




Guiding Questions

1. Is the Moon completely covered with craters?
2. Has there been any exploration of the Moon since the *Apollo* program in the 1970s?
3. Does the Moon's interior have a similar structure to the interior of the Earth?
4. How do Moon rocks compare to rocks found on the Earth?
5. How did the Moon form?

table 10-1 Moon Data	
Distance from Earth (center to center):	Average: 384,400 km = 238,900 mi Maximum (apogee): 405,500 km Minimum (perigee): 363,300 km
Eccentricity of orbit:	0.0549
Average orbital speed:	3683 km/h
Sidereal period (relative to fixed stars):	29.5306 days
Synodic period (from moon to new moon):	29.5306 days
Inclination of lunar equator to orbit:	6.69°
Inclination of orbit to ecliptic:	5.15°
Diameter (equatorial):	3476 km = 2160 mi = 0.272 Earth diameter
Mass:	7.342 × 10 ²² kg = 0.0123 Earth mass
Average density:	3344 kg/m ³
Escape speed:	2.4 km/s
Surface gravity (Earth = 1):	0.17
Albedo:	0.11
Average surface temperatures:	Day: 130°C = 264°F = 403 K Night: -180°C = -292°F = 93 K
Atmosphere:	Essentially none



The Moon's Orbit

This Picture Distorts the Earth-Moon Distance

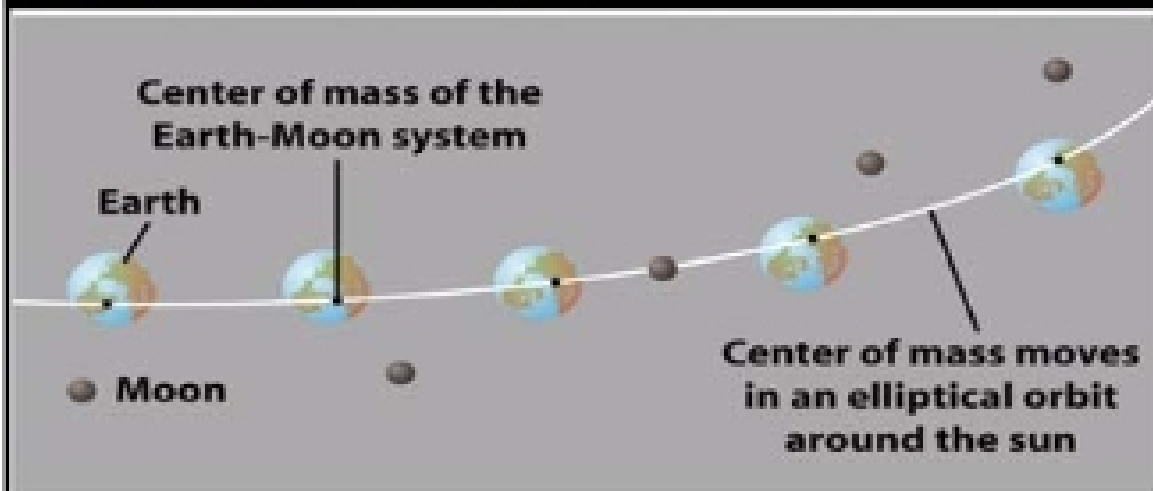
- The Moon and Earth both orbit around a point between their centers called the center of mass of the Earth-Moon system
- The center of mass then follows an elliptical orbit around the Sun



An Everyday Example of Center of Mass Motion



Motion of the Earth-Moon Center of Mass



Moon

<u>Major Regions</u>	<u>Appearance</u>	<u>Process Formed</u>
Highlands	Bright	meteor impact
Age? old	Heavily cratered	
Mare Basins	Dark	asteroid impact
Age? young		lava flows

See transparency of lunar surface.

Source: Dr. James Regas Cal State Chico

Lunar History See p. VII - 1

Energy Sources

1. Meteor Bombardment

P.E.

K.E.

Impact

K.E. --> heat - melts rock

Source: Dr. James Regas Cal State Chico

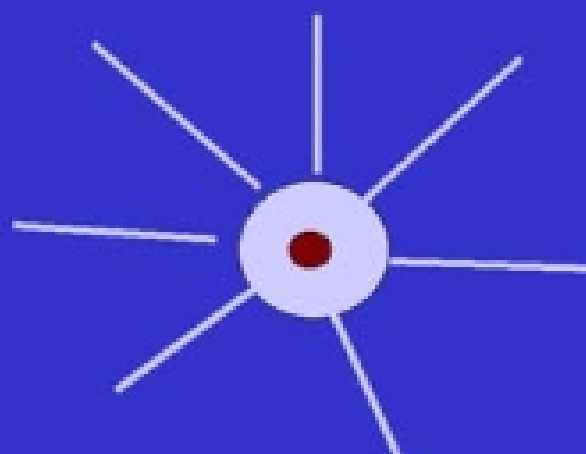
2. Radioactive Heating by

U - uranium, K - potassium, & Th - thorium

Heat melts interior

Source: Dr. James Regas Cal State Chico

Rays - thin dusting of lunar material



2/19/96

Source: Dr. James Regas Cal State Chico
