Astronomy SBS information sheet

Constants	Universal constants	Conversions
$c = 3.00\times10^{8}\ \mathrm{m\,s^{-1}}$	$L_{\odot} \approx 3.84\times10^{26}\ \mathrm{W}$	$1\,\mathrm{AU} = 1.50\times10^{11}\ \mathrm{m}$
$k = 1.38\times10^{-23}\ \mathrm{J\,K^{-1}}$	$M_{\odot} \approx 1.99\times10^{30}\ \mathrm{kg}$	$1^{\circ} = 3600\ \text{arc-sec} = 1.75\times10^{-2}\ \text{rads}$
$G = 6.67\times10^{-11}\ \mathrm{N\,m^{2}\,kg^{-2}}$	$T_{\odot} \approx 5770\ \mathrm{K}$	$1\,\text{parsec} = 3.26\ \text{ly}$
$\sigma = 5.67\times10^{-8}\ \mathrm{W\,m^{-2}\,K^{-4}}$	$R_{\odot} \approx 6.96\times10^{8}\ \mathrm{m}$	
	$M_{\oplus} \approx 5.98\times10^{24}\ \mathrm{m}$	

$$v = \frac{d}{t}$$

$$E = mc^{2}$$

$$c = f\lambda$$

$$F = ma$$

$$E_{\mathrm{P}} = mgh$$

$$E_{\mathrm{K}} = \tfrac{1}{2}mv^{2}$$

$$F = -\frac{GM_{1}M_{2}}{r^{2}}$$

$$E_{P} = -\frac{GMm}{r}$$

$$T^{2} = \left(\frac{4\pi^{2}}{GM}\right)r^{3}$$

$$g = -\frac{GM}{r^{2}}$$

$$E_{\mathrm{K}} = \frac{GMm}{2r}$$

$$v_{\mathrm{esc}} = \sqrt{\frac{2GM}{R}}$$

$$e = \sqrt{1-\left(\frac{b}{a}\right)^{2}}$$

$$v_{\mathrm{orbit}} = \sqrt{\frac{GM}{r}}$$

$$\lambda_{\mathrm{max}}T = 2.90\times10^{-3}\,\mathrm{mK}$$

$$\theta = \frac{d}{L}$$

$$d\,(\text{parsec}) = \frac{1}{p\,(\text{arc-second})}$$

$$m_{B} - m_{A} = -2.5\lg\left[\frac{b_{\mathrm{B}}}{b_{\mathrm{A}}}\right]$$

$$b = \frac{L}{4\pi^{2}r}$$

$$L \approx \sigma AT^{4} = 4\pi R^{2}\sigma T^{4}$$

$$E = 10f$$

$$f = \left[\frac{a-b}{a}\right]$$

$$N = R\cdot f_{\mathrm{p}}\cdot n_{\mathrm{e}}\cdot f_{\mathrm{l}}\cdot f_{\mathrm{i}}\cdot f_{\mathrm{c}}\cdot L$$

$$M_{\mathrm{J}} = \frac{9}{4}\left(\frac{1}{2\pi n}\right)^{\frac{1}{2}}\frac{1}{m^{2}}\left(\frac{kT}{G}\right)^{\frac{3}{2}}$$

$$z = \frac{H_{o}}{c}d = \frac{\lambda_{\mathrm{obs}}-\lambda_{\mathrm{em}}}{\lambda_{\mathrm{em}}}$$

$$H_{o} \approx 72\ \mathrm{km\,s^{-1}\,Mpc^{-1}}$$

$$T \approx \frac{1}{H_{\mathrm{o}}}$$