Lab 2 Solar System – Key Terms and Conversion Factors

Earth Time

1 year = 365 days 1 day = 24 hours 1 hour = 60 minutes 1 minute = 60 sec

Space Distance

Astronomical Unit (AU) – special unit of distance measure in space

1 AU = average distance from Earth to Sun = 93,000,000 miles = 93×10^6 miles

Light-Year (Lt.Yr) – the distance traveled over one earth year, travelling at the speed of light

Speed of light = c = 3×10^8 m/sec

1 year = 365 x 24 x 60 x 60 = 31,536,000 sec

Light-Year: Distance 1 year at speed of light = $(3 \times 10^8$ m/sec)*(31,536,000 sec) =
9.46×10^{15} m = 5.88×10^{12} miles = 63,241 AU

Light-Minute (Lt. min) – the distance traveld over one earth minute (60 sec), travelling at the speed of light

Speed of light = c = 3×10^8 m/sec

1 min = 60 sec

Light-Minute: Distance 1 minute at speed of light = $(3 \times 10^8$ m/sec)*(60 sec) =
1.8×10^{10} m = 1.12×10^7 miles = 0.12 AU

Temperature

Celsius – measure in the metric system, 0^o C = Freezing Point of Water 100^o C = Boiling Point of Water

Fahrenheit – measure in the English system

Kelvin – measure of temperature in scientific applications

$T_{(°F)} = T_{(°C)} \times 1.8 + 32$

$T_{(°C)} = (T_{(°F)} - 32) / 1.8$

$T_{(K)} = T_{(°C)} + 273.15$

$T_{(°C)} = T_{(K)} - 273.15$

Orbital Period – the time it takes a planet to circle the sun, a “year”

Orbital Rotation – the time it takes a planet to rotate around once on it’s axis, a “day”

Orbital Distance – the straight-line distance from the planet to the sun

Planet Radius – distance from surface to center of planet (r = D/2)

Planet Diameter – distance from end to end, through the center of a planet (D = 2r)

Surface Temperature – the average temperature of the planet at it’s surface

Surface Pressure – the atmospheric pressure at the surface of a planet

Earth Pressure = 1.014 bars = 1014 millibars = 29.92 *inches* (*of mercury*)