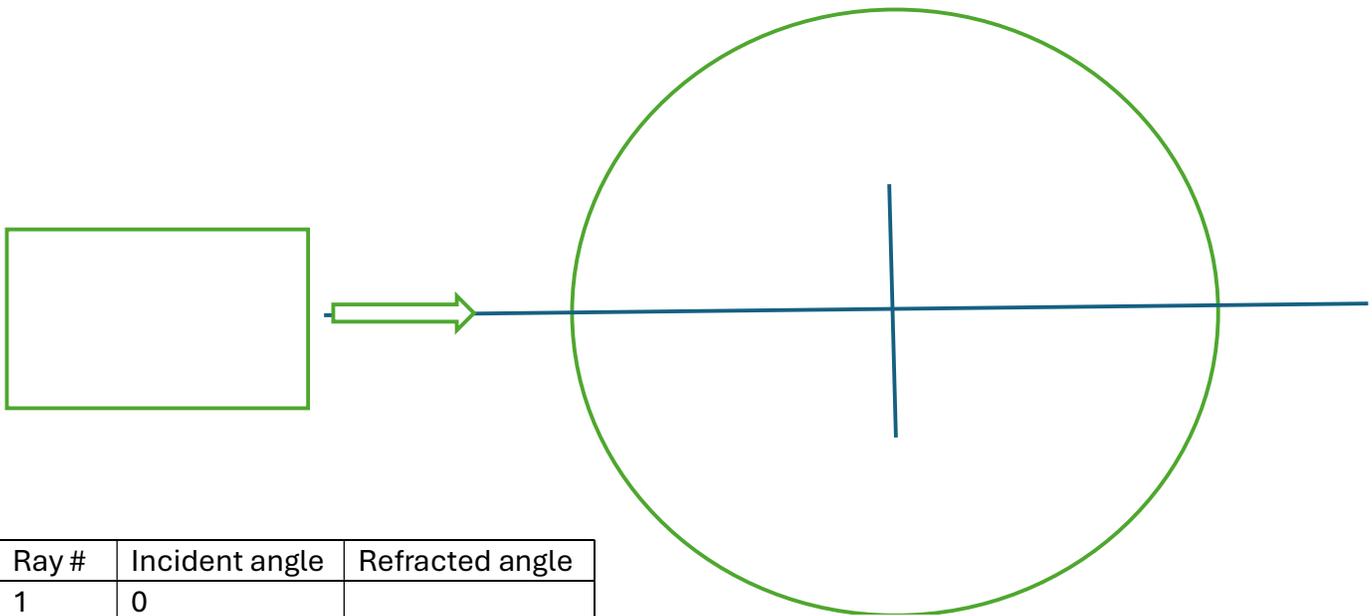
Write down Snell's law here:

Using the space below, solve for N for ray angles measured in rays 2-5

(what is the Index of Refraction, N mean?)

Follow the same procedure here but with the lens facing the OPPOSITE DIRECTION!

Use the space below to trace out the shape (a semi-circle) onto your paper centering it on the line with the curved side facing to the LEFT. (this is where the light source is located).



Ray #	Incident angle	Refracted angle
1	0	
2	20	
3	40	
4	60	
5	80	

How does this sequence of experiments differ from the previous?

What new phenomena do you see?

Using the space below, solve for N for ray angles measured in rays 2-5.

At what angle does the ray no longer 'exit' the lens?