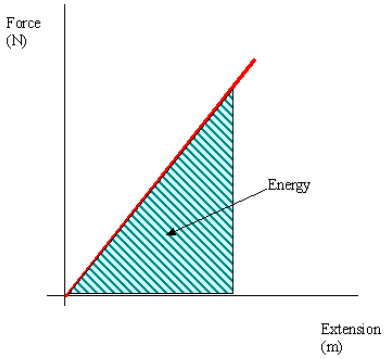
Physics AS - Unit 2 - Mechanics, Materials And Waves - Deviations

Hooke's Law - Energy Stored In Spring

$$= \frac{1}{2} F \Delta L$$

- Using $W = FD$
- We can see the area underneath graph = energy stored
- As the force is varying (keeps increasing) we must take the average force applied
- Hence we use a half of the max force applied
- Multiplied by the extension (final length – initial length)



Diffraction Grating - Nth Order Angle

$$d \sin\theta = n\lambda$$

- As we can see from diagram if constructive interference (maxima) the path difference between 2 waves must be a whole number of wavelengths
- So $AC = n\lambda$
- And angle $A\hat{B}C = \theta$ where θ is the angle to the nth order
- D (distance from centre to centre of each slit) = AB
- Using trigonometry we can see $\sin\theta = \frac{n\lambda}{d}$
- Hence $d \sin\theta = n\lambda$