

## Final Study Guide Questions

Earth Science

Fall 2008

Mr. Traeger

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

The following questions are similar to questions that will be asked on the final exam. Please go through your book and answer them as a way to review for the final. If you answer ALL of them to the best of your ability, you will get an additional 15 points added to your final exam grade! That means that your questions MUST be turned in on the day of the final. The final is cumulative (It covers the whole semester.) and will cover Preliminary Activities and selected sections of Chapters 1, 2, 3, 4, 5, 6, 9, 10, 11, 12, and 13.

Section	Topic	Questions to Ponder
<b>Preliminaries</b>		
Skills Handbook pages 807-830	Basic Skills	<ul style="list-style-type: none"> <li>▪ What is standard notation and what is scientific notation? How do you convert between the two?</li> <li>▪ How do you convert between metric units using the decimal jump method?</li> <li>▪ How do you measure distance, volume, and mass?</li> <li>▪ How do you calculate density?</li> <li>▪ How do you make a line graph? When should it be used?</li> <li>▪ How do you make a bar graph? When should it be used?</li> </ul>
<b><u>Chapter 1 Section 2: Science as a Process</u></b>		
1.2		<ul style="list-style-type: none"> <li>▪ What is a scientist?</li> <li>▪ Why do scientists do what they do?</li> <li>▪ What is the scientist's mind?</li> <li>▪ Do all scientists fit a stereotype?</li> <li>▪ What are qualities of scientific thinking?</li> <li>▪ How do scientists approach questions?</li> <li>▪ What are the steps involved in the scientific method?</li> <li>▪ What is the purpose of peer review?</li> <li>▪ Why is it important to test scientific ideas?</li> <li>▪ What is the difference between scientific theories and laws?</li> </ul>
<b><u>Chapter 2: Earth as a System</u></b>		
2.1	Earth: A Unique Planet	<ul style="list-style-type: none"> <li>▪ Why did Earth become a spheroid?</li> <li>▪ What are the different layers of Earth's interior? What are the characteristics of these layers?</li> <li>▪ Where does Earth's heat and magnetic field come from? What is a magnetic field?</li> </ul>
2.2	Energy in the Earth System	<ul style="list-style-type: none"> <li>▪ What are the four earth system spheres?</li> <li>▪ Is there a fifth sphere not named in the book? What is it?</li> <li>▪ How do the spheres interact?</li> <li>▪ How do interactions change the spheres?</li> </ul>
<b><u>Chapter 3: Models of the Earth</u></b>		
3.1	Finding Locations on Earth	<ul style="list-style-type: none"> <li>▪ What is a map?</li> <li>▪ What is latitude and longitude?</li> <li>▪ How do you find your direction on the Earth?</li> </ul>
3.2	Mapping Earth's	<ul style="list-style-type: none"> <li>▪ What kinds of technology are used to make maps</li> </ul>

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	Surface	<ul style="list-style-type: none"> <li>today?</li> <li>▪ Why are map projections necessary?</li> <li>▪ What is the definition of map scale?</li> </ul>
3.3	Types of Maps	<ul style="list-style-type: none"> <li>▪ What kinds of things are shown on a topographic map?</li> <li>▪ What are contour lines and contour interval?</li> <li>▪ What are slope and elevation and how do you know when a hill has a steep slope or a gentle slope?</li> <li>▪ What do the different topographic map symbols mean?</li> <li>▪ How do you use topographic maps?</li> </ul>
<b><u>Chapter 4: Earth's Chemistry</u></b>		
4.1	Matter	<ul style="list-style-type: none"> <li>▪ What is matter?</li> <li>▪ What is an element? A compound?</li> <li>▪ What is the atom? What is its basic structure?</li> <li>▪ What is the periodic table? How do you use it to determine how many protons an atom has? Know how to read the periodic table!</li> <li>▪ What are ions? How do you calculate the charge on an ion?</li> <li>▪ What are isotopes? How do you figure out the number of protons, neutrons, and electrons in an isotope?</li> <li>▪ What are the characteristics of a metal? A nonmetal? How can you use the periodic table to classify a metal?</li> </ul>
<b><u>Chapter 5: Mineral's of Earth's Crust</u></b>		
5.1	What is a Mineral?	<ul style="list-style-type: none"> <li>▪ What is a mineral? It's NOT a rock! List the 5 characteristics.</li> <li>▪ What are the two main types of minerals?</li> <li>▪ How do minerals form?</li> <li>▪ What is crystal structure and how does it determine how a mineral is formed?</li> <li>▪ What are the major mineral groups and how do you tell the difference among them? Think chemical structure!</li> <li>▪ What are some basic uses for minerals?</li> </ul>
5.2	Identifying Minerals	<ul style="list-style-type: none"> <li>▪ What are the physical and chemical properties that you would look for when attempting to identify a mineral? Moh's Scale, streak, etc.</li> <li>▪ What are special properties of a mineral?</li> <li>▪ Could you identify a mineral if given a sample and the right tools?</li> <li>▪ What is specific gravity (density)? Why is it useful?</li> </ul>
<b><u>Chapter 6: Rocks</u></b>		
6.1	Rocks and the Rock Cycle	<ul style="list-style-type: none"> <li>▪ What is a rock?</li> <li>▪ What are the three major types of rock?</li> <li>▪ What is the rock cycle? What are the products and processes of the rock cycle?</li> </ul>
6.2	Igneous Rocks	<ul style="list-style-type: none"> <li>▪ What are the 2 types of igneous rock and how does each type form?</li> <li>▪ What is Felsic? Mafic?</li> <li>▪ What are characteristics of rocks that form deep in the</li> </ul>

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		<p>earth? On the surface? Think intrusive and extrusive!</p> <ul style="list-style-type: none"> <li>▪ What are igneous rock descriptions? How would you classify igneous rocks into the gabbro, diorite, and granite families?</li> <li>▪ Where would you go to find igneous rocks?</li> </ul>
6.3	Sedimentary Rocks	<ul style="list-style-type: none"> <li>▪ What are the 3 types of sedimentary rock and how does each type form?</li> <li>▪ What are features of sedimentary rocks?</li> <li>▪ What are fossils?</li> <li>▪ Where would you go to find sedimentary rocks?</li> </ul>
6.4	Metamorphic Rocks	<ul style="list-style-type: none"> <li>▪ How do metamorphic rocks form?</li> <li>▪ What are the 2 types of metamorphism?</li> <li>▪ What are descriptions of metamorphic rocks? What is foliation and how does it help to identify a metamorphic rock? Think gneiss and marble!</li> <li>▪ Where would you go to find metamorphic rocks?</li> </ul>
<b><u>Chapter 10: Plate Tectonics</u></b>		
10.1	Continental Drift	<ul style="list-style-type: none"> <li>▪ What was Pangaea? How did it change over the years?</li> <li>▪ What kinds of evidence did we use to re-construct Pangaea?</li> <li>▪ What were early ideas of plate tectonics? Think Wegener and Continental Drift!</li> <li>▪ What is the theory of plate tectonics? What types of evidence support it?</li> <li>▪ What is sea floor spreading?</li> <li>▪ How does magnetism and rocks ages help to support the theory of plate tectonics?</li> </ul>
10.2	The Theory of Plate Tectonics	<ul style="list-style-type: none"> <li>▪ What are characteristics of convergent, divergent, and transform plate boundaries?</li> <li>▪ What kinds of structures (landforms) would you expect to form at each type of plate boundary?</li> <li>▪ How do continents move?</li> <li>▪ What is mantle convection? Ridge push? Slab pull?</li> </ul>
<b><u>Chapter 13: Volcanoes</u></b>		
13.1	Volcanoes and Plate Tectonics	<ul style="list-style-type: none"> <li>▪ What is magma and how does it form?</li> <li>▪ Name and describe the 3 types of places where volcanoes form.</li> <li>▪ How did the Hawaiian Islands form?</li> <li>▪ How do volcanoes relate to plate tectonics?</li> </ul>
13.2	Volcanic Eruptions	<ul style="list-style-type: none"> <li>▪ What are the types of magma?</li> <li>▪ What do viscosity, silica content, and gas content have to do with the explosiveness of a volcano?</li> <li>▪ What are the types of lava flows?</li> <li>▪ What are the ash and rock fragments ejected from a volcano?</li> <li>▪ What are the characteristics of shield volcanoes, cinder cones, and composite volcanoes? Where does each type form? Relate this to plate tectonics!</li> </ul>

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		<ul style="list-style-type: none"> <li>▪ What are the major volcanic hazards?</li> <li>▪ How do calderas form?</li> </ul>
<b><u>Chapter 11 and 12: Deformation of the Crust and Earthquakes</u></b>		
11.1	How Rock Deforms	<ul style="list-style-type: none"> <li>▪ What are the three types of stress in the earth?</li> <li>▪ What is strain? What happens to rock when it has too much of it?</li> <li>▪ What are folds: synclines and anticlines?</li> <li>▪ What are the types of faults in the earth's crust?</li> <li>▪ What is a hanging wall? What is a foot wall?</li> <li>▪ What is the difference between normal, reverse, thrust, and strike-slip faults?</li> </ul>
12.1	How and Where Earthquakes Happen	<ul style="list-style-type: none"> <li>▪ How do earthquakes relate to plate tectonics?</li> <li>▪ What causes earthquakes?</li> <li>▪ What are the different types of seismic waves? What are their characteristics?</li> </ul>
12.2	Studying Earthquakes	<ul style="list-style-type: none"> <li>▪ What is a seismograph and how does it work?</li> <li>▪ How do you interpret a seismogram?</li> <li>▪ How do you locate the epicenter of an earthquake?</li> <li>▪ What is the difference between intensity and magnitude? What scales are used to measure each?</li> <li>▪ By how much does the energy of an earthquake change between scales of magnitude?</li> </ul>
12.3	Earthquakes and Society	<ul style="list-style-type: none"> <li>▪ What are hazards associated with earthquakes?</li> <li>▪ What are tsunamis? How do they form? What should you do to avoid getting killed by one?</li> <li>▪ How does the ground type that you live on determine the intensity of the earthquake?</li> <li>▪ What can you do to prevent earthquake damage and loss of life?</li> <li>▪ What goes into a good earthquake safety kit? What makes a good earthquake safety plan?</li> <li>▪ What should you do when an earthquake strikes? What shouldn't you do?</li> <li>▪ What are the areas of major earthquake risk in the world?</li> <li>▪ Can we predict earthquakes? If so, how?</li> <li>▪ How do differences in engineering determine the amount of damage received by structures?</li> </ul>
<b><u>Chapter 9: A View of Earth's Past</u></b>		
9.1	Geologic Time	<ul style="list-style-type: none"> <li>▪ How is the geologic time scale organized? What is it based upon?</li> <li>▪ How do evolution and major extinctions determine how the geologic time scale is constructed?</li> <li>▪ What is the difference between Eon, Era, Period, and Epoch?</li> <li>▪ What were the series of astronomical and geological events that set the stage for life to occur on our planet?</li> <li>▪ What is a geologic map and how do you read one?</li> </ul>