***** Read your protractor to the nearest 1/2 degree!!!!!

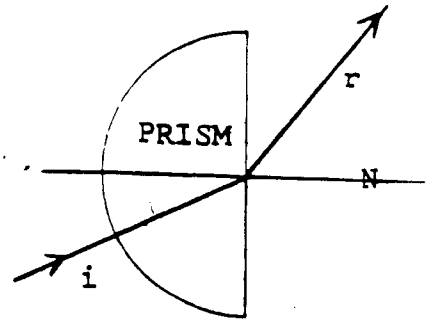
PHYSICS LAB

CRITICAL ANGLE
TOTAL INTERNAL REFLECTION

Purpose: To investigate refraction at the critical angle and total internal reflection.

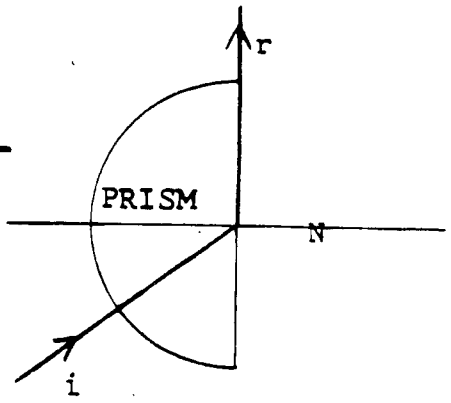
PART I Refraction at less than the critical angle. ($\measuredangle i < \measuredangle i_c$)

__ a) Place the semicircular prism in position on the data sheet. Rotate the entire data sheet so that the incident ray passes from the prism into air across the flat surface as shown here. — - — - — - — - — - →
__ b) Outline the prism.
__ c) Draw and label the incident and refracted rays. Show direction of travel with arrow heads.
__ d) Label and measure $\measuredangle i$, $\measuredangle r$.
__ e) Apply Snell's Law to calculate the index of refraction of the prism.



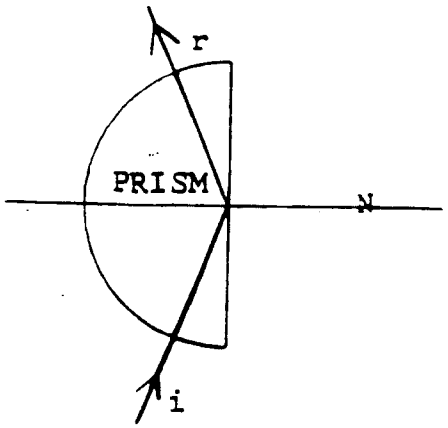
PART II Refraction at the cirtical angle. ($\measuredangle i = \measuredangle i_c$)

__ a) Place the semicircular prism in position on the data sheet. Rotate the entire data sheet until the refracted ray passes along the flat surface of the prism as shown here. — - - — - - — - - — - - →
__ b) Outline the prism.
__ c) Draw and label the incident and refracted rays. Show direction of travel with arrow heads.
__ d) Label and measure $\measuredangle i_c$. ($\measuredangle r = 90^\circ$)
__ e) Apply Snell's Law to calculate the index of refraction of the prism.



PART III Total internal reflection. ($\measuredangle i > \measuredangle i_c$)

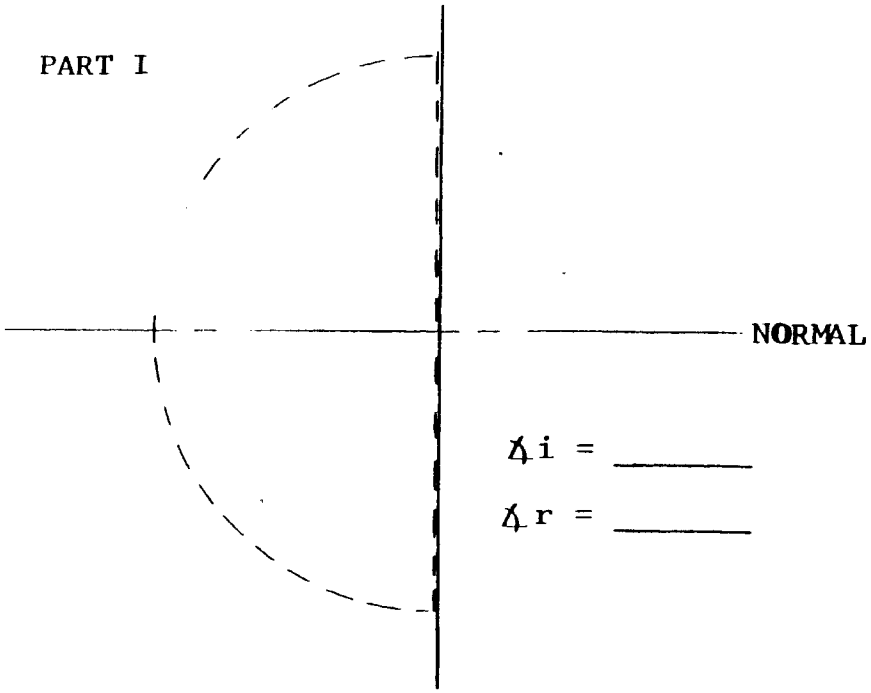
__ a) Place the semicircular prism in position on the data sheet. Rotate the entire data sheet until the incident ray is reflected from the inside flat surface of the prism as shown here. — — — — →
__ b) Outline the prism.
__ c) Draw and label the incident and reflected rays. Show direction of travel with arrow heads.
__ d) Label and measure $\measuredangle i$, $\measuredangle r$.



DATA SHEET

CRITICAL ANGLE, TOTAL INTERNAL REFLECTION

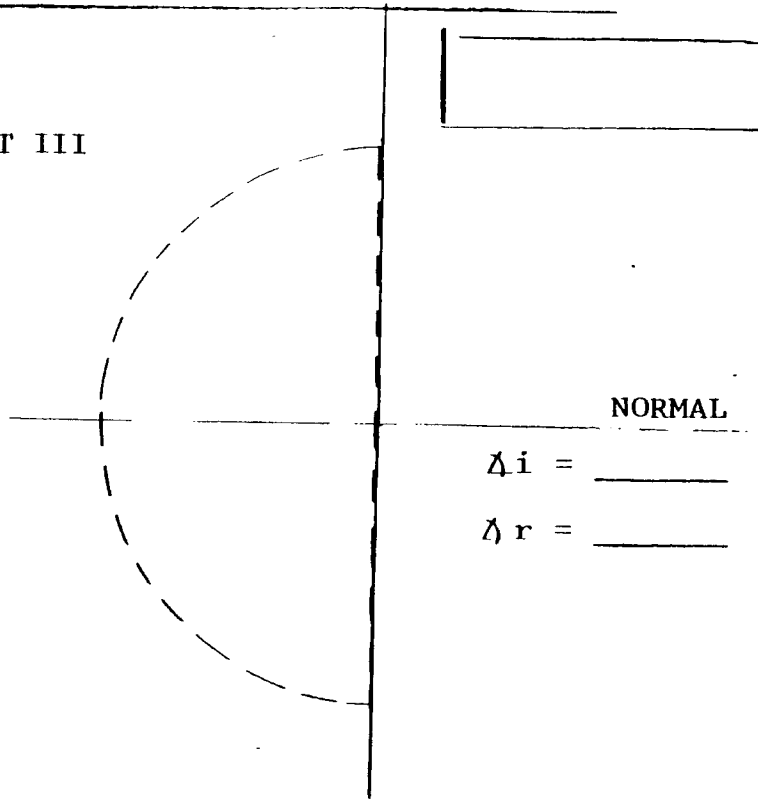
PART I



$\measuredangle i$ = _____

$\measuredangle r$ = _____

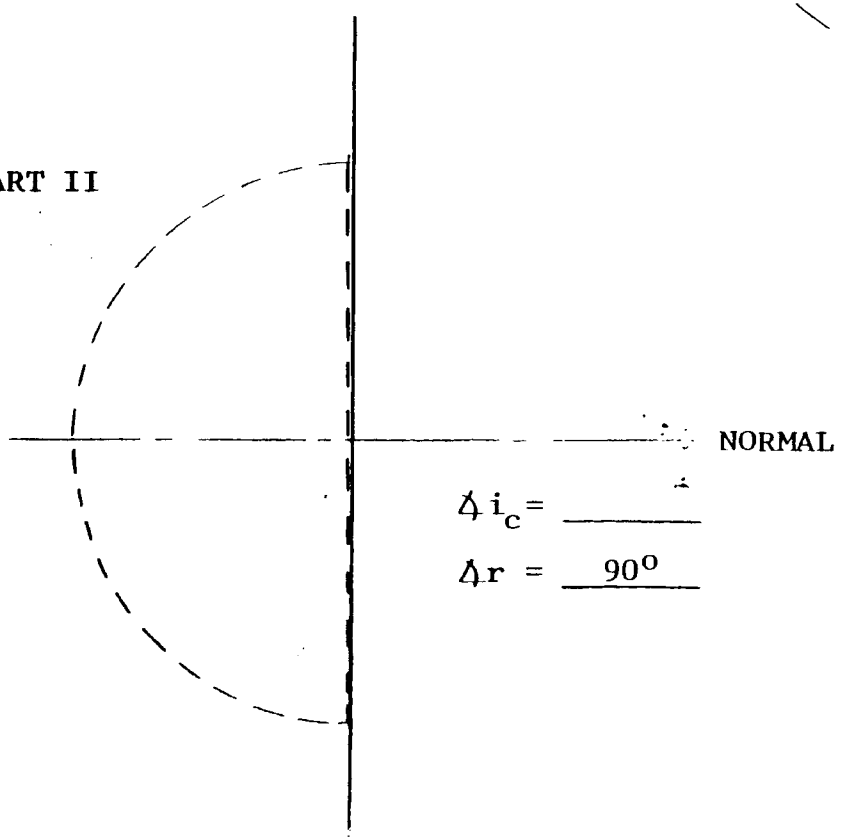
PART III



$\measuredangle i$ = _____

$\measuredangle r$ = _____

PART II



$\measuredangle i_c$ = _____

$\measuredangle r$ = 90°