1. What is the association between plate boundaries and volcanism? What is the correlation between the eruptive style and composition of volcanic deposits, with plate boundary type?

2. Which type of weathering (physical or chemical) is dominant in the mountains of the Phoenix metropolitan area? Explain your answer.

3. Much of the bedrock of the South Mountains (south of Phoenix) is made up of granodiorite. What is granodiorite? What type of materials will result when this rock weathers? You may want to refer back to Chapter 5 to help you answer the question.

4. How could you tell sediment deposited in a river from sediment deposited in a lake or by the wind?

5. Describe the processes that turn sediments into rock.
6. From the base upward, a bedding sequence begins with a bioclastic limestone, passes upward into a dense carbonate rock made of carbonate-cementing organisms (including algae normally found with coral), and ends at the top with beds of dolomite. Deduce the possible sedimentary environments represented by this sequence.

7. What are the primary types of metamorphism and what are the primary agents of metamorphism?

8. Construct a diagram similar to the one in Figure 10.8 or 10.9 that illustrates the following sequence of geological events from oldest to youngest: a) sedimentation (deposition) of a limestone formation; b) uplift and folding of the limestone; c) erosion of the folded terrain; d) intrusion of a basaltic dike that reaches the surface; e) subsidence of the terrain and deposition of a sandstone formation. Mark the unconformities on your diagram.

9. What fraction of the original Carbon-14 present in a sample (for example, a sample of charcoal found in sediment) is present after 17,190 years? How many half-lives is this?

10. Compare the Paleozoic Grand Canyon Sequence (the Figure in ‘Earth Issues’ Box 10.1, page 226-227) with the Geologic Time Scale (Figure 10.12 or 10.17). What geologic time periods are completely missing from the section? Between which two formations is the gap? What happened to the rocks from this period? How much time is missing?