**IB Physics**

**FA12.3 - Refraction**

Name

Favorite mode of non-motorized transportation

1. You hear the sound of a hammer striking concrete 1.21 seconds sooner in the concrete than through the air. If the speed of sound through the air is 339 m/s, and the hammer is 724 m away, what is the speed of sound in the concrete? (782 m/s)

**Questions 2-5 are about the light from a 640 nm laser. (640 nm is its wavelength, 1 nm = 10-9 m)**

2. What is the **speed** of the laser light in Lucite? (n = 1.51) (1.99x108 m/s)

3. What is the **wavelength** and **frequency** of the light in Lucite? (n = 1.51) (424 nm, 4.69x1014 Hz)

4. The laser goes from air into the Lucite. It makes the angle shown in the diagram below. Calculate the **refracted** **angle** in the Lucite, **draw** the refracted beam, and label the angle. (32.4o)

Lucite n = 1.51

Air n = 1.00

54o

5. What is the **critical angle** between air and Lucite? In which substance does it occur? (41.5o – in the Lucite)