

1. In an interference pattern produced by light passing through two slits, the distance between the central bright line and the fifth bright line is 14.4 cm, as measured on a screen 130 cm from the slits. The distance between the slits is 0.002 cm.

(a) Determine the wavelength of the light in cm.

(b) Express the wavelength in nanometers.

(c) Approximately what color is the light?

2. Two parallel slits 0.06 mm apart are illuminated by light of wavelength  $5.46 \times 10^{-7}$  m. The resulting interference pattern is projected on a screen 80 cm from the slits.

(a) How far (in meters) from the middle of the central bright line is the third bright line?

(b) Express the wavelength used in part (a) in nanometers.

(c) If the wavelength used in part (a) is in the green/yellow portion of the visible spectrum, what effect would using light in the orange/yellow portion of the spectrum have on the answer in part (a)? (Qualitative answer; no calculation required.)

3. A two-slit interference pattern formed by light whose wavelength is  $6.4 \times 10^{-5}$  cm is measured on a screen 250 cm from the slits. The distance between the central bright line and the fourth bright line is 17.8 cm.

(a) What is the distance between the slits?

(b) Express the wavelength used in part (a) in nanometers.

(c) Approximately what color is the light?