Earth Science Benchmark 1 Study Guide

Standard 3.c
Students know how explain the properties of rocks based on the physical and chemical conditions in which they formed, including tectonic processes.

1) Where is the majority of the granite rock that composes the continents formed?
2) How is sandstone, commonly found near coastlines, formed?
3) What is igneous rock, and what determines if it is coarse-grained, fine-grained or glassy?
4) What are the ways in which rocks can be classified (know how to use Table 1 on pg. 74 of the textbook identify rocks)?
5) What is a tetrahedron molecule and what about the way these bond causes silicate materials like talc, mica and graphite to easily break apart?
6) How does marble form from limestone?

Standard 3.d
Students know why and how earthquakes occur and the scales used to measure their intensity and magnitude.

7) What scale is used to measure the intensity of an earthquake?
8) What event or geological phenomena occurs when there is more stress being applied than the rock can handle (strain unit)?
9) How much more energy is released by a 2.0 earthquake than a 3.0 earthquake? Why?
10) What event or geological phenomena would probably occur where 2 plates slide against each other in opposite directions?
11) What event or geological phenomena usually occurs along major fault lines (hint: California is famous/infamous for these events)?
12) What scale is used to measure the amount of energy released by an earthquake?

Standard 4.b
Students know the fate of incoming solar radiation in terms of reflection, absorption and photosynthesis.

13) What reflects most of the incoming solar that is reflected back into space from Earth?
14) How do plants use absorbed light energy from solar radiation, and what is this process called?
15) What kind of radiation does the ozone layer absorb the most?
16) What causes atmospheric scattering?
17) What is the difference between short-wave and long-wave radiation, what relationship do these have to wave frequency?
18) What absorbs most longer wavelength radiation?

Standard 4.c
Students know the different atmospheric gases that absorb the Earth's thermal radiation and the mechanism and significance of the greenhouse effect.

19) What would happen if there were more CO_2 entering the atmosphere than was being removed?
20) Which elements in the Earth's atmosphere are responsible for absorbing most of the Sun's incoming solar radiation?
21) What is the greenhouse effect?
22) What happens to most of the heat released by the Earth?
23) What gases are responsible for the greenhouse effect?

Standard 7.a
Students know the carbon cycle of photosynthesis and respiration and the nitrogen cycle.

24) Where is the largest reservoir of nitrogen on Earth?
25) Where does most of the oxygen in the atmosphere come from?
26) How is nitrogen returned to the atmosphere during the nitrogen cycle?
27) What happens to the CO_2 in the atmosphere because of respiration?
28) What do the carbon cycle and the nitrogen cycle have in common?
29) What is the formula for photosynthesis and what does it mean?

Standard 7.b
Students know the global carbon cycle: the different physical and chemical forms of carbon in the atmosphere, oceans, biomass, fossil fuels, and the movement of carbon among these reservoirs.

30) In the carbon cycle, how does carbon move around on a "global scale"?
31) What kinds of materials are affected by chemical weathering?
32) What compound increases in the atmosphere as a result of burning fossil fuels?
33) What are some of the various forms of carbon in the ocean?
34) What type of rocks play an important role in the carbon cycle?
35) In the last 100 years, what has been the single biggest reason more carbon has moved from the fossil fuel reservoir to the atmosphere?