1. How far from a concave mirror (radius 27.0 cm) must an object be placed if its image is to be at infinity?

2. The speed of light in a certain substance is 85 percent of its value in water. What is the index of refraction of this substance?

3. A flashlight beam strikes the surface of a pane of glass (n=1.5) at a $63°$ angle to the normal. What is its angle of refraction?

4. A sharp image is located 78.0 mm behind a 65.0 mm focal-length converging lens. Find the object distance.

5. Sherlock Holmes is using a 10-cm-focal-length magnifying glass. To obtain maximum magnification, where must the object be placed (assume a normal eye), and what will be the magnification?

6. Reading glasses of what power are needed for a person whose near point is 120 cm, so that he can read a computer screen at 50 cm? Assume a lens-eye distance of 1.8 cm.

7. Sam purchases + 3.2 diopter eyeglasses which correct his faulty vision to put his near point at 25 cm (Assume he wears the lenses 2.0 cm from his eyes.) Calculate the focal length of Sam's glasses.

8) A spaceship passes you at a speed of 0.85c. You measure its length to be 48.2 m. How long would it be when at rest?

9) A certain star is 75 light-years away. How long would it take a spacecraft traveling 0.95c to reach that star from Earth, as measured by observers
a) on Earth
b) on the spacecraft

10) What is the percentage increase in the mass of a car traveling 110 km/h as compared to at rest?

11) What is the mass of a proton traveling at $v = 0.9c$?