

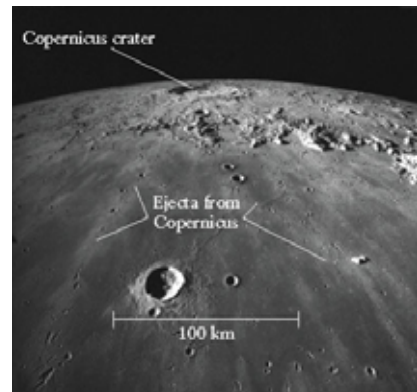
Introduction to Astronomy

HW0801201

due in one week

1. There is a magnificent celestial display lately on the western sky soon after sunset. Grasp the nice weather in these days to gaze the sky. Take a photograph or sketch the positions of the two brightest sources (what are they?) next to the Moon relative to the horizon. What are the apparent magnitudes of the two celestial sources? What is the phase of the Moon?
2. The *New Horizons* mission, launched in 2006, is expected to make a first-ever flyby of Pluto and Charon in 2015. The spacecraft swung by Jupiter in 2007 to get a boost of speed so as to get to Pluto more quickly. To see how the swing acceleration helps, calculate how long the journey of the *New Horizons* from Earth to Pluto would have taken by assuming an elliptical orbit around the Sun, with the perihelion at 1 AU (at the Earth) and the aphelion at 30 AU (at Pluto).

3. When an impact crater is formed, ejecta are sprayed outward from the impact. The photograph on the right shows light-colored ejecta extending outward from the crater Copernicus on the Moon. While ejecta are found surrounding the craters on Mercury, they do not extend as far from the crater as do ejecta on the Moon. Explain why.



4. What are the 10 most abundant elements in the Galaxy? Compare their relative amounts.