

- 5 Red light of wavelength 640 nm is incident normally on a diffraction grating having a line spacing of 1.7×10^{-6} m, as shown in Fig. 5.1.

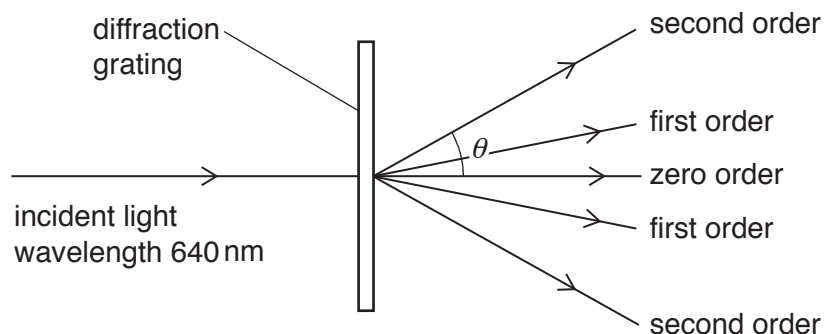


Fig. 5.1 (not to scale)

The second order diffraction maximum of the light is at an angle θ to the direction of the incident light.

- (a) Show that angle θ is 49° .

[3]

- (b) Determine a different wavelength of **visible** light that will also produce a diffraction maximum at an angle of 49° .

wavelength = m [2]

[Total: 5]