Group # Names: _____

Date: _____

_____

Lenses – II

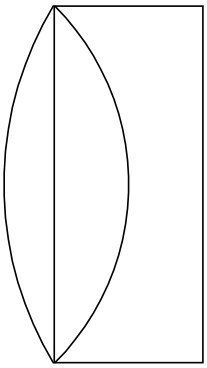
I. Use the ray box to view the convergence of light rays when going through a converging lens. (Use the setting with the maximum number of parallel rays.)

Do the same for the diverging lens.
Do the rays converge?

Draw your observations and determine in both cases the focal points.

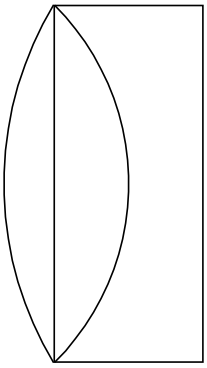
II. Make a convergent "water" lens by pouring water into one (and only one) of the chambers of the plastic piece in your Ray Optics kit. Determine the focal point and using the lensmaker equation, determine the radius of curvature of the curved piece. Indicate on the sketches below which chamber is filled with water.

II.(a)



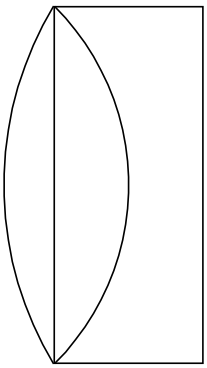
$f_1 =$
$R_1 =$

II.(b)



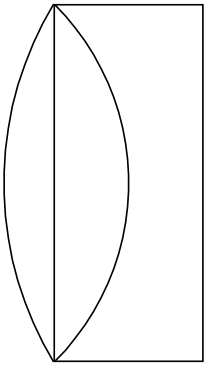
$f_2 =$
$R_2 =$

III. Make a convergent "water" lens by pouring water into two of the chambers of the plastic piece. From the two radii of curvature measured in part I calculate the predicted focal length. Measure the focal length using the parallel rays and compare with the predicted value.



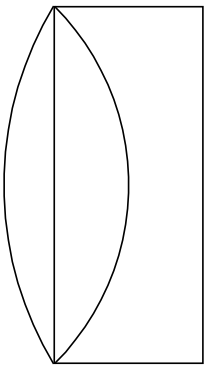
$f_{predicted} =$
$f_{measured} =$

IV. Make now a divergent "water" lens by pouring water into the remaining chamber of the plastic piece. Using the radii of curvature measured in part I calculate the predicted focal length. Measure the focal length using the parallel rays and compare with the predicted value.



$f_{predicted} =$
$f_{measured} =$

V. Fill now the outer two chambers of the plastic box, but not the central one. Because the front and the back surfaces are flat and parallel, the lens effect will have to be from the air chamber...this will be an "air" lens. Will it be converging or diverging? Try it and see. Describe your observations.



Time: 1 h 00 min.