Q2. Monocromatic light of wavelength 6560A falls normally on a grating 2 cm wide. The frist order spectrum is produced at an angle of 16®17' from the normal. Calculate the total number of lines on the grating.

Given:- λ=6560A=6560 x 10^{-8}cm; width = 2cm ; n=1 ; θ=16.28®

Formula:- $(a+b)\sin\theta = n\lambda$

$$a+b = \frac{1}{(N)Number\ of\ lines\ per\ cm}$$

Total number of lines= N x width

Solution:- $(a+b)=\frac{n\lambda}{sin\theta} = \frac{6560}{sin16.28} \times 10^{-8}$ = 2.34 x 10^{-4} cm

Number of lines per cm = $\frac{1}{a+b}$ =4273

Total no. of lines = 4273 x 2 = 8547

Ans:- There will be 8547 lines on the grating.