

Review for Lab Exam 1 (Week of Oct. 3, 2016)

This Exam will begin at the start of lab and will include questions from the first three labs.

The lab will be open Friday and there are review times for you starting on Sunday night, so that you can review the minerals. **The review schedule is posted on D2L.**

Lab 1: Density, Isostasy & Plate Tectonics (you will be provided with a calculator and a ruler)

- Know the approximate (average) densities of ocean crust, continental crust, and asthenosphere and how they behave isostatically (i.e., do they sink, float, float high/float low, etc).
- Be able to calculate density when given mass and volume.
- Be able to compare the densities of different materials and how they would behave isostatically.
- Know the types of plate boundaries (and examples of each), and density differences in the crust, asthenosphere, and whole Earth.
- Be able to use the buoyancy equations (below) that you used in lab to calculate the height of the crust floating above or below the asthenosphere (based on density differences).

$$H_{\text{BELOW}} = \frac{\rho_{\text{object}}}{\rho_{\text{fluid}}} H_{\text{TOTAL}}$$

$$H_{\text{TOTAL}} = H_{\text{ABOVE}} + H_{\text{BELOW}}$$

where: H_{BELOW} = height of object below the surface of fluid in which the object is floating
 H_{ABOVE} = height of object above the surface of the fluid in which the object is floating
 H_{TOTAL} = total height of floating object
 ρ_{object} = density of the object that's floating (e.g. crust)
 ρ_{fluid} = density of the fluid in which the object is floating

Lab 2: Minerals (you will be given streak plates, glass plates, magnets and acid to use).

- Given a mineral sample*, be able to answer the following questions:
 - Is this mineral metallic or non-metallic?
 - Is this mineral harder or softer than glass?
 - Is this mineral harder or softer than your fingernail?
 - How many directions of cleavage does this mineral have?
 - What color is the streak of this mineral?

*Note: You should be able to answer these questions for any mineral. The samples for this portion of the exam **will not necessarily be a mineral sample you saw in lab** (i.e. minerals A-V).

- [Know the distinguishing properties of minerals](#) A–O (there will be 1 or 2 distinguishing properties for each mineral).
- Be able to **identify minerals A–O** without the charts in your lab manual.

***Hint:** You do not need to memorize *every* property of *every* mineral; you only need to memorize each mineral's *distinguishing* properties.

For Example: Hematite's distinguishing property is that it is the only mineral that streaks red/brown. If you are given a sample on the test that streaks red/brown, then you know that it is hematite.

Warning: You will be given some A–O mineral samples that **look different than the ones you saw during lab**. Prepare for this by knowing the distinguishing properties of minerals A–O; Do NOT try to just memorize what the mineral samples look like.

Lab 3: Maps and topography:

- Be able to use latitude and longitude (don't forget to indicate N, S, E, W as needed).
- Use the bar scale and fractional scale on a map, and be able to determine distances from a map.
- Be able to determine a verbal scale by using the fractional scale and vice versa (see Part I of the topographic maps lab).
- Determine the contour interval (even if it is not indicated on the map).
- Know the difference between elevation and height, and be able to determine **elevation**, **height**, and **slope** (be careful not to confuse these terms).
- Be able to determine the direction a river is flowing based on topographic contours.
- Be able to **determine the slope** between two points on a topographic map.