

Questions for Geology 8T quiz #1 – Be prepared for any of these four questions, however, I will only ask you two of them.

Here are the potential questions (I will ask you two of these):

1. What is the main difference between the **lithosphere** and the **asthenosphere**?

Contrast the oceanic lithosphere and the continental lithosphere.

Each of the following questions related to density will ask you to support a claim using one or more of the density ideas we developed in class in a graphic organizer like the one shown below. So you need to know those 4 density ideas.

2. The lithosphere is actually composed of crustal rocks with a layer of higher density rocks (part of the mantle, but still stiff and rigid) at the base, as shown to the right. Both parts are attached to each other and behave as a single brittle unit (the lithosphere). Note that the density of the asthenosphere is 3.3 g/cm^3 – thus, the rigid mantle rocks at the base of the lithosphere have a higher density than the asthenosphere. If the rocks at the base of the lithosphere are denser than the asthenosphere, then why does the continental lithosphere float?

continental crust rocks (2.67 g/cm^3)
mantle rocks (3.4 g/cm^3)

Claim: The continental lithosphere floats even though the rocks found at the bottom of the cont. lith. are more dense than the asthenosphere.

What are the density ideas that support this claim? Clearly explain how they can be applied to this problem.

3. A large metal ship on the Saint Lawrence River (fresh water) sails from the river out into the Atlantic Ocean (salt water). Use the density ideas developed in class to explain the following:
- a. The ship floats the entire time – in general, why does the metal ship float?

Claim: Metal ships float on water
What density ideas support this claim and explain them in relationship to the floating ship.

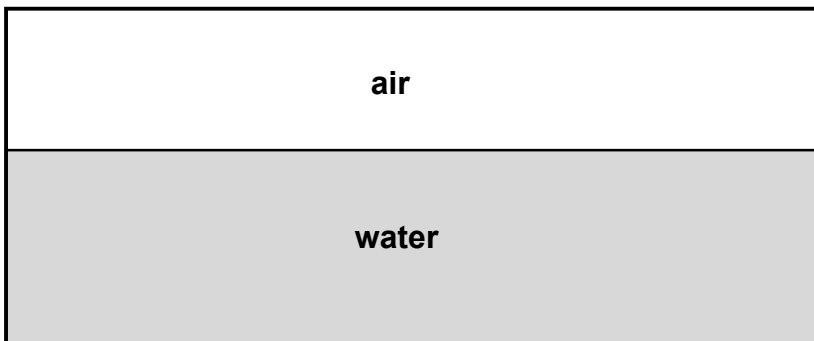
- b. How does the density of salt water compare to that of plain water?
 Salt water is **less dense than, more dense than, the same density as** plain water (*circle one*)
 What density idea supports your claim and explain how it supports it.

- c. What happens to this ship when it moves from the fresh water out into the salt water? Does it: **sink lower, float higher, or keep the same buoyancy?** (*circle one*)
 What density idea supports your claim and explain how it supports it.

4. The density of water is 1.0 g/cm^3 . You have 3 round objects of identical size with these densities:

Sketch what will happen to each object when put in a tub of water. **Clearly explain each of your choices using the density ideas developed in class.**

Object	Density (g/cm^3)
A	2.50
B	0.9
C	0.2



The explanations for why I drew the sketches as I did		
A	B	C