

SECOND MIDTERM

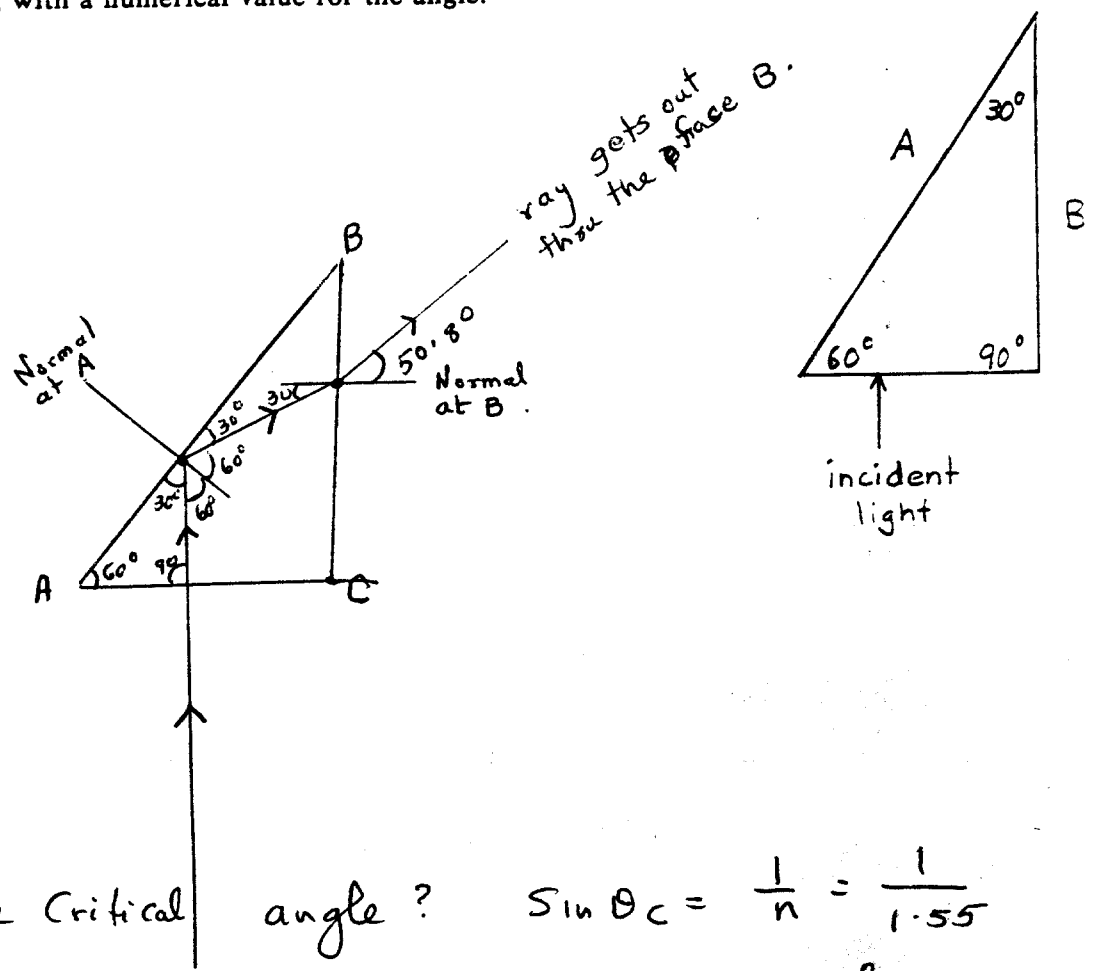
Name (print) P. HARI Name (signed) _____

Discussion Instructor (circle one): Chen Emerson Iguchi Stoops

Discussion Section # _____

SHOW ALL WORK!!!!
REPORT ALL NUMBERS TO THREE SIGNIFICANT FIGURES!
Use the conversion constants and data given on the front page.

Given a 30°-60°-90° prism as shown with an index of 1.55. Light is incident from air perpendicular to the base. Calculate from which face, A or B, the light leaves the prism, and show on a clear drawing its direction, with a numerical value for the angle.



what is the Critical angle? $\sin \theta_c = \frac{1}{n} = \frac{1}{1.55}$
 $\theta_c = 40.17^\circ$

So total Internal reflection, since $\theta_{\text{incident}} = 60^\circ$ is greater than 40.17°

From the geometry angle of Incidence = 30° .

Using Snell's law. $\sin \theta \cdot 1.55 = \sin 30^\circ$
 $\theta = \sin^{-1}(1.55 \cdot \sin 30^\circ) = 50.8^\circ$ at B.