$m\lambda = d\sin\theta$ $m\lambda = W\sin\theta$ $\theta_R = 1.22\frac{\lambda}{D}$

$\delta = \frac{2\pi}{\lambda_0}(n_1x_1 - n_2x_2) + (\epsilon_1 - \epsilon_2)$ $\lambda = \frac{\lambda_0}{n}$

$\Delta E = Q + W$ $\Delta E = mC\Delta T$

$E = \frac{hc}{\lambda} = hf$ $E_N = \frac{-13.6eV}{N^2}$ $E_g = Mgy$

$\Omega_{AB} = \Omega_A\Omega_B$ $\Omega(N,q) = \frac{(q+N-1)!}{q!(N-1)!}$ $Pr(E) \propto \Omega(E)e^{-E/kT}$

$Pr(v) = 4\pi\left(\frac{M}{2\pi kT}\right)^{\frac{3}{2}} v^2 e^{\frac{-Mv^2}{2kT}}$

$S = k_B \ln \Omega$ $\frac{dS}{dE_{int}} = \frac{1}{T}$ $\Delta S = \frac{Q}{T}$

$v_{rms} = \sqrt{\frac{3kT}{M}}$ $v_P = \sqrt{\frac{2kT}{M}}$ $v_{avg} = \sqrt{\frac{8kT}{\pi M}}$ $\frac{1}{2}mv_{rms}^2 = \frac{3}{2}kT$

Conversions/Constants

$k = 1.38x10^{-23}\frac{J}{K}$ $1\ \mu m = 10^{-6}m$

$h = 6.6 \times 10^{-34} J - s$ 1 nm=1 x 10^{-9} m

$c = 3 \times 10^8$ m s^{-1} $1^\circ = 3600''$

$N_A = 6.02x10^{23}$

$T[K] = T[^\circ C] + 273$

1 eV $= 1.602x10^{-19}$J