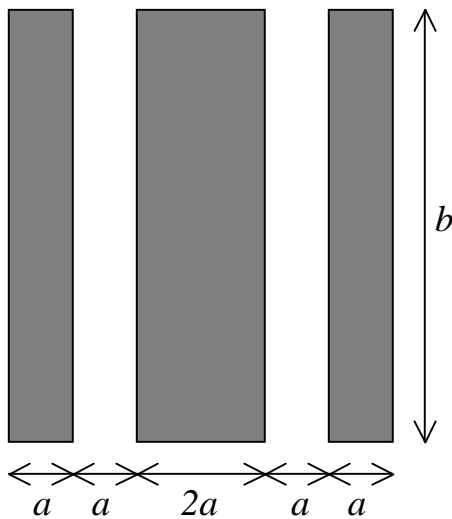


1. Saleh and Teich Exercise 4.2-1, page 123. Do the comparison for points in the output plane that lie on the optic axis. (In other words, you can take $a = 0$ in the discussion on page 123.)

2. Suppose a laser produces a light beam 2 mm in diameter, with a wavelength of 633 nm. Estimate how large a spot would be produced if the laser were pointed at the moon, a distance of 376×10^3 km away. Neglect any effects of the earth's atmosphere.

3. Calculate the Fraunhofer diffraction pattern produced by a set of three rectangular slits with dimensions as shown.



4. Calculate the Fraunhofer diffraction pattern produced when a rectangular slit of width D_x and height D_y is illuminated by a plane wave making a small angle θ with respect to the plane of the slit, as shown. Show that the pattern itself propagates at the same angle θ .

