

Earth Science  
Study guide 3

- 2/19 Reading assignment: Chapter 7, “Continental Drift: An Idea Before its Time,” Pgs. 194-198, “Testing the Plate Tectonics Model,” Pgs. 211-216.
1. Give examples of observations explained by the plate tectonic theory.
  2. How does the plate tectonic theory explain the observations from #1?

Reading: Introduction to Minerals, mineral resources and rocks – posted on Blackboard. Like always, you will not be able to use the actual reading for your prep check, but can use notes taken using the reading. Your **prep check** on 2/19 will cover the following questions (1-6) and the vocabulary:

1. Give examples of mineral resources and the products that contain them.
2. Define a mineral.
3. List the eight most abundant elements in Earth's crust. Describe how these relate to the most abundant minerals and the availability of mineral resources.
4. List properties of minerals that determine their usefulness.
5. Differentiate between rocks and minerals.
6. Name the three main rock families, and explain the processes that work to form rocks (the rock cycle).

Vocabulary: mineral, mineral resource, mineral reserve, rock, igneous rock, sedimentary rock, metamorphic rock

2/21 Class cancelled – SNOW DAY

2/26 There is no reading for today. Based on today’s activity, you should be able to do the following:

1. Summarize the difference between a mineral resource and reserve. List factors that would increase reserves and factors that would deplete reserves.
2. Use a concept map to interpret the complex relationships among consumers, producers, regulating agencies, and the environment in a global context.

**Homework due**  
**Lab 5**

2/28 Class cancelled

3/5 Reading: Mining – posted on Blackboard. Like always, you will not be able to use the actual reading for your prep check, but can use notes taken using the reading. Your **prep check** on 3/5 will cover the following:

1. Contrast surface and underground mining.
2. What are a mining company’s goals with each of the following: exploration, extraction, concentration, reclamation and remediation?
3. How are the following waste products created, and why are they a problem: waste rock, tailings, leach piles, and smelter emissions?
4. How can problems related to the waste products above be managed?

**Homework due**

*More on the back...*

3/7 Reading: Sedimentary Rocks – posted on Blackboard. Like always, you will not be able to use the actual reading for your prep check, but can use notes taken using the reading. Your **prep check** on 3/7 will cover the following:

1. Summarize the processes that act to make (a) clastic and (b) chemical sedimentary rocks.
2. Explain how sedimentary processes (especially chemical weathering, erosion and deposition, and crystallization) redistribute and concentrate mineral resources.
3. Explain how climate influences chemical weathering, and how chemical weathering concentrates certain mineral resources.
4. Give examples and uses of mineral resources that are formed by sedimentary processes.

Vocabulary: weathering, chemical weathering, mechanical weathering, erosion, crystallization, deposition, lithification

### Lab 6

3/12-3/14 SWIC closed: Happy Spring Break!

3/19 Reading: Igneous Rocks – posted on Blackboard. Like always, you will not be able to use the actual reading for your prep check, but can use notes taken using the reading. Your **prep check** on 3/19 will cover the following:

1. Describe how igneous rocks form. How does the formation of igneous rocks link to plate tectonics?
2. Describe how metamorphic rocks form? How does the formation of metamorphic rocks link to plate tectonics?
3. Explain how mineral resources are concentrated by hydrothermal activity and how this links to intrusions, volcanism and plate tectonics.

Vocabulary: melting, crystallization, magma, hydrothermal fluid

In class we'll start on phosphates. Based on what is covered in class, you should be able to answer the following: (this information is also located in the reading titled Phosphates – posted on Blackboard)

1. In what products are phosphates used?
2. Why is phosphorus important?
3. How have human activities disrupted the phosphorus cycle?
4. How is phosphorus mined, beneficiated and concentrated?

3/21 Reading: Ch. 11, *Relative Dating: Key Principles* and *Dating with Radioactivity*, Pgs 326-330 and 336-339. When you finish the reading, you should be able to answer the following questions:

1. Know how to tell the relative ages of: igneous rocks, sedimentary rocks, faults, folds, and unconformities.
2. What happens during radioactive decay?
3. How much of a parent isotope decays in one half-life?
4. How can we determine the age of a rock, if we know the ratio of parent to daughter isotope in that rock?

***More on the back...***

5. Why is it important to select an appropriate isotope to measure when determining the rock's age?
6. How do scientists guarantee that the radiometric age is correct?
7. How old is Earth? How do scientists know Earth's age?
8. In addition to radiometric dating, what observations tell us Earth must be very old?

Important vocabulary you should know: unconformities, relative dating, uniformitarianism, catastrophism, element, nucleus, proton, neutron, isotope, mass number, atomic number, radiometric dating, radioactive decay

**In-class homework**

Exam 2 will be Thursday, 3/28.