radius: 
~ 4000 mi

ave. distance from sun: 
93 mill mi

approx. circumference: 
24, 900 mi
Eratosthenes 247 B.C.
“if two parallel lines are transected by a diagonal, the alternate interior angles are equal."

Shape: “oblate ellipsoid”; (flattened at poles; bulging at equator)
centrifugal force: Force directed away from axis of rotating object

Plane of the Ecliptic: the plane in which the planets orbit the sun

Revolution: revolution 365.24 days
    leap year
Path : counter-clockwise (North Pole)
orbit is “eccentric”

\[
\text{eccentricity} = \frac{a^2 - b^2}{a^2}
\]
(eccentricity of earth’s orbit = .017)

orbit is an “ellipse“
circle versus ellipse
Definition of an ellipse: “The sum of distances of each point on the ellipse to the foci is constant.”
    Perihelion : 91,500,000 mi: (around January 3)
    Aphelion : 94,500,000 mi: (around July 4)
    Average : 93,000,000 mi.

Polar axis  
66.5° tilt (to plane of ecliptic)

23.5° tilt (to line perpendicular to plane of ecliptic)

fixed

Graticule:  
latitude and longitude

A grid system to describe the location of a point on a sphere

Latitude  
arcl between location and equator
gives direction North, South of equator

*parallels of latitude* are circles, parallel

greatest circumference equator: 0°,
Poles: 90°N, 90°S
one degree of latitude is the same all over the globe

**Longitude**

Shows direction East, West of *Prime Meridian*
*meridians of longitude* are half-circles, not parallel, intersect at poles
Any 2 meridians = circumference of earth
one degree of longitude is not same all over

Where is UMD?

47° 49' 00" North, 92° 4' 45" West

**Time**

based on longitudinal position of sun

solar day

local time

Standard time

24 time zones: 15 degrees wide each

**Central Meridian**

Standard time based on solar time of CM

International Date Line:
Imagine instantaneous travel around world westward back to starting point...

180° meridian (roughly)

cross eastward: go back a day
cross westward: go forward a day

e.g. If it is 9am Tuesday in Perth, Australia, what day and time is it in Vancouver B.C.?
Answer: 5 pm Monday

Problem:
If I left L.A. at 10:55 PM on December 24,
and the flight lasted 14 hours and 5 minutes, what time and day was it when I arrived in Brisbane?

When it is **midnight** on the International Date Line, it is the **same day** all over the world.