Chapter 7: Rocks and Minerals

Minerals
- Explain how a rock is different from a mineral.
- Figure 7.5 shows the basic structure of an atom. Define & identify (on a diagram) the following: proton, neutron, electron, atomic number, atomic mass.
- Compare ionic bonds and covalent bonds. Provide an example of a mineral with each type of bond.
- The silica tetrahedron is considered the "building block" for most common minerals. Draw a silica tetrahedron. Describe how it can be a "building block" for different minerals.
- List and briefly describe the 5 characteristics geologists would use to define a mineral.
- List and describe several common mineral characteristics and explain how they may be used to identify a mineral. Provide examples for each characteristic.
- Describe the characteristics of quartz and calcite. Describe several ways you could distinguish the two. Give the formula of each.
- List some of the processes by which minerals form.
- List some examples of minerals that are important resources.

Rocks
- Draw a sketch of the “Rock Cycle” and describe the processes that it entails.
- Rocks are classified by their texture and mineral composition. Provide examples to show what this means.
- Explain the difference between magma and lava. How are these terms related to intrusive and extrusive?
- Igneous rocks are classified based on texture and composition. Study Figure 7.20. Compare and contrast “felsic” with “mafic” rock compositions. Discuss the relationship between granite and rhyolite, gabbro and basalt. Explain where andesite fits on the chart.
- Study the fold-out image on p. 189-189. Describe the relationship between plate boundary processes and the origin of igneous rocks.

Weathering Processes (Chapter 9—part)
- List and describe the different processes involved in physical and chemical weathering.
- Describe the process of shperoidal weathering.
- Describe the chemical weathering of granite. List the end products of hydrolysis.

Rocks Cont’d
- Study the fold-out image on p. 189-189. List several types of environments in which sediments would be deposited.
- List and describe several depositional structures (ie. ripple marks) and explain how each provides information about the environment of deposition of a sedimentary rock.
- You are given a sample of conglomerate and a sample of shale. Explain how the grain size provides an indication of the environment of deposition.
- Explain how fossils provide clues to the interpretation of depositional environments. Provide examples.
- Compare the origin of clastic sedimentary rocks to biochemical sedimentary rocks. Provide examples of each.
- Describe the origin and characteristics of several varieties of limestone.
- Describe the formation/composition of chalk, gypsum, rock salt, and coal.
- Study the fold-out image on p. 189-189. Describe the locations where metamorphism would occur.
- Describe the differences between regional and contact metamorphism. Provide an example of a rock of each type.
- Explain how foliation forms. Give examples of foliated rocks.
- List the major types of foliated rocks from low-grade to high-grade metamorphism.
- Explain the relationship between limestone and marble.
Chapter 8: Geologic Time

- What is the difference between "relative" age dating and "absolute" age dating?
- Describe how the principles of relative dating can be used to unravel the sequence of geologic events in a region.
- Describe the sequence of events that produces an angular unconformity. Draw a sketch of an angular unconformity.
- Describe the basic principles used to construct the geologic time scale.
- List in order the main subdivisions (eras) of the Phanerozoic. Name a major type of organism each era is known for.
- Explain how the half-life of an isotope can be used to determine the age of a sample.
- Name the elements that are typically used in radioactive dating of rocks. Why is carbon not one of these?
- List some limitations of radioactive dating.

Ch. 8 Vocabulary:

<table>
<thead>
<tr>
<th>Relative Dating</th>
<th>Paleontology</th>
<th>Absolute age</th>
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<tbody>
<tr>
<td>Superposition</td>
<td>Trace fossil</td>
<td>Radioactivity</td>
</tr>
<tr>
<td>Original horizonality</td>
<td>Amber</td>
<td>Parent isotope</td>
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<tr>
<td>Cross-cutting features</td>
<td>Coprolite</td>
<td>Daughter product</td>
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<tr>
<td>Unconformity</td>
<td>Phanerozoic</td>
<td>Half life</td>
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<tr>
<td>Dike</td>
<td>Paleozoic</td>
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<td>Angular unconformity</td>
<td>Mesozoic</td>
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<td>Principle of faunal succession</td>
<td>Cenozoic</td>
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<td>Uniformitarianism</td>
<td>K-T boundary</td>
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<td>Mass extinction</td>
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Earth Revealed Video Programs: ER #10: Geologic Time; ER #11: Evolution Through Time