Name_____

Phys 2020 (NSCC), Spring 2008
Problem Set #10

1. A certain nearsighted person cannot see clearly objects beyond 50 cm from the eye. Determine the focal length and power of the glasses which will enable him to see very distant objects clearly. (This does have a simple answer!)

2. A certain farsighted person cannot see clearly objects closer to the eye than 60 cm. Determine the focal length and power of the spectacle lenses which will enable her to read a book at a distance of 25 cm.

3. Red light of wavelength 643.8 nm from a point source passes through two parallel and narrow slits which are 1.0 mm apart. Determine the distance between the central bright fringe and the third dark interference fringe formed on a screen parallel to the plane of the slits 1.0 m away.

4. A pair of narrow parallel slits separated by 0.200 mm is illuminated by coherent light. The interference pattern is observed on a screen 1.60 m from the plane of the parallel slits. It is found that the second bright fringe is 2.30 mm away from the central maximum. What is the wavelength of the light?

5. Helium-neon laser light ($\lambda = 632.8$ nm) is sent through a 0.300-mm-wide single slit. What is the width of the central maximum on a screen 1.00 m from the slit?

6. A single slit of width 0.14 mm is illuminated by monochromatic light and diffraction bands are observed on a screen 2.00 m away. If the second dark band is 16 mm from the central bright band, what is the wavelength of the light?

7. Light of wavelength 490 nm is incident on a narrow slit. The diffraction pattern is viewed on a screen 3.20 m from the slit. The distance on the screen between the central maximum and the third minimum is 2.5 cm. What is the width of the slit?

8. What is the energy of a photon of light of wavelength 0.70 μm?