7 **(a)** Explain what is meant by *coherent* light waves.

.....

..... [1]

(b) Coherent light of wavelength 640 nm is incident normally on a diffraction grating having 300 lines per millimetre, as shown in Fig. 7.1.

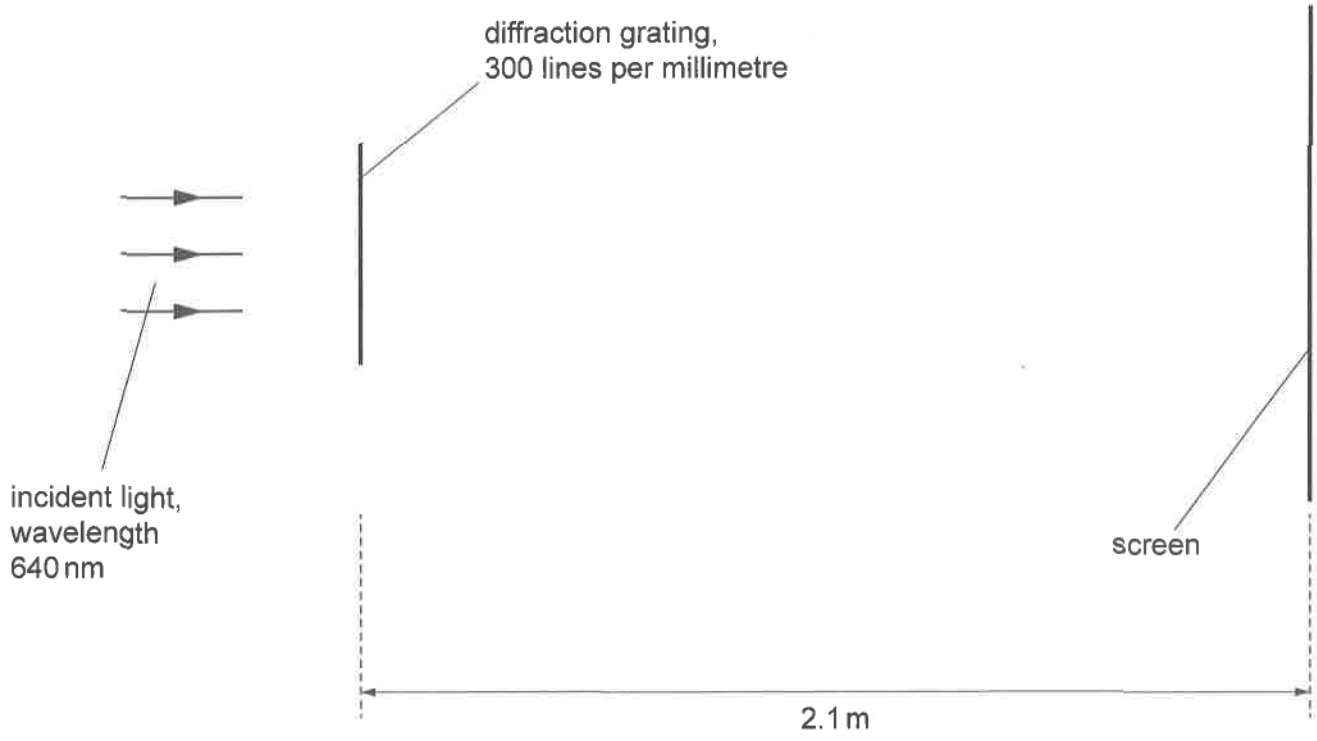

Fig. 7.1 (not to scale)

The planes of the grating and the screen are parallel.

The perpendicular distance between the grating and the screen is 2.1 m.

A diffraction pattern is observed on the screen.

Calculate the distance in cm on the screen from the central (zeroth order) maximum to the second order maximum for this light.

distance = ... cm [4]

[Total: 5]

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