Name_____ #____
Regents Physics

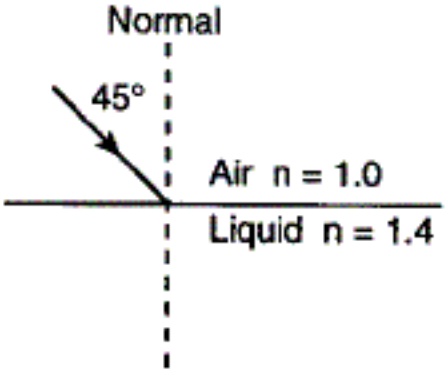
Snell's Law HW

$$n_1 \sin \theta_1 = n_2 \sin \theta_2$$

$$n = \frac{c}{v}$$

1. A ray of monochromatic light (f = 5.09 x 10^{14} Hz) traveling in air is incident on an interface with a liquid (n = 1.4) at an angle of 45.°.

a) Find the angle of refraction _____



b) Draw the refracted ray

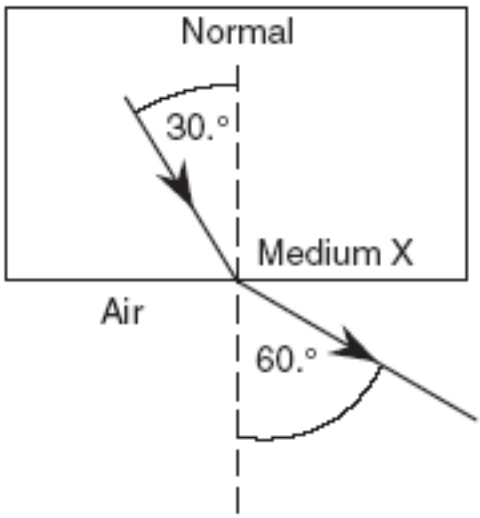
c) Draw the reflected ray.

2. If the angle of incidence in air is 30.°, what is the angle of refraction in crown glass?

Draw the refraction diagram (be sure to include the reflected beam)

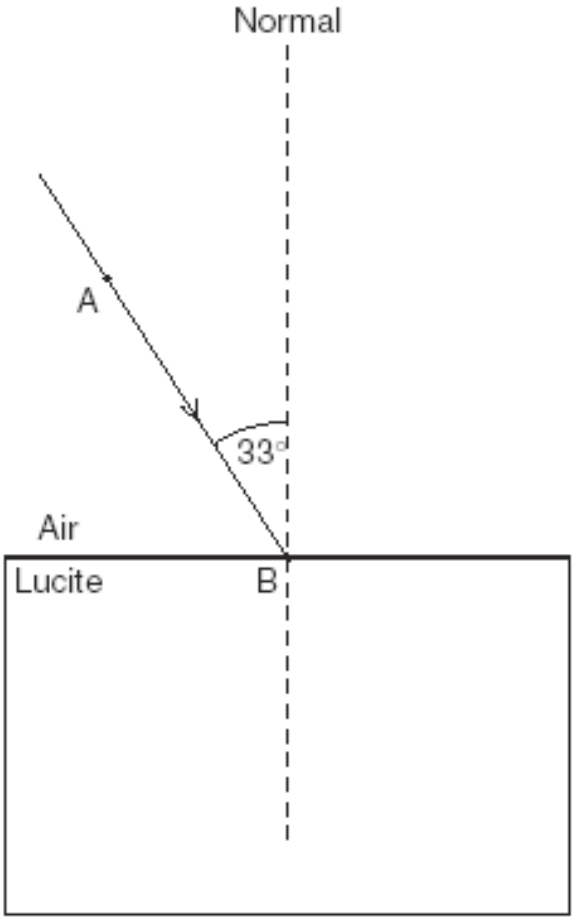
Air
Crown Glass

3. The diagram below shows a ray of light passing from medium X into the air.



What is the absolute index of refraction of medium X?

(Questions 4,5) A monochromatic beam of yellow light, *AB,* is incident upon a Lucite block in air at an angle of 33°. **Find the angle of refraction. Draw the refracted ray**

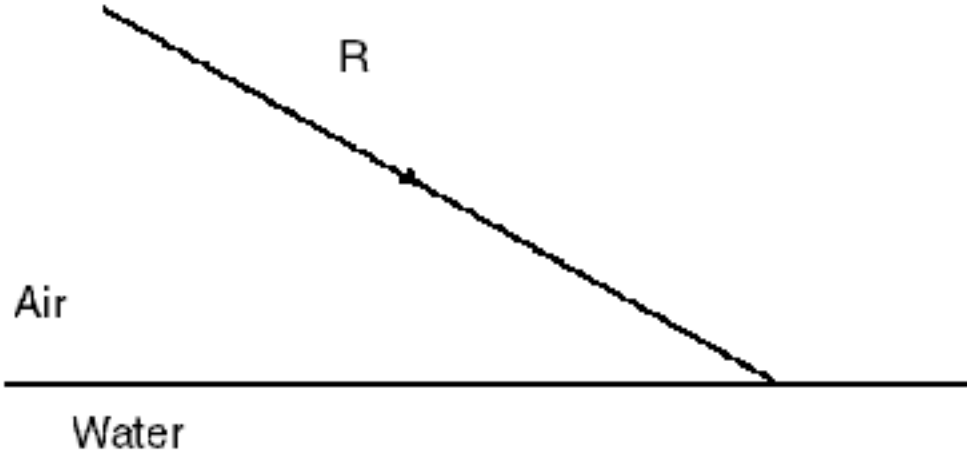


Base your answers to **questions 6 - 8** on the information and diagram below. In the diagram, a light ray, *R,* strikes the boundary of air and water.

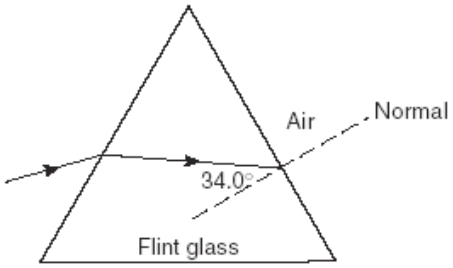
6. Using a protractor, <u>determine the angle of incidence</u>. (hint: Draw the normal first)

7a. Use Snell's Law to find theta 2 (refraction angle)

7b. Using a protractor and straightedge, <u>find and draw the refracted ray</u> on the diagram below



(8 - 10) The diagram below shows a ray of monochromatic light ($f = 5.09 \times 10^{14}$ hertz) passing through a flint glass prism.



8. Calculate the angle of refraction (in degrees) of the light ray as it enters the air from the flint glass prism.

9. Using a protractor and a straightedge, construct the refracted light ray in the air on the diagram

10. What is the speed of the light ray in flint glass? (answer in scientific notation)