Extra Practice Problems for Chapter 12

1. What is the focal length of a spherical mirror whose radius is 16.0 cm?

2. An object is placed 2.0 cm from a concave spherical mirror whose radius is 6.0 cm. What kind of image (real or virtual, upright or inverted, magnified or reduced) is formed?

3. An object is placed 4.0 cm from a convex spherical mirror whose radius is 6.0 cm. What kind of image (real or virtual, upright or inverted, magnified or reduced) is formed?

4. In a specific transparent substance, light travels half as quickly as it does in a vacuum. What is the substance's index of refraction?

5. Light is traveling through flint glass (n=1.66) and hits air at an angle of 22.5° relative to the perpendicular. What is its angle relative to the perpendicular after it is refracted?

6. Light traveling in plate glass (n=1.3) encounters a new substance. If the angle relative to the perpendicular in the glass is 36°, and the angle relative to the perpendicular in the new substance is 42°, what is the new index of refraction?

7. Light travels through a plastic (n=1.51) and hits air an angle of 61.5° relative to the perpendicular. What is its angle relative to the perpendicular after it is refracted?

8. For the problem above, what angle relative to the perpendicular must it have so that it can refract at an angle of 1.0° relative to that same perpendicular?

9. An object is placed 4.0 cm from a converging lens whose focal length is 6.0 cm. What kind of image (real or virtual, upright or inverted, magnified or reduced) is formed?

10. An object is placed 1.5 cm from a diverging lens whose focal length is 3.0 cm. What kind of image (real or virtual, upright or inverted, magnified or reduced) is formed?