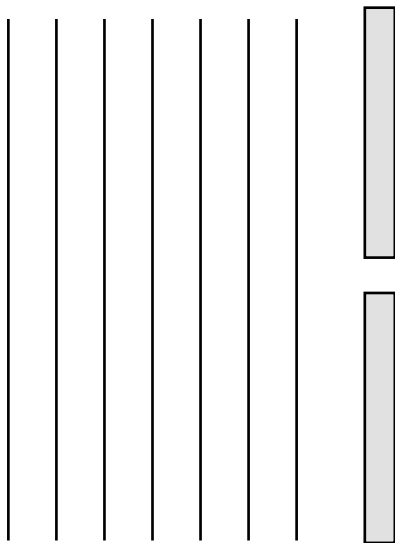
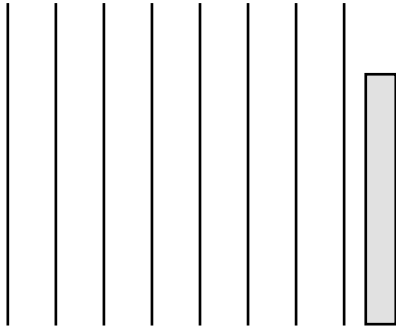
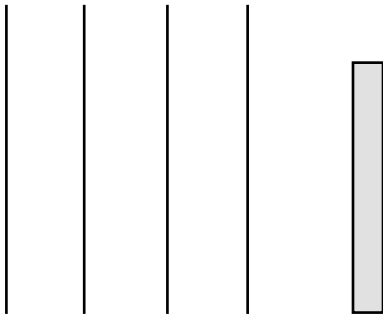
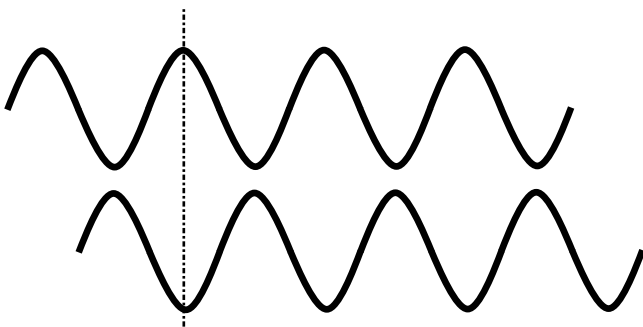
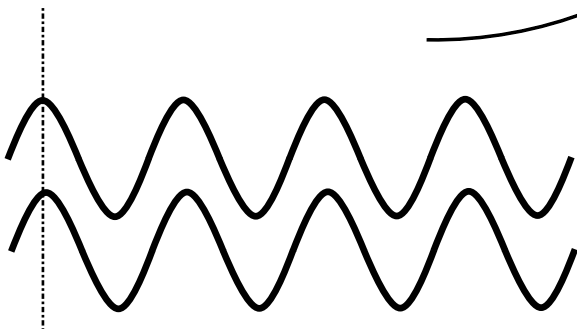
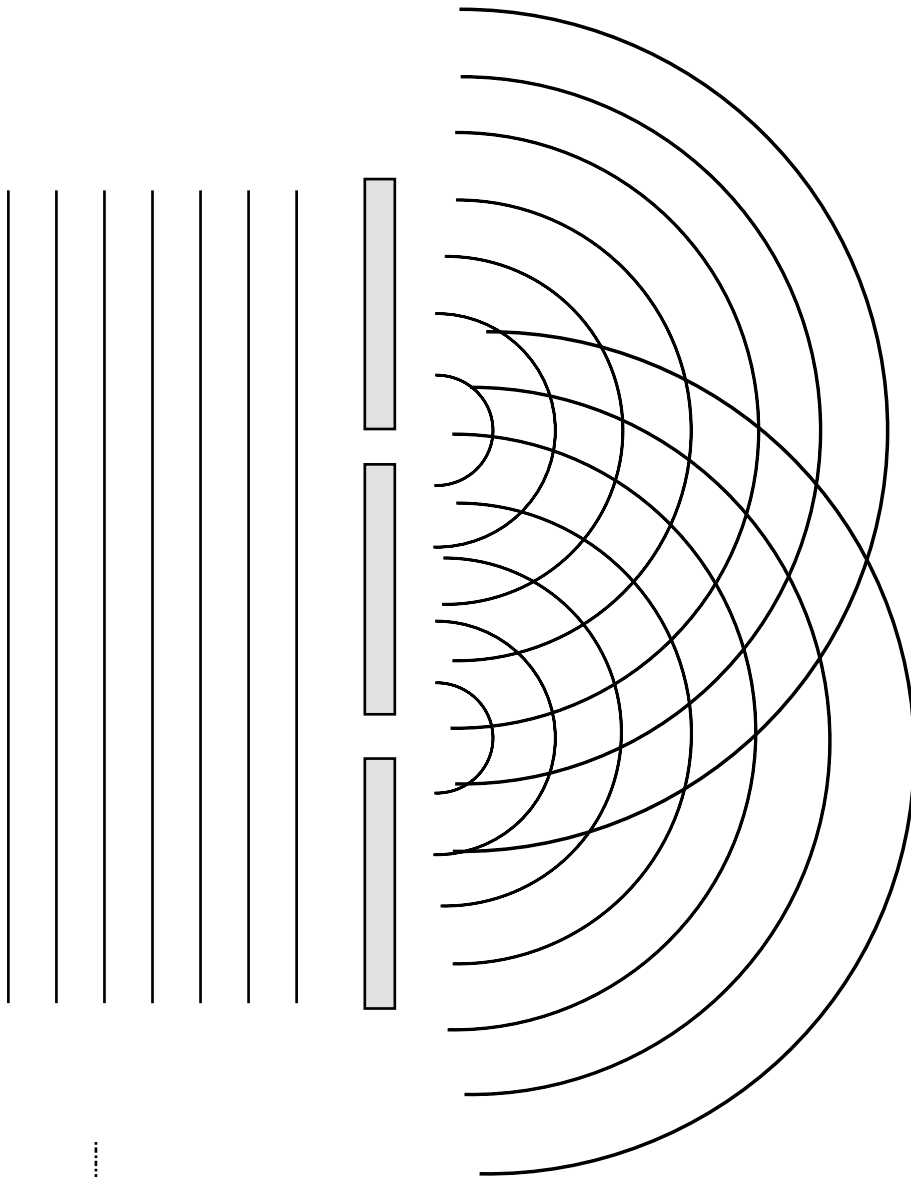


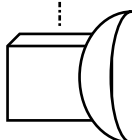
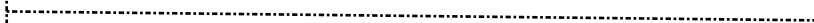
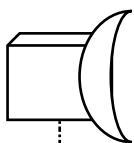
Diffraction



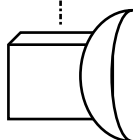
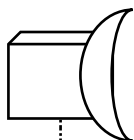


Interference of Waves

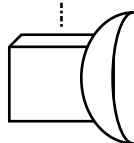
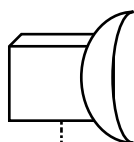
1



2

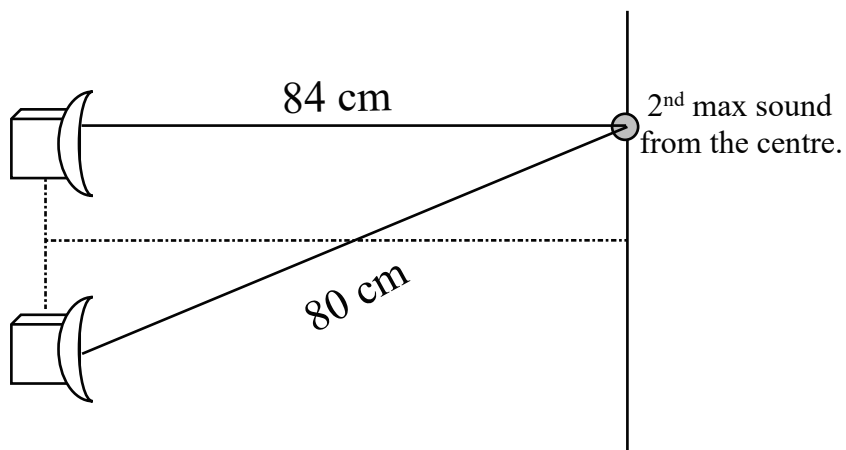


3

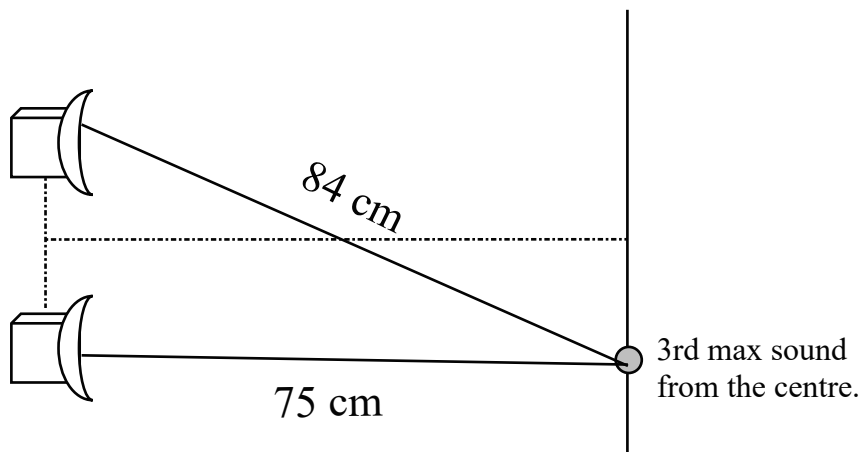


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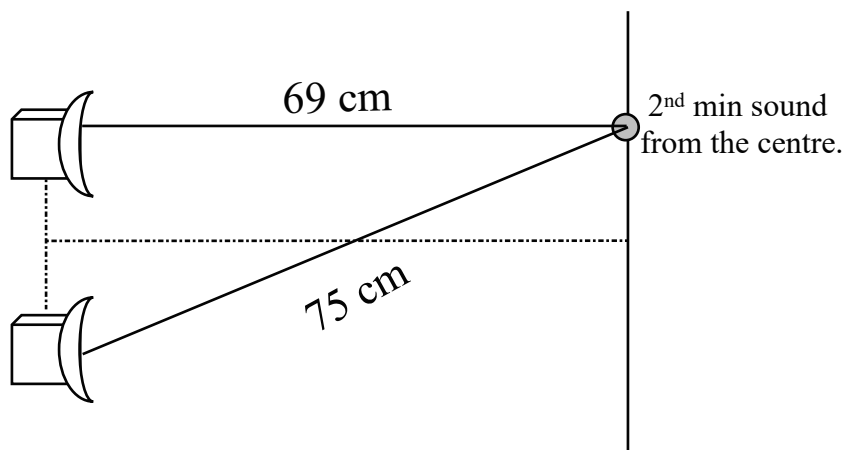
EX 1 Find the wavelength of the sound from the speakers.



EX 2 Find the wavelength of the sound from the speakers.



EX 3 Find the wavelength of the sound from the speakers.



Interference of Light Waves

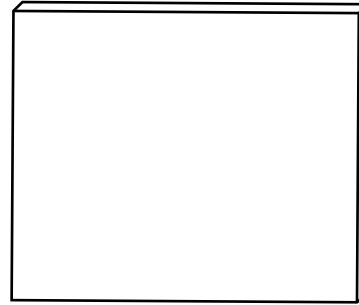
In 1779 Thomas Young experimented with light to see if light could produce an interference pattern. If it did then **it was proven that light was a wave phenomenon.**



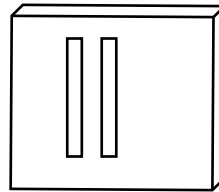
Thomas Young

Coherent Light

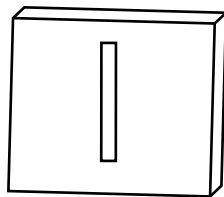
Incoherent light



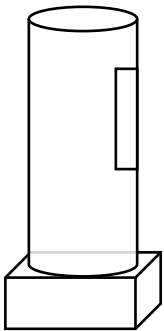
Screen



Double slit

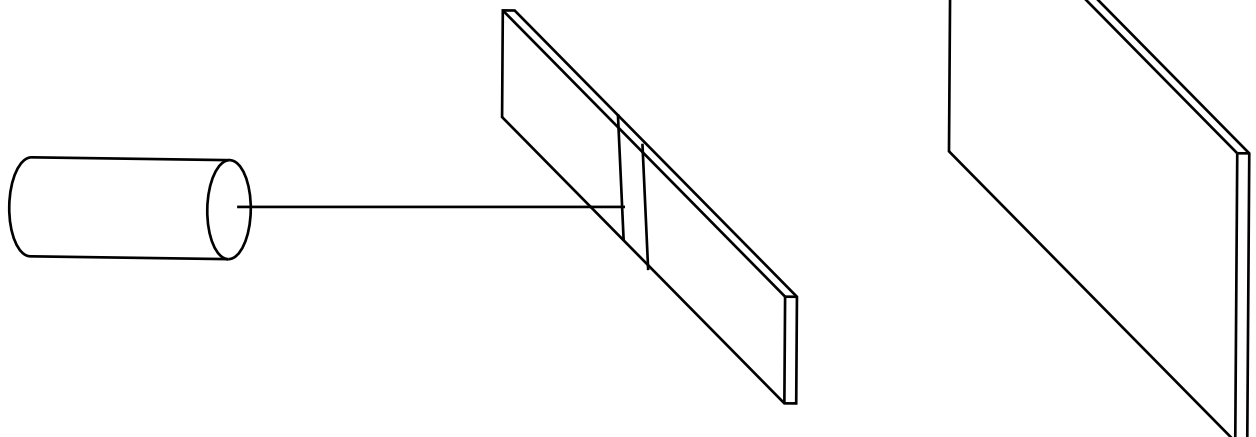


Single slit



Lamp

Coherent light from a laser



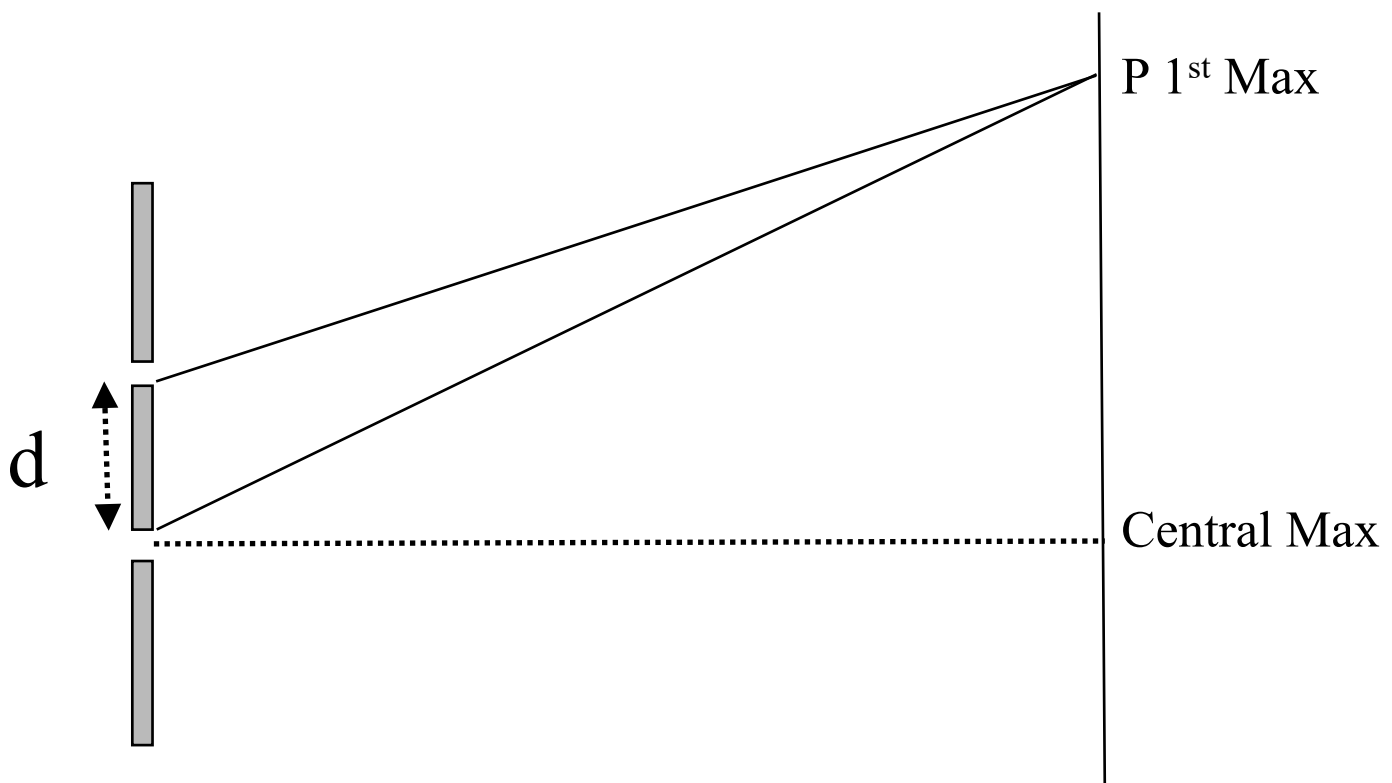
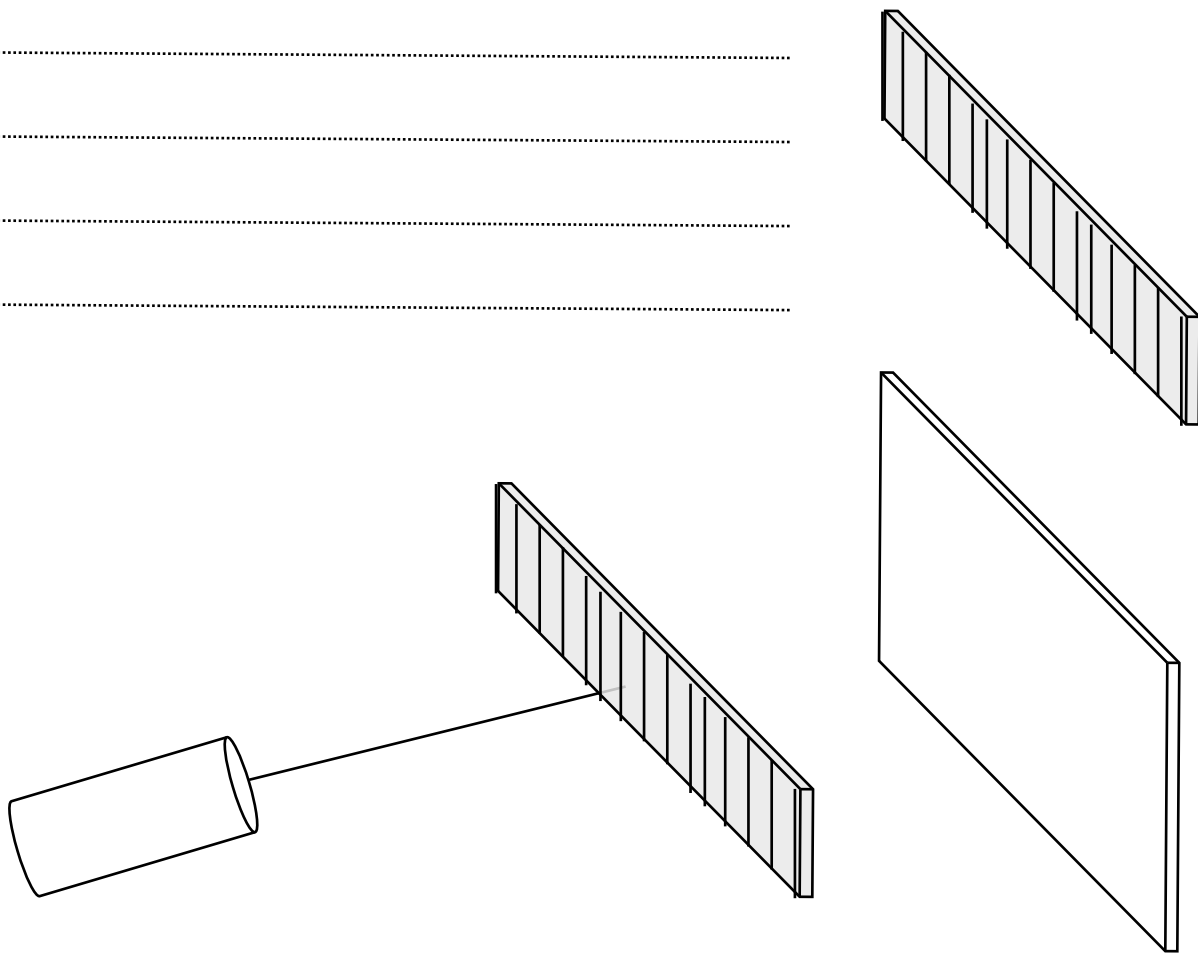
Diffraction Grating

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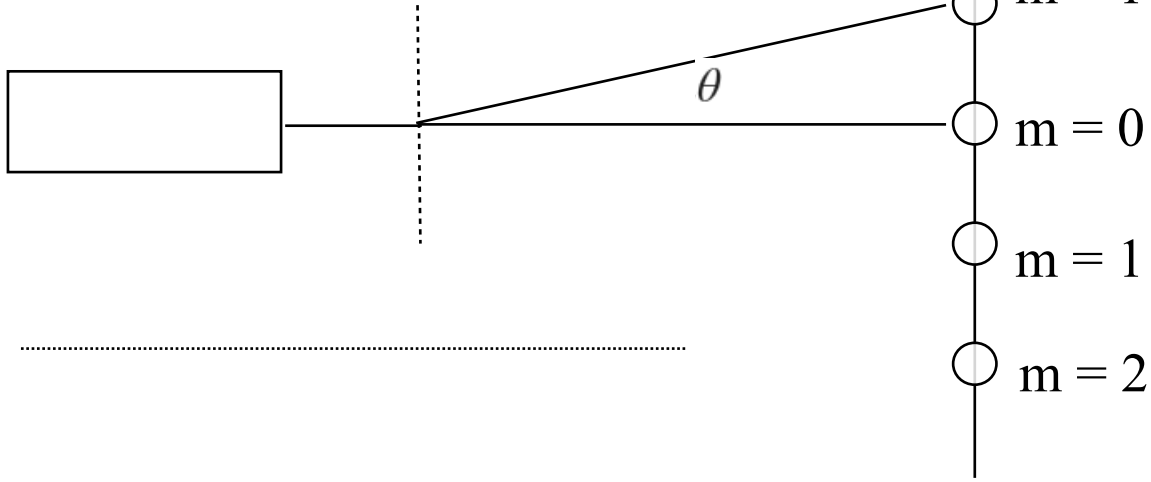
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Diffraction Grating Equation

$$d \sin \theta = m \lambda$$



m

λ

$\sin \theta$

d



On a diffraction grating the number of lines per millimetre is quoted.

d which is the distance between the lines or the gap distance is found as follows:

A diffraction grating has 100 lines per millimetre.
Find the slit width d

A diffraction grating has 600 lines per millimetre.
Find the slit width d

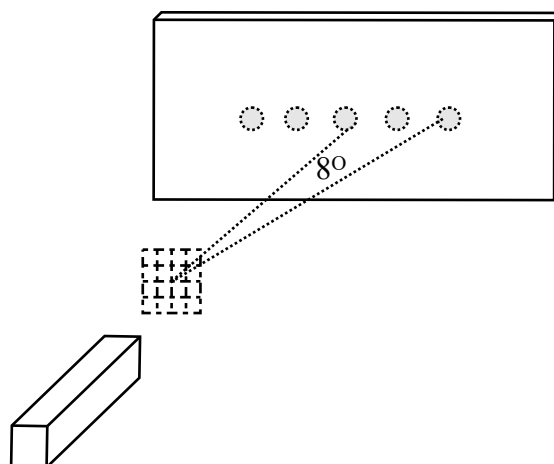
Higher Physic P&W Wave Properties Interference

Diffraction Grating Equation Examples

A laser beam is passed through a diffraction grating with 300 lines per millimetre.

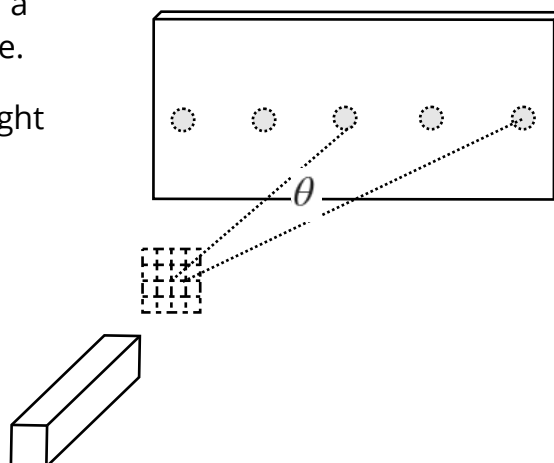
A second order bright spot is found at an angle of 8° from the central maximum bright spot.

Determine the wavelength of the light.



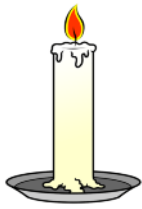
A laser beam of wavelength 550 nm passes through a diffraction grating which has 600 lines per millimetre.

Determine the angle from the central maximum bright spot to the second maximum bright spot.



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White Light Through a Diffraction Grating



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Comparison of spectra between prism and diffraction grating

