

Name: _____

Paired Reading – a protocol for productive reading

This reading protocol was taken from *Success in Science through Dialogue, Reading and Writing* by Beauchamps, Kusnick, and McCallum (<http://sasp.ucdavis.edu>)

- Work in pairs (Person **A** and Person **B**)
- **A** reads the first paragraph out loud, **B** listens and then summarizes the main points of that paragraph
- **B** reads the next paragraph out loud, **A** listens and then summarizes the main points of that paragraph
- Repeat until the reading is complete

The Outer Layers of the Earth

The stiff, rigid outer layer of the Earth is called the **lithosphere** (*lithos* means ‘rocky’). This layer breaks or fractures easily (brittle behavior). If you have heard anything about *Plate Tectonics*, the plates that cover the surface of the Earth are made of the brittle lithosphere. The layer that lies below the lithosphere is a mostly solid layer that can actually flow slowly (ductile behavior) like silly putty. This layer is much weaker, but denser, than the lithosphere and is called the **asthenosphere** (*asthenos* means ‘weak’). So to review, the Earth has a brittle outer layer called the lithosphere, which ‘floats’ on the ductile asthenosphere below it.

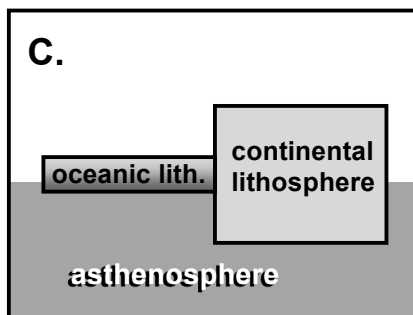
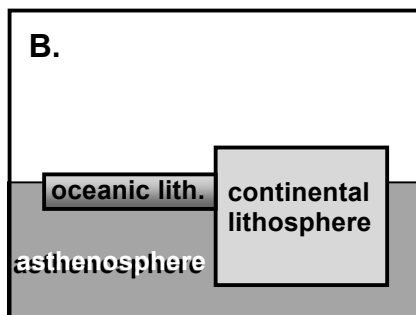
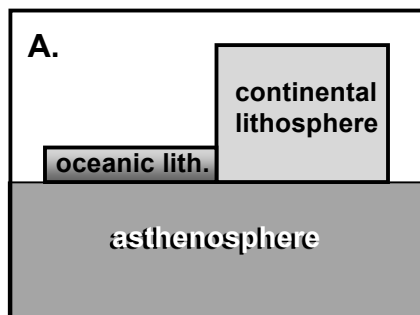
There are two varieties of lithosphere: **continental lithosphere** (comprising the land on the continents) and **oceanic lithosphere** (the rocky stuff underneath Earth’s oceans). In general, continental lithosphere is much thicker but less dense than oceanic lithosphere. We also know that the surface of the continents stick up in the air (high elevation), whereas the surface of the oceanic rocks lie at low elevation beneath the ocean water. Can you figure out what the bottom of each lithosphere type does relative to the ductile asthenosphere on which it floats?

Check Your Understanding: Buoyancy and the Outer Layers of the Earth

The three figures below (**A**, **B**, **C**) are side-view slices through the Earth. Use the information provided in Table 1 AND the Density Ideas from class to decide which of these figures show the most likely arrangement of oceanic & continental lithosphere relative to the asthenosphere.

Table 1. Information about the lithosphere and asthenosphere

Layer		Density	Other Information
lithosphere	continental	2.7 g/cm ³	Stiff, rigid, brittle, very thick
	oceanic	2.9 g/cm ³	Stiff, rigid, brittle, relatively thin
asthenosphere		3.3 g/cm ³	Below the lithosphere, weak, mushy, ductile



I chose:	Support your choice by using specific density ideas developed in class: