

## Astronomy 200 Formula Sheet

$velocity = \frac{distance}{time}$	$E = mc^2$	$L = 4\pi\sigma R^2 T^4$
$bf = (2.512)^{\Delta m}$ $\Delta m = m_b - m_a$	$E = hf$	$m - M = 5 \log\left(\frac{d}{10}\right)$
$p^2 = R^3$	$c = f\lambda, v = f\lambda$	$d = 10^{\left(\frac{m-M+5}{5}\right)}$
$R = \frac{r_a + r_p}{2}$	$\frac{v}{c} = \frac{\Delta\lambda}{\lambda_0}$	$d = 1/p$
$F_g = -G \frac{Mm}{r^2}$	$\lambda_{max} = \frac{3000000}{T}$	$L = M^{3.5}$
$d = 5t^2$	$F = \sigma T^4$	$t_{m-s} = \frac{1}{M^{2.5}}$
$v_{orbital} = \sqrt{\frac{GM}{R}}$	$v_{escape} = \sqrt{\frac{2GM}{R}}$	$R_{BH} = \frac{2GM}{c^2}$
$c = 300\,000 \text{ km/s}$	$h = 6.63 \times 10^{-34} \text{ Js}$	$G = 6.67 \times 10^{-11} \text{ Nm}^2\text{kg}^{-2}$

Name	Symbol	Value	Units
Mass of Earth	$M_{\oplus}$	$5.974 \times 10^{24}$	kg
Mass of Sun	$M_{\odot}$	$1.989 \times 10^{30}$	kg
Mass of Moon		$7.36 \times 10^{22}$	kg
Equatorial radius of Earth	$R_{\oplus}$	6378	km
Equatorial radius of Sun	$R_{\odot}$	$6.955 \times 10^5$	km
Equatorial radius of Moon		1737	km
Mean density of Earth		5515	$\text{kg m}^{-3}$
Mean density of Sun		1408	$\text{kg m}^{-3}$
Mean density of Moon		3346	$\text{kg m}^{-3}$
Luminosity of Sun	$L_{\odot}$	$3.839 \times 10^{26}$	W
Effective temperature of Sun		5778	K
Hubble constant	$H_0$	$70 \pm 5$	$\text{km s}^{-1} \text{Mpc}^{-1}$
Light-year		$9.461 \times 10^{12}$	km
Astronomical unit	AU	$1.496 \times 10^8$	km
Parsec	pc	$3.086 \times 10^{13}$	km