

P11 - 0-0 - Variables/Unit Definitions

<p>d : distance (m) t : time (s) \vec{v} : velocity $\left(\frac{m}{s}\right)$ \vec{a} : acceleration $\left(\frac{m}{s^2}\right)$ Δ : change in ($f - i$) $i = \text{initial}$ $f = \text{final}$</p> <p>\vec{d} : displacement (m)</p> <p>m : Mass (kg) \vec{g} : acceleration due to gravity = $9.81 \frac{m}{s^2}$ down (Earth) (gravitational field strength)</p> <p>\vec{F} : Force (N) Newtons</p> <p>\vec{F}_g : Gravitational Force (N)</p> <p>\vec{F}_N : Normal Force, (N) G : Gravitational Constant, $G = 6.67 \times 10^{-11} N \frac{m^2}{kg^2}$</p> <p>$\vec{F}_f$: Force of Friction (N) $k = \text{spring constant } \left(\frac{N}{m}\right)$</p> <p>$\mu$: Coefficient of Friction</p>		
<p>\vec{p} : Momentum $\left(\frac{kgm}{s}\right)$ Impulse : Change in Momentum</p> <p>W : Work, (Nm) Newton Meters = (J) Joules = Energy</p> <p>P : Power, Watts $W = \frac{J}{s}$</p>	<p>$\omega = \text{angular velocity } \frac{\theta}{t}$</p> <p>$\alpha = \text{angular acceleration } \frac{\Delta\omega}{t}$</p>	
<p>$m_{Earth} = 5.98 \times 10^{24} kg$ Distance to Moon from Earth = $3.84 \times 10^8 m$</p> <p>$r_{Earth} = 6.38 \times 10^6 m$ $m_{moon} = 7.35 \times 10^{22} kg$</p> <p>$T$: Period of Rotation = $8.61 \times 10^4 s$ $r_{moon} = 1.74 \times 10^6 m$</p> <p>Radius of orbit around sun = $1.5 \times 10^{11} m$ T : Period of Rotation = $2.36 \times 10^6 s$</p> <p>Period of orbit around sun = $3.16 \times 10^7 s$ Radius of orbit around Earth = $3.84 \times 10^8 m$</p> <p>Period of orbit around Earth = $2.4 \times 10^6 s$</p>		
<p>$m_{sun} = 1.98 \times 10^{30} kg$</p> <p>$r_{sun} = 6.96 \times 10^8 m$</p> <p>$V_{sun} = (10^2)^3 V_{Earth}^*$</p>	<p>$g = 1.6 \frac{m}{s^2}$ (Moon)</p> <p>$g = 274 \frac{m}{s^2}$ (Sun)</p>	<p>$m_{mars} = 6.41 \times 10^{23} kg$</p> <p>$r_{mars} = 3.39 \times 10^6 m$</p>
<p>λ : Wavelength</p> <p>T : Period (s)</p> <p>f : frequency (Hz) (Cycles Per Second = s^{-1})</p>	<p>n : Index of Refraction</p> <p>m : Magnification</p> <p>h_o : Height of the Object</p> <p>h_i : Height of Image</p> <p>d_o : Distance to Object</p> <p>d_i : Distance to Image</p>	<p>n : Vacuum = 1</p> <p>n : Air = 1.0003</p> <p>n : Water = 1.33</p> <p>n : Ethanol = 1.36</p> <p>n : Crown Glass = 1.52</p> <p>n : Quartz = 1.54</p> <p>n : Flint Glass = 1.61</p> <p>n : Diamomd = 2.42</p>
<p>\vec{c} : Speed of Light = $3.00 \times 10^8 \frac{m}{s}$</p> <p>Coulomb's constant: $k = 9.00 \times 10^9 \frac{Nm^2}{C^2}$</p> <p>$1C = 6.24E18e^-$</p> <p>Elementary Charge: $e^-, p^+ = \pm 1.60 \times 10^{-19} C$</p> <p>Mass of Electron: $m_e = 9.11 \times 10^{-31} kg$</p> <p>Mass of Proton: $m_p = 1.67 \times 10^{-27} kg$</p> <p>Electron Volt (eV): = $1.6E - 19 J$</p> <p>Permeability of free space: $\mu_o = 4\pi \times 10^{-7} \frac{Tm}{A}$</p>	<p>\vec{E} ; Electric Field Strength $\frac{N}{C}, \frac{V}{m}$</p> <p>\vec{F} ; Electrostatic Force</p> <p>Q ; Quantity of Charge (Coulombs; C)</p> <p>r ; Distance (m)</p> <p>V ; Potential (Volts; V)</p> <p>ΔV ; Potential Difference (Voltage; V)</p>	