

29 A parallel beam of light consists of light of wavelength 420 nm and light of wavelength 630 nm.

The light is incident normally on a diffraction grating.

The diffraction maxima for the two wavelengths overlap only at an angle of 31° from the direction of the incident light beam.

What could be the line spacing of the diffraction grating?

A $1.2\ \mu\text{m}$

B $1.6\ \mu\text{m}$

C $2.4\ \mu\text{m}$

D $3.7\ \mu\text{m}$