29:52 Exploration of the Solar System
Homework Assignment #5
Assigned: March 10, 2008
Quiz Due: March 24, 2008, 8AM

1. Use *Starry Night* to find the current position of the planet Venus, and any other data which would be useful. What configuration is it in (i.e. opposition, quadrature, superior conjunction, inferior conjunction)

2. Read the section in your textbook on p144 about radioisotope dating before answering this question. Let's say that there is a radioisotope A that forms in certain types of minerals, and that it decays to a stable isotope B with a half life of 2 billion years. A rock brought back from Planet X is found to have 25 atoms per cc of isotope A, and 75 atoms/cc of B. Assume that when the rock formed there were no atoms of isotope B present. How long ago did this rock form on Planet X?

3. The "Sea of Crises" (Mare Crisium) is a Mare on the Moon that is visible to the naked eye as a dark dot on the right edge of the Moon. You can find it on an online Moon map at http://www.oarval.org/MoonMapen.htm . Using information available in the textbook, figure out how long ago this feature was formed on the Moon.

4. Compare the size of the Manson crater here in Iowa with crater Kepler on the Moon. For Manson crater, use the "Big Impacts" web site given in class. For crater Kepler, I don't just want a number you pulled off the web. Measure a value (it doesn't have to be extremely accurate) from the Moon map given above.

5. What is the closest that Mercury ever comes to the Earth?

6. What is the angular diameter of Mercury at these times? Review material in the lectures on angular sizes of objects. You can also read the textbook on p45, and use the handy-dandy equation 3.1. For point of reference, to see much of a disk with the telescopes we use for teaching purposes, the angular diameter of a planet or moon would have to be about 10 arcseconds. With large professional telescopes, an angular size of at least 2 – 3 arcseconds would be necessary to see any detail at all.