# Physical Constants and Characteristics

Gravitational constant:              $G = 6.673 \times 10^{-11} \ m^3 \ kg^{-1} \ s^{-2}$

Stefan-Boltzmann constant:           $\sigma = 5.67 \times 10^{-8} \ W \ m^{-2} \ K^{-4}$

GM Sun:                              $\mu_{Sun} = 1.327 \times 10^{20} \ m^3 \ s^{-2}$

GM Earth:                            $\mu_{Earth} = 3.986 \times 10^{14} \ m^3 \ s^{-2}$

GM Moon:                             $\mu_{Moon} = 4.903 \times 10^{12} \ m^3 \ s^{-2}$

GM Mercury:                          $\mu_{Mercury} = 2.094 \times 10^{13} \ m^3 \ s^{-2}$

GM Venus:                            $\mu_{Venus} = 3.249 \times 10^{14} \ m^3 \ s^{-2}$

GM Mars:                             $\mu_{Mars} = 4.269 \times 10^{13} \ m^3 \ s^{-2}$

GM Jupiter:                          $\mu_{Jupiter} = 1.267 \times 10^{17} \ m^3 \ s^{-2}$

Solar Constant:                      $S = 1.361 \times 10^3 \ W \ m^{-2}$ at 1 AU

Sun radius (equatorial):             $R_{Sun} = 6.955 \times 10^8 \ m$

Astronomical Unit:                   $1 \ AU = 1.496 \times 10^{11} \ m$

Earth mass:                          $M_{Earth} = 5.973 \times 10^{24} \ kg$

Earth radius (equatorial):           $R_{Earth} = 6.378 \times 10^6 \ m$

Earth's gravitational acceleration:  $g = 9.80665 \ m \ s^{-2}$

Sidereal day:                        23h 56min 04.09 sec

Moon mass:                           $M_{Moon} = 7.348 \times 10^{22} \ kg$

Moon radius:                         $R_{Moon} = 1.738 \times 10^6 \ m$

Moon's mean distance from Earth:     $d_{Moon} = 3.844 \times 10^8 \ m$

Mercury's mean distance from Sun:    $D_{Mercury} = 0.387 \ AU$

Venus' mean distance from Sun:       $D_{Venus} = 0.723 \ AU$

Mars' mean distance from Sun:        $D_{Mars} = 1.524 \ AU$

Jupiter's mean distance from Sun:    $D_{Jupiter} = 5.204 \ AU$