Physics Problem Set #8

Show your work if you want partial credit.
Due Tuesday, Mar. 30

1. A ray of light in air is approaching the boundary with water at an angle of 52 degrees from vertical. Determine the angle of refraction of the light ray.

2. A ray of light in air is approaching the boundary with a layer of crown glass at an angle of 67.0 degrees from vertical. Determine the angle of refraction of the light ray upon entering the crown glass and upon leaving the crown glass.

3. A ray of light in air approaches a triangular piece of crown glass at an angle of 0.00 degrees (the triangle is an isosceles right triangle and the ray is approaching one of the legs). Perform the necessary calculations in order to trace the path of the light ray as it enters and exits the crown glass.

4. A ray of light is traveling through air (n = 1.00) towards a lucite block (n = 1.40) in the shape of a 30-60-90 triangle. The ray approaches the hypotenuse of the block at an angle of 90 degrees from the hypotenuse. Trace the path of the light ray through the lucite block - at what angle does the ray exit the block?

5. What are the 2 requirements for Total Internal Reflection to occur?

6. What is the critical angle for the crown glass-air boundary?