

Chp 6-Review Questions. Exploring Terrestrial Surface Processes and Atmospheres

1. Describe the kinds of features that can be seen on the Moon with a small telescope.
2. Are impact craters on the Moon the same shape as the meteoroids that made the impact? Explain your answer.
3. Why is Earth geologically active while the Moon is not?
4. Rocks found on the Moon are between 3.1 and 4.47 billion years old. By contrast, the majority of Earth's surface is made of oceanic crust that is less than 200 million years old, and the very oldest Earth rocks are about 4 billion years old. If Earth and the Moon are essentially the same age, why is there such a disparity in the ages of rocks on the two worlds?
5. What kind of surface features are found on Mercury? How do they compare to surface features on the Moon? Why are they probably much older than most surface features on Earth?
6. If Mercury is the closest planet to the Sun and has such a high average surface temperature, how is it possible that ice might exist on its surface?
7. What is flake tectonics? Why does Venus exhibit flake tectonics rather than plate tectonics?
8. How was water most recently discovered on Mars?
9. How was water most recently discovered on Earth's Moon?
10. Why do ice rafts indicate the existence of a subsurface ocean on Europa?

Chp 6-Discussion Questions. Exploring Terrestrial Surface Processes and Atmospheres

1. NASA is planning a new series of manned missions to the Moon. Compare the advantages and disadvantages of exploring the Moon with astronauts as opposed to using mobile, unmanned instrument packages.
2. Describe how you would empirically test the idea that human behavior is related to the phases of the Moon. What problems are inherent in such testing?
3. Imagine that you are planning a lunar landing mission. What type of landing site would you select? Where might you land to search for evidence of recent volcanic activity?
4. If you were planning a new mission to Mercury, what features and observations would be of particular interest to you?
5. The total cost of the Mars Global Surveyor mission was about \$154 million. (To put this number in perspective, in 2000 the U.S. Mint spent about \$40 million to advertise its new \$1 coin, which failed to be accepted by the public. Several recent Hollywood movies have had larger budgets than the Mars Global Surveyor.) Does this expenditure seem reasonable to you? Why or why not?
6. Is it worthwhile for scientists to actively search for water on planets and satellites?

Chp 6-Collaborative Group Exercises. Exploring Terrestrial Surface Processes and Atmospheres

1. The image of the Moon in Figure 6-2 reveals numerous craters. Using the idea that the Moon's landscape can only be changed by impacts, make a rough sketch showing 10 of the largest craters and label them from oldest (those that showed up first) to youngest (the most recent ones). Explain your reasoning and any uncertainties.
2. Consider the image of Mars in Figure 6-1. Draw a circle on your paper roughly 5 cm in diameter and, taking turns, have each person in your group sketch a different region of Mars. How is your collaborative sketch different from the other images of Mars found throughout the book?