

Tuesday, 10/14/08

- Project ideas due Thursday
- Schedule Observation 10/16 or 10/30 at 6:40pm
- Large Hadron Rap
- Review Chapter 5
- Radio dating Exercise

Earth's Structure

- Spherical but with slight equatorial bulge
- Layered by differentiation:
 - Thin crust...rocks, silicates
 - mostly solid mantle w/ convection
 - inner/outer core...iron, nickel
- Atmosphere
- Magnetic field

Earth's Dynamics

- Heating/convection: impacts/radioactive decay
- Plate tectonics: rifting, subduction
- B-field: Interior dynamo, auroras, pole-switching
- Atmosphere:
 - Temperature variations: greenhouse gases
 - Coriolis Effects
- Precession

The Day

- One rotation of Earth
- Two ways to interpret:
 - Stars return to same position (23hrs56mins)
 - Sun returns to same position (high point@noon)
- Astronomers use sidereal days
- Calendar uses solar
- Variations to the solar day:
 - Depends on orbital motion of Earth
 - Varies throughout orbit (Kepler's Second Law)
 - Use mean solar day

The Month

- Lunar cycle is 29.5 days
- 12 lunar cycles short of a full year
- Stretch some months to 30 or 31 days to make a full year

The Year

- Complete revolution about the sun
- About 365.244 days (about $\frac{1}{4}$ day fraction)
- Add a full day just every 4 years
- Except centuries not divisible by 400
- Gregorian Calendar

Other (Lunar) Calendars

- Muslim:
 - Purely lunar
 - Out of sync w/ seasons
- Jewish:
 - (corrected) lunar
 - Add a month from “time-to-time”
- Chinese:
 - (corrected) lunar