

Section

16-2

HOLT PHYSICS

Concept Review*Diffraction*

1. A diffraction grating has 8.00×10^3 lines per centimeter.
 - a. What is the slit spacing in this grating?

 - b. Is the grating appropriate for observing the diffraction of visible light (400 to 700 nm)? For better results, would you choose a grating with wider spacing? with more lines per centimeter? Explain.

2. The spacing in a diffraction grating is 8.00×10^{-6} m.
 - a. How many lines per centimeter are there?

 - b. Find the first, second, and third angles at which one would observe maxima when light of 620 nm wavelength is diffracted.

3. The second-order maxima are observed at 8.12° with the grating above in a diffraction experiment. What is the wavelength?

4. Monochromatic light of 570 nm is diffracted by a grating of unknown spacing. The third-order maxima are observed at a 23° angle. What is the spacing in that grating?
